The Canopy

Final Environmental Impact Report/ Responses to Comments on the Draft EIR

SCH#2023070072

prepared by

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February 2024

RINCON CONSULTANTS, INC. SINCE 1994

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Appendices

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1 Introduction

1.1 Purpose of the Final EIR

This document is the Final EIR which contains responses to comments received on the Draft Environmental Impact Report (Draft EIR) and revisions to the Draft EIR prepared for The Canopy Project (project). The Draft EIR identifies the likely environmental consequences associated with development facilitated by the proposed project and recommends mitigation measures to reduce potentially significant impacts.

1.2 Environmental Review Process

Pursuant to the California Environmental Quality Act (CEQA), lead agencies are required to consult with public agencies having jurisdiction over a proposed project and to provide the general public with an opportunity to comment on the Draft EIR.

The City of Sebastopol distributed a Notice of Preparation (NOP) of the Program EIR for a 30-day agency and public review period commencing July 6, 2023 to August 7, 2023. In addition, the City held a virtual Scoping Meeting on July 18, 2023. The meeting, held at 3:00 PM, was aimed at providing information about the proposed project to members of public agencies, interested stakeholders and residents/community members. The meeting was held at Sebastopol Community Center at 425 Morris Street, Sebastopol, CA and online via Zoom. The City received letters from two agencies in response to the NOP during the public review period, as well as various verbal comments during the EIR Scoping Meeting.

The Draft EIR was made available for public review for a 48-day public review period that began on December 7, 2023 and ended on January 24, 2024. The Notice of Availability of a Draft EIR was posted with the County Clerk, sent to the State Clearinghouse, mailed to local and state agencies, published in the newspaper, and emailed to interested parties. In addition, the Planning Commission received verbal comments on the Draft EIR during the public meeting held on January 23, 2024.

The City received 13 individual written comments on the Draft EIR and one written memo of comments received verbally via phone call. Copies of written comments received during the comment period are included in Chapter 2 of this document and comments received during the public meeting are included in Chapter 3 of this document.

1.3 Document Organization

This document consists of the following chapters:

- **Chapter 1: Introduction.** This chapter discusses the purpose and organization of this Final EIR and summarizes the environmental review process for the project.
- **Chapter 2. Written Comments and Responses.** This chapter contains reproductions of all comment letters received on the Draft EIR. A written response for each CEQA-related written comment received during the public review period is provided. Each response is keyed to the corresponding comment.

- **Chapter 3: Public Hearing Comments and Responses.** This chapter contains a summary of comments received during the public meeting held on January 23, 2024.
- **Chapter 4: Revisions to the Draft EIR.** Changes to the Draft EIR that have been made in light of the comments received are contained in this chapter.

1.4 EIR Certification Process and Project Approval

Before adopting the proposed project, the lead agency is required to certify that the EIR has been completed in compliance with CEQA, that the decision-making body reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment of the lead agency.

Upon certification of an EIR, the lead agency makes a decision on the project analyzed in the EIR. A lead agency may: (a) disapprove a project because of its significant environmental effects; (b) require changes to a project to reduce or avoid significant environmental effects; or (c) approve a project despite its significant environmental effects, if the proper findings and statement of overriding considerations are adopted (*CEQA Guidelines* Sections 15042 and 15043).

In approving a project, for each significant impact of the project identified in the EIR, the lead or responsible agency must find, based on substantial evidence, that either: (a) the project has been changed to avoid or substantially reduce the magnitude of the impact; (b) changes to the project are within another agency's jurisdiction and such changes have or should be adopted; or (c) specific economic, social, or other considerations make the mitigation measures or project alternatives infeasible (*CEQA Guidelines* Section 15091). Pursuant to PRC Section 21061.1, feasible means capable of being accomplished in a successful manner within a reasonable period of time, taking into account, economic, environmental, legal, social, and technological factors.

If an agency approves a project with unavoidable significant environmental effects, it must prepare a written Statement of Overriding Considerations that sets forth the specific social, economic, or other reasons supporting the agency's decision and explains why the project's benefits outweigh the significant environmental effects (*CEQA Guidelines* Section 15093).

When an agency makes findings on significant effects identified in the EIR, it must adopt a reporting or monitoring program for mitigation measures that were adopted or made conditions of project approval to mitigate significant effects (*CEQA Guidelines* Section 15091[d]).

1.5 Draft EIR Recirculation Not Required

CEQA Guidelines Section 15088.5 requires Draft EIR recirculation when comments on the Draft EIR or responses thereto identify "significant new information." Significant new information is defined as including:

1. A new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented.
2. A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance.
3. A feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the significant environmental impacts of the project, but the project's proponents decline to adopt it.

4. The draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded.

The comments, responses, and Draft EIR revisions presented in this document do not constitute such "significant new information;" instead, they clarify, amplify, or make insignificant modifications to the Draft EIR. For example, none of the comments, responses, and Draft EIR revisions disclose new or substantially more severe significant environmental effects of the proposed project, or new feasible mitigation measures or alternatives considerably different than those analyzed in the Draft EIR that would clearly lessen the proposed project's significant effects.

2 Responses to Comments on the Draft EIR

This section includes comments received during public circulation of the Draft Environmental Impact Report (EIR) prepared for The Canopy Project (Project).

The Draft EIR was circulated for a 48-day public review period that began on December 7, 2023 and ended on January 24, 2024. The City of Sebastopol received 13 written comment letters on the Draft EIR and one memo summarizing verbal comments received via phone call. The commenters and the page number on which each commenter's letter appear are listed below.

Letter No. and Commenter		Agency	Page No.
Public Comment			
1	Linda Berg		5
2	Tor Allen		7
3	Joan Schwan and Geoffrey Skinner		10
4	Paul Fritz		21
5	Seth Hanley		27
6	Tennis Wick	Permit Sonoma	33
7	Dave Kereazis	Department of Toxic Substances Control (DTSC)	38
8	Linda Berg		44
9	Janet Waring		47
10	Sandy Mathews		50
11	Jacob Harris		52
12	Kate Haug		56
13	Kathy Oetinger		58
14	Yunsheng Luo	California Department of Transportation (Caltrans)	61

The comment letters and responses follow. The comment letters are numbered sequentially and each separate issue raised by the commenter, if more than one, has been assigned a number. The responses to each comment identify first the number of the comment letter, and then the number assigned to each issue (Response 1.1, for example, indicates that the response is for the first issue raised in Comment Letter 1).

Where a comment resulted in a change to the Draft EIR text, a notation is made in the response indicating that the text is revised. Changes in text are signified by strikeout font (~~strikeout font~~) where text was removed and by underlined font (<u>underlined font</u>) where text was added. These changes in text are also included in Section 4, *Revisions to the Draft EIR*.

City of Sebastopol
Planning Department

December 20, 2023

To: Katie Green, Rincon Consultants

Re: Canopy Draft EIR public comments.

Hello Katie,

I received a phone call from Linda Berg on December 18th, 2023 and her comments are listed below for the project.

- How and why is there no significant impact to traffic and emergency services from this project.
- How are they estimating only 684 trips per day for this project.
- Adding vehicles to the Healdsburg corridor is not a good idea.
- Why is the cumulative congestion used and does this account for the new 22 units proposed at 845 Gravenstein Highway North.

1.1

Sincerely,

John Jay, Associate Planner
jjay@cityofsebastopol.gov

Letter 1

COMMENTER: Linda Berg

DATE: December 18, 2023

Response 1.1

The commenter asks how less than significant traffic and emergency services impacts were determined, how trips per day were estimated, and why cumulative congestion is used in the analysis, and whether it accounts for 22 new units proposed at 845 Gravenstein Highway North. The commenter also opines that adding vehicles to the Healdsburg corridor is not a good idea.

Transportation and emergency service impacts are discussed in Section 4.13, *Transportation*, of the Draft EIR. As described on Page 4.13-14 of the Draft EIR, the proposed internal network and the parking stalls located therein were determined to be in accordance with City design standards. Site access and circulation were determined to function acceptably for emergency response vehicles. Furthermore, analysis on Page 4.13-14 of the Draft EIR determined that the increase in traffic volumes resulting from the project can reasonably be expected to result in similarly nominal changes to traffic delays in the area. Since emergency responders can claim the right-of-way through use of their lights and sirens, the addition of project-generated traffic would be expected to have little to no impact on emergency response times. Therefore, the project would have a less than significant impact on emergency response.

Impacts related to vehicle miles traveled (VMT) and hazards related to geometric design features were also determined to be less than significant. Furthermore, as described in Section 4.12-7, *Public Services*, pursuant to Chapters 3.34 and 3.38 of the Sebastopol Municipal Code (SMC), the project would be required to pay fees that would be used to support Sebastopol Fire Department operations and the provision of additional resources and staff at the Sebastopol Police Department's police station and impacts to public services such as emergency services would be less than significant.

While not required by CEQA, trips per day and level of service (LOS) analysis is provided in Appendix TRA to the Draft EIR. Calculations used to determined trips per day are provided in Appendix B of Appendix TRA. Cumulative impacts regarding consistency with existing plans and programs related to pedestrian, transit, and roadway policies, and vehicle miles traveled (VMT) impacts are discussed on pages 4.13-14 through 4.13-15 of the Draft EIR. As stated therein, with respect to cumulative impacts, the OPR Technical Advisory states, "A project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact." The proposed project would contribute to this cumulative impact by adding to countywide VMT alongside other planned development nearby. However, as described under Impact TRA-2, the implementation of the project would not significantly increase the City's VMT. Therefore, the Draft EIR determined that the project would not result in a cumulatively considerable contribution to significant cumulative VMT impacts. As shown on Page 3-2 of the Draft EIR, the proposed 845 Gravenstein Hwy North project mentioned by the commenter was included in the cumulative projects list considered for cumulative analysis.

John Jay

From: Tor Allen <tor@rahus.org>
Sent: Monday, January 8, 2024 9:23 PM
To: John Jay; Kari Svanstrom
Cc: Steven Pierce
Subject: Observation @ Canopy Project.... solar related

Hi John, Kari,
I was just reviewing the Draft EIR for the Canopy project
https://www.cityofsebastopol.gov/wp-content/uploads/2023/12/Canopy-DEIR-with-Appendices.pdf

I wanted to share 2 observations regarding this development for consideration.
1. pg. 46, front facade of the building. shows an architectural roof 'feature' that renders much of the solar viable roof space unusable or not ideal. the architecture 'feature' is just that - it's something the architect thinks makes the building look better. I'm hoping that this can be modified such that the south and west facing roof space can be maximized for solar array placement. One would think that by now architects that claim their development is 'solar' would at least make an attempt at optimizing the roof. Title 24 solar requires a bare minimum solar array size. One should really design a solar array that allows for adding modules if a homeowner wishes, beyond the bare minimum that the developer will install initially. 2.1

Figure 2-5 Proposed Building Elevations

Source: William Hezmalhalch Architects, INC. DBA WHA., 2023

2. roof vents - while this report might not show this detail, it's important. One can reference Barlow Crossing for how NOT to do it. All vents can be placed on the north or east side of the roof leaving the south and west facing roof space free of obstructions. It's really not that hard to do. Habitat for Humanity projects know how to do this, so ... 2.2

3. require a Battery per unit. With the change in Net Metering law, dramatically lowering the value of any exported solar electrons to the grid, new residential solar systems are considered incomplete without a battery to help store energy for use during peak afternoon/evening periods - especially with an all electric home. City of Sebastopol is allowing a waiver for this project for the 3 story height. Perhaps it can require an appropriate sized battery as well? 2.3

Thanks!

Tor

--

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Letter 2

COMMENTER: Tor Allen

DATE: January 8, 2024

Response 2.1

The commenter suggests that an architectural roof feature shown in Figure 2-5 of the EIR could be modified to optimize future use of solar panels.

The comment has been noted and passed to decisionmakers. This comment does not relate to the adequacy of the EIR, but rather comments about design features on the project chosen for analysis.

Response 2.2

The commenter recommends placing roof vents on the north or east side of the roof.

The comment has been noted and passed to decisionmakers. This comment does not relate to the adequacy of the EIR, but rather comments about design features on the project chosen for analysis.

Response 2.3

The commenter recommends requiring a battery unit.

The comment has been noted and passed to decisionmakers. This comment does not relate to the adequacy of the EIR, but rather comments about design features on the project chosen for analysis.

John Jay

From: John Jay
Sent: Tuesday, January 9, 2024 10:24 AM
To: John Jay
Subject: FW: Comments on "The Canopy" proposed development

Hello Kari,

Please share our comments below with the Planning Commission members. Thank you!

Dear Planning Commission members,

We live on Hurlbut Avenue and would like to offer input on the proposed high-density housing development in our neighborhood. We generally support providing housing on appropriate sites where equitable housing opportunities are needed, but this project appears primarily aimed at a specific higher-end market, with no units fewer than three bedrooms and few below-market units. The project as proposed is out of character with the neighborhood in terms of density and scale. We would like to see reduced housing density, reduced building height, confirmation that there will not be impacts on groundwater supply, and a solid plan for mitigating the impacts of lost native oak trees. Following are our additional comments and questions. Thank you for your consideration. 3.1

Trees:

- The biological section of the CEQA document indicates that 41 native trees are being removed. Please clarify the plan for mitigating those losses. If it will be off-site, is the City confident that $75 is adequate to purchase, plant, and maintain through establishment trees of similar value to those that are being removed? Where will these be planted? Would the trees be replaced in kind (i.e., native oaks for native oaks), or would they more likely be small street trees such as crape myrtles or ornamental pears, which provide much reduced biological and shade values? 3.2
- Will project grading (cut and/or fill) and soil capping have any negative impact on trees to be preserved? The root protection zone for native trees is typically considered to extend 1.5 times the width of the canopy; grading within that zone often leads to tree loss. If additional trees will be impacted by grading, they should be included in the count of trees lost and mitigated for. 3.3
- The plan indicates that one of the few mature oaks to be protected within the site will be permanently lit with multiple lanterns. Please consider omitting that lighting as it would reduce the habitat value of the heritage oak for birds and other wildlife, as well as contribute to light pollution. 3.4
- The project description notes that native trees will be used for landscaping, and mentions maple, dogwood, and madrone. Madrone is appropriate for the site. Big-leaf maple is a riparian tree (needing significant water) and we suggest it be replaced with black or Oregon oak, which are drought-tolerant and would occur naturally on the site. Dogwood is also a riparian tree/shrub not suitable for this site without ongoing irrigation; we suggest it be removed from the palette. Many of the shrubs and perennials listed are native, drought-tolerant, and appropriate to the site. The plant palette also lists birch, which is not native and requires high water input; we suggest that species be removed. Plans appear to call for turf grass around one of the preserved heritage oaks; summer irrigation can kill native oaks, so lawns should be avoided within the oaks' root protection zone. 3.5

Wildlife:

- The biology report does not address current wildlife use of the site and lacks a list of wildlife species observed on-site during the assessment. We live in a similar nearby setting of an aging apple orchard with scattered oak trees and know that this setting is heavily used by many bird, bee, and butterfly species, as well as deer, foxes, coyotes, and other native 3.6

wildlife. With urbanization expanding across our town, state, and globe, protecting remnant habitat elements within urban areas is increasingly essential for wildlife to persist.

- The report indicates that the site has no value for wildlife movement, and suggests that it is surrounded by commercial and residential development. We see it differently; the site is bounded by the corridor of the regional trail on one side, which provides a narrow but valuable strip of largely native oak habitat stretching from the edge of town through town, to the Laguna. Currently, from a wildlife perspective, the site serves as a portion of that corridor. We have seen deer and foxes use the nearby path as a movement corridor and many birds nesting along it. In recent years, a bear was observed on the O'Reilly property and used the path as a movement corridor as evidenced by scat. The fact that the CERES garden required a deer fence also reflects the regular use of the site by deer. 3.7
- The report doesn't mention USFWS-listed Birds of Conservation Concern likely to make use of the property, such as oak titmice. Mature oaks, and even aging apple trees, provide valuable resources in this neighborhood to titmice and other birds such as western bluebirds, swallows, northern flickers, sapsuckers, and many others. The populations of many previously common bird species have declined dramatically just since the 1960s-1970s; for example, USFWS states that the oak titmouse population across California declined by 46% from 1966 to 2010, with urban and suburban development being one of the primary causes. 3.8
- Reducing the project density to retain more native oaks and provide more space for the native shrub plantings listed on the plant palette would reduce the project's negative impact on local wildlife, supporting birds and pollinators in particular. 3.9

Traffic:

- The traffic report notes that the project would significantly impact traffic at intersections that are already failing to meet standards for service. It suggests traffic light timing adjustment as a mitigation. How much improvement in traffic impacts would result from adjusting light timing? Is that adequate to offset project traffic to less-than-significant? 3.10

Water and Energy:

- The hydrology section does not state anticipated project water demand/groundwater use during operation. What will this be? Has it been determined that this new demand will not overdraft groundwater supplies? Does the analysis consider climate change? Please provide information on this analysis.
- The cumulative impacts section does acknowledge that the project "would increase the water demand, which would be derived solely from groundwater sources. Cumulative development would also increase the demand for groundwater supplies. It is anticipated that cumulative development would result in a significant cumulative impact. The proposed project includes the upgrade of stormwater detention areas, which would be consistent with GSP goals for groundwater recharge, and as described under Impact HYD-2, the project would allow for a net recharge to groundwater and would not interfere with sustainable management of the groundwater basin." However, we did not find any data or rationale provided for the assertion that a net recharge to groundwater would result from the project. Please provide that information. The Santa Rosa Plain Groundwater Sustainability Plan notes that “the amount of groundwater stored in the shallow and deep aquifer systems is declining on average by about 2,100 acre-feet per year.” How do the cumulative impacts envisioned by residential development address or worsen this situation? 3.11
- What portion of the project's energy use will be provided by the proposed solar panels? Does the proposed system meet Sebastopol's requirements? 3.12

Population and Housing:

- Will there be deed restrictions in place to ensure that units are not converted to short-term rentals? A significant portion of the housing in the neighborhood is already devoted to short-term rentals or second homes. We support the goal of finding housing for Californians in need, but not necessarily facilitating new development for increased vacation rentals or second homes. 3.13

Aesthetics and Noise:

- The Aesthetics section indicates that the project is surrounded by "residential and commercial land uses." This obscures the fact that much of the site borders a regional trail corridor/regional park, as well as a school site with significant open space. 3.14

Hundreds of people experience this trail corridor every day, enjoying its quiet, natural, tree-lined setting away from the urban realm, and these values should be considered in analyzing the project's impact. The dense development of 40+' tall buildings and parking immediately along the trail could change the experience of that stretch of trail from that of a wooded linear park to more of an urban sidewalk. The human health benefits of walking in natural settings are increasingly well-documented by researchers and worth protecting from incremental losses. We would like to see an increased setback from the trail, lowered building heights, and a commitment to a screen of native trees here.

- This project is proposed in the transition zone between the developed corridor of 116 and rural residential areas. Contrary to statements in the report, the proposal is not consistent with the existing residential scale of the neighborhood. Dense, extensive 40'+ tall residential buildings represent a dramatic visual change in the neighborhood. That height is consistent only with the O'Reilly buildings, and those were also out of character and highly controversial when built (and now stand underutilized). Please consider reducing the height and density of the project, particularly on the edges meeting the West County Trail, the surrounding residences, and Hurlbut.

3.14 cont.

- The noise section indicates that solid, eye-level walls will be needed to prevent significant ongoing noise impacts from equipment. Please identify these on project drawings and details. How much will existing noise in the adjacent neighborhoods be increased by the project? The report does not clearly state this.

3.15

- Plans indicate that the site will be surrounded by fencing, but the fencing is not shown on the elevation drawings or Highway 116 views. Extensive fencing has a significant impact on neighborhood views, social interactions, and aesthetics. Please provide view illustrations that include the proposed fencing, as well as the solar panels and other project infrastructure not currently shown.
- Fencing along Hurlbut Avenue is shown as 42" tall. Does this exceed the allowable fence height in Sebastopol within the setback from the road centerline?

3.16

- Will there be deed restrictions to prevent residents from installing security or other lighting that conflicts with Dark Sky guidelines? Being able to see many stars is one of the great pleasures of living here, often noted by friends and family who visit from other regions.
- We suggest omitting the art features such as fog catchers and using that space instead to incorporate native landscape plantings, helping to offset the loss of native trees and improving bird and pollinator habitat on-site while also providing a beautiful setting for residents.

3.17

In the future we hope the City is able to encourage redevelopment of existing developed but under-utilized sites, like the largely empty and neglected strip mall across 116 from the site, or the O'Reilly building itself, while protecting some remnant fragments of open space within town.

3.18

We understand that there are many considerations to weigh for the City and the Planning Commission. Thank you for including our input, and that of other project neighbors, as part of the process.

Joan Schwan and Geoffrey Skinner
1293 Hurlbut Avenue

Letter 3

COMMENTER: Joan Schwan and Geoffrey Skinner

DATE: January 9, 2024

Response 3.1

The commenter states that they would like to see reduced housing density, reduced building heights, and requests additional clarification regarding groundwater supplies and mitigation measures for native oak trees.

This comment has been passed to decisionmakers for review. Please see Response 3.11 regarding groundwater supply and Response 3.2 regarding oak tree mitigation measures.

Response 3.2

The commenter requests clarification regarding mitigation measures for trees that would be removed on the project site including where new trees will be planted, and what types of trees would be planted.

Impacts to trees protected by the City's Municipal Code are discussed in Section 4.3.3. As described therein, the project applicant would be required to comply with the Sebastopol Municipal Code Chapter 8.12, Tree Protection, which would include a review of tree removal plans, landscape plans, and specification of a tree replacement ratio by the Planning staff or the City Arborist during the project design review. Pending approval, removed protected trees must be replaced with an approved tree species on the approved tree List, as described in Mitigation Measure BIO-2 on Page 4.3-17 of the Draft EIR. The project proposes planting replacement trees on site, including big leaf maple, madrone, sycamore, and California bay. Through approval of the tree removal permit and corresponding tree mitigation requirements, the project would not conflict with local policies or ordinances regarding trees. The biological value of replacement trees is not evaluated, or required, under this threshold.

An updated Tree Impact Summary by Horticultural Associates was provided on January 23, 2024 and will be available as an appendix to the Final EIR. A total of 43 on-site trees will be removed, including 29 protected trees. Mitigation Measure BIO-2 would continue to apply. With implementation of Mitigation Measure BIO-2, impacts would be reduced to less than significant. The information contained within the Draft EIR, in conjunction with the updated Tree Impact Summary that is provided in the Final EIR, would not constitute the addition of substantial new information and would not require recirculation of the Draft EIR.

Page ES-3 of the Draft EIR has revised with the following (changes shown in strikeout/underline):

There are currently ~~133~~134 trees within the project site (including 92 protected trees), and the proposed project would involve the removal of ~~22~~43 trees (including 29 protected trees) while preserving the remaining ~~111~~91 trees (including 63 protected trees) primarily along the perimeter of the site. An existing large, mature coast live oak tree would be retained at the primary entrance to the project entry. Existing oak trees and redwoods would be preserved throughout the site. Additional trees, such as native maples, madrone and dogwood, are proposed to create onsite ecosystems that attract birds and butterflies. Proposed landscaping would include new plantings throughout the open spaces, including the paseo, at the setbacks along drive aisles, roadways, and

streets, and surrounding the proposed buildings. Other amenities, including gardens, active and passive seating areas, children's play areas, and a meditation hammock garden are also proposed.

Response 3.3

The commenter asks if any trees to be protected, or their root systems, would be affected by project grading.

A Tree Protection Plan prepared for the proposed project is discussed in Section 4.3.2. A Tree Protection Plan is required as a part of the materials submitted with applications for a tentative map, use permit, variance, design review, encroachment permit, grading permit, or building permit where the proposed work will be located within the dripline of any tree for which a tree removal permit would be required. Project demolition plans include tree protection zones encompassing the drip lines of protected trees.

Response 3.4

The commenter recommends omitting the proposed use of lanterns on mature oak trees to be protected.

Impacts to special-status wildlife is discussed in Section 4.3.3. Based on the existing conditions of the project site within the developed area of the City and former use as an apple orchard, habitat value for special-status wildlife is generally low. Lighting impacts are discussed on page 4.1-7 of the Draft EIR. As described therein, Mitigation Measure AES-4 would require the project to amend the final lighting plan to include the identification of all types, sizes, and intensities of wall mounted building lights and landscape accent lighting, and a photometric map. Implementation of Mitigation Measure AES-4 would reduce impacts to a less than significant level. Lighting concepts shown in the site plans, including the image used of the oak with lanterns, are design concept ideas and the project, including the final lighting plan, will be required to undergo appropriate design review and adhere to City standards related to lighting.

Response 3.5

The commenter recommends updating the proposed landscaping to replace Big-leaf Maple with Oregon Oak, and removing dogwood, Birch, and turf grass within Oak root protecting zones.

This comment has been passed on to decision makers. Please see Response 3.2 regarding the City's Municipal Code tree removal permit requirement.

Response 3.6

The commenter states that the Biological Resources Assessment does not include a list of wildlife species observed on the project site.

The commenter is correct that the BRA does not include a list of wildlife species observed during field surveys. However, the potential for special-status wildlife and wildlife corridors does not depend on species observations; rather, it is evaluated based on a habitat assessment. A brief description of each of these species is included within Table A-1 of the BRA, including the species' status, habitat, and probability of occurring on the project site. No special-status species were observed onsite during general surveys.

Response 3.7

The commenter states that the project site is bounded by a trail that acts as a corridor for wildlife and claims that they have observed wildlife along the path.

Impacts to wildlife movement are discussed in Section 4.3.3. The West County Trail is outside of the project site and would not be affected by the proposed project. This trail may provide opportunities for local wildlife movement, but it does not contain suitable natural areas that would contribute to a migratory corridor for wildlife.

Response 3.8

The commenter states that the report does not mention USFWS-listed birds of conservation concern.

Impacts to special-status wildlife are discussed in Section 4.3.3 of the EIR. USFWS-listed birds of conservation concern are not typically included as special-status species under CEQA since they are already addressed under the Migratory Bird Treaty Act. Impacts to native birds would be less than significant with implementation of a nesting bird survey (Mitigation Measure BIO-1[c]).

Response 3.9

The commenter recommends reducing the project density to retain native oaks and provide more space for native shrubs.

Please see Response 3.4, regarding impacts to special-status wildlife. Note also that with mitigation, impacts to biological resources were found to be less than significant under the proposed project.

Response 3.10

The commenter asks if proposed traffic light timing adjustments would be adequate to reduce traffic impacts to a less than significant level.

Prior to SB 743, CEQA analysis typically treated automobile delay and congestion as an environmental impact. Instead, SB 743 requires the CEQA Guidelines to prescribe an analysis that better accounts for transit and reducing greenhouse gas emissions. In November 2017, the Governor's Office of Planning and Research (OPR) released the final update to CEQA Guidelines consistent with SB 743, which recommend using vehicle miles traveled (VMT) as the most appropriate metric of transportation impact to align local environmental review under CEQA with California's long-term greenhouse gas emissions reduction goals. The Guidelines required all jurisdictions in California to use VMT-based thresholds of significance by July 2020. Because LOS impacts are no longer considered significant impacts under CEQA, therefore, traffic congestion-related mitigation measures are not required. Therefore, traffic congestion was not analyzed in the Draft EIR based on this state law.

Refer to Section 4.13, *Transportation*, of the EIR for more transportation analysis. As noted therein, pursuant to Section 15064.3 of the *CEQA Guidelines*, traffic delay, which is what LOS measures and describes, shall not constitute a significant environmental impact for land use projects. However, General Plan Policy CIR1-7 requires projects with potentially significant impacts to circulation to provide a circulation impact report to provide decisionmakers with a picture of the impacts associated with a project and allow decision-makers to determine appropriate improvements to alleviate traffic impacts. In addition, General Plan Policy CIR 1-8 requires review of multi-modal LOS objectives where applicable.

While that information may not be used to justify a significant impact under CEQA (and thus in the Draft EIR), an LOS study has been provided in detail in the Transportation Impact Study (Appendix G) for reference, which includes a discussion of recommended traffic light timing adjustments. As stated therein, the project would result in a greater than a five percent increase in average delay at SR 116/North Main Street, which would operate unacceptably at LOS E during the p.m. peak hour with or without the project. As a result, this is considered an adverse project impact under the City's standards. The Transportation Impact Study determined that optimizing the signal's cycle length and splits to accommodate project trips would result in an improved LOS D. Therefore, the project applicant's recommended contributions to the City's Traffic Impact Fee (TIF) could be utilized to adjust the signal's timing, resulting in LOS D which would be an improvement compared to existing conditions. With this improvement, the intersection would operate in accordance with City standards.

Response 3.11

The commenter requests information regarding the project's operational water demand and groundwater recharge including how climate change and cumulative development may impact declining groundwater stores in the future.

The commenter is correct that the anticipated water demand during operation is not discussed in the hydrology section; that is because for CEQA analysis, water demand is discussed in Section 4.15, *Utilities and Service Systems*. As described therein, the City relies exclusively on groundwater as a water supply source. As stated on page 4.15-10, according to the City's General Plan, the average total per capita water production between 2006 and 2015 was 129 gallons per person per day. Utilizing the water usage rate of 129 gallons per capita per day, the total annual water demand of the proposed project was calculated to be approximately 9.6 mg[1], or 0.77 percent of the 1,237 mg maximum production for the city. The Draft EIR determined that the projected water supply currently available for production by the City of Sebastopol exceeds the projected water demand associated with the proposed project and the project would not exceed the City's available water production capabilities. Compliance with existing regulations and inclusion of the proposed water-conserving project features would also help ensure that an adequate supply of water is provided to the proposed project during normal, dry, and multi-dry year conditions. Therefore, impacts would be less than significant.

Groundwater recharge is addressed on pages 4.8-12 through 4.8-13 of the Draft EIR. As described therein, runoff from impervious surfaces would be detained in detention basins and recharged adjacent to the site, resulting in the same amount of groundwater recharge post-project as under existing conditions. Therefore, the project would not substantially interfere with groundwater recharge at the project site.

Cumulative impacts regarding water demand and groundwater recharge are discussed on page 4.8-17. As described therein, proposed project would increase the demand for water, which would be derived solely from groundwater sources. Cumulative development would also increase demand for groundwater supplies. It is anticipated that cumulative development would result in a significant cumulative impact. The proposed project includes the upgrade of stormwater detention areas, which would be consistent with Groundwater Sustainability Plan (GSP) goals for groundwater recharge, and as described under Impact HYD-2, the project would allow for a net recharge to groundwater and would not interfere with sustainable management of the groundwater basin.

[1] 2 9.6 mg = 204 residents * 129 mg * 365

Consequently, the proposed project would not result in a considerable contribution to a significant cumulative impact related to groundwater. Cumulative impacts pertaining to utility availability are discussed on page 4.15-12. As described therein, cumulative projects would rely on the City for their water supply and the City's water supply is expected to be available for normal, dry, and multi-dry year conditions. Therefore, cumulative impacts related to water demand were determined to be less than significant.

Regarding the commenter's question about climate change, climate change scenarios were incorporated into the modeling used in the Santa Rosa Plain Groundwater Subbasin GSP referenced in Section 4.8, *Hydrology and Water Quality* of the Draft EIR. As stated in the GSP, the Santa Rosa Plain Groundwater Sustainability Agency (GSA) chose a climate change scenario that provides for several very dry years through 2025; normal and wetter years through 2050; and then a long-term drought after the mid-twenty-first century. This climate scenario allows for a significant stress test for groundwater resources planning during the GSP implementation horizon (Sonoma Water 2021). The analysis in the GSP accounts for growth planned in the City's 2016 General Plan Update, which includes the addition of 750 housing units. Approximately 170 housing units were constructed in the City from 2015 until 2023, and along with the 96 units (80 units with the potential for up to 16 ADUs) contemplated in the proposed project this does not exceed the 750 housing units considered in the 2016 General Plan Update and in the GSP referenced in the Draft EIR for the project. Therefore, water demand from new housing units, like the housing proposed by this project, was already accounted for in the future water demand determined in the GSP, and would not be an unanticipated use of groundwater.

Potential future impacts to water supply from climate change are provided on page 4.6-4 of the Draft EIR for additional context.

Response 3.12

The commenter asks what portion of the project's energy use will be provided by the proposed solar panels and if they meet Sebastopol's requirements.

The exact portion of energy that would be provided by solar panels has not yet been determined. Energy impacts are discussed in Section 4.16, *Impacts Found to Be Less Than Significant*. As described therein, no conflict with an applicable plan, policy or regulation adopted for the purpose of renewable energy or energy efficiency is anticipated and there would be no impact. As described on Page 4.2-5 of the Draft EIR, the proposed project would exceed the energy efficiency measures with the 2022 Title 24 Building Efficiency Standards by 5 to 10 percent. For example, the project would dedicate circuitry for electric vehicle charging stations for all townhome garages, which is beyond the requirement of the 2022 Title 24 Standards. The CALGreen standards are updated every three years and become increasingly more stringent over time. The building official has also confirmed that this project would meet these requirements.

Energy sources for the project are discussed in Section 4.6, *Greenhouse Gas Emissions*, of the EIR. Electricity would be provided to the project site by Pacific Gas and Electric (PG&E), and the project would utilize renewable electricity through the use of solar panels. Homeowners also have the option to opt into the SCP program, which provides residents and businesses in Sonoma and Mendocino counties with renewable resources, such as geothermal, wind, and solar. All garages would be wired for EV charging and solar battery backup, and the project would include energy star appliances and Nest thermostats.

Response 3.13

The commenter questions if there will be deed restrictions regarding short-term rentals and second homes.

The comment regarding deed restrictions does not pertain to the analysis presented in the Draft EIR. Future owners or residents of housing units are not determined through CEQA.

Response 3.14

The commenter claims that describing the site as surrounded by residential and commercial uses insufficiently describes that the site is also adjacent to a trail, open space, and a school. The commenter expresses concerns regarding visual changes to the community and recommends increased setbacks from the trail, and reducing the height and density of the project, and the inclusion of native trees. The commenter also claims the project is not consistent with the existing residential scale of the neighborhood.

This comment has been noted and passed on to decision makers. Impacts related to aesthetics are discussed in Section 4.1, *Aesthetics*, of the Draft EIR. As stated on page 4.1-1 of the EIR, the project site is described as being located in a neighborhood characterized by a mix of uses including residential, educational, commercial, and recreational. It also states that the project site is directly adjacent to the West County Trail, that the Sebastopol Charter School is located north of the site, and that the project site is undeveloped and is characterized by mature trees. Regarding the commenter's concerns about visual changes to the neighborhood, as described in Section 4.1, *Aesthetics*, implementation of Sebastopol Design Guidelines and compliance with Sebastopol Municipal Code (SMC) Chapters 17.450 and 16.40 would ensure that development would be consistent with design guidelines through design review and would ensure that the project would be consistent with existing surrounding development. As described on page 4.1-6, the Draft EIR found that the project, which requires approval of a Conditional Use Permit, would be consistent with existing land use designation and zoning. As discussed on Page 2-4 of the Draft EIR, the project would comply with the height limitations and setback requirements in the SMC through the use of a State Density Bonus to allow a waiver to increase the building height to three stories, which would ensure the sensitive design and siting of future residences in a way that is visually compatible with the development scale and style of the surrounding area. The project's consistency with SMC R7 Development Standards is shown in detail in Table 4.9-2. The commenter is correct that the height of the proposed project is consistent with the height of the adjacent office park buildings, which are now included in the baseline conditions for visual character surrounding the project site.

Regarding the commenter's request to retain native trees, an updated tree impact summary provided by Horticultural Associates on January 23, 2024 states that 91 of the trees on-site would be preserved, including 63 protected trees. Furthermore, as described on Page 4.1-5, the project applicant would be required to comply with the Sebastopol Municipal Code Chapter 8.12, Tree Protection, which would include a review of tree removal plans, landscape plans, and specification of a tree replacement ratio by the Planning staff or the City Arborist during the project design review. Pending approval, removed protected trees must be replaced with an approved tree species on the approved tree List, as described in Mitigation Measure BIO-2.

Response 3.15

The commenter requests an update to site plans to include eye-level walls proposed to reduce noise, fences, and solar panels. The commenter asks how much noise will increase in neighborhoods adjacent to the project site, and if proposed fences along Hurlbut Avenue are within the allowable height.

The request regarding updated plans has been passed on to decision makers for consideration. Impacts related to noise are addressed in Section 4.10, *Noise*, of the Draft EIR. As discussed therein, impacts related to temporary or permanent increase in ambient noise levels in the vicinity of the project would be less than significant with implementation of Mitigation Measure NOI-1, which requires a solid barrier with a height blocking the line-of-sight to the nearby noise sensitive receptors to reduce noise due to mechanical equipment. Once the final equipment selection is made, Mitigation Measure NOI-1 also requires the completion of an acoustical analysis of the noise from project mechanical and electrical equipment to surrounding properties prior to final design to verify compliance with the City's nighttime exterior noise standard of 45 dBA.

Response 3.16

The commenter requests additional information regarding fencing. The commenter requests illustrations that include the proposed fencing, as well as the solar panels and other project infrastructure not currently shown. The commenter asks if a 42-inch fence is allowable by the City.

The request regarding updated plans has been passed on to decision makers for consideration. Fences up to 6 feet are allowable at the rear of the property, and front yard fencing is allowed up to 42 inches. Fencing already exists in residential neighborhoods adjacent to the project site and the proposed fencing would not impact views from the project site; therefore, it would not result in a significant visual impact. A conceptual wall and fence plan is included on page 36 of the Project Plans and Drawings available on the City's website via this link: https://www.cityofsebastopol.gov/wp-content/uploads/2023/08/The-Canopy-DR-Submittal-Drawings-compressed.pdf

Response 3.17

The commenter asks if there will be restrictions to prevent conflicts with dark sky guidelines and recommends omitting art features to incorporate more native landscaping.

This comment has been noted and passed on to decision makers. Impacts regarding nighttime lighting are discussed on Page 4.1-7 of the Draft EIR. As described therein, the proposed project would introduce nighttime light sources associated with lighting of the proposed buildings and the project could affect nighttime views in the area. General Plan Policy COS 11-8 requires all outdoor lighting to be constructed with full shielding and/or recessed to reduce light trespass to adjoining properties and to reduce illumination of the night sky and be directed downward and away from adjoining properties and public rights-of way, so that no light fixture directly illuminates an area outside of the site. Policy COS 11-7 restricts outdoor lighting and glare from development projects to retain the quality of night skies by minimizing light pollution. However, there are no municipal code requirements that implement the General Plan policies related to outdoor lighting, or the design guidelines regarding site lighting. Therefore, Mitigation Measure AES-4 requires exterior lighting installed on the project site to be of low intensity, low glare design, and hooded to direct light downward onto the subject parcel and prevent spill-over onto adjacent parcels and to

otherwise meet dark night sky requirements. Impacts were determined to be less than significant with implementation of Mitigation Measure AES-4.

Response 3.18

The commenter encourages redevelopment of existing developed but underutilized sites including an empty strip mall across the 116 from the project site or the O'Reilly building.

This comment will be noted and passed on to decision-makers. However, expressions of opinion relating to the proposed project are not related to the adequacy of the analysis and conclusions in the EIR.

John Jay

From: Paul Fritz <paul@fritzarchitecture.com>
Sent: Tuesday, January 9, 2024 11:32 AM
To: Kari Svanstrom; John Jay
Subject: RE: tonight's Planning Commission meeting - cancellation

Hi Kari and John,
I'm sending my questions/comments about the Canopy draft EIR. A lot of these are just clarifications. The numbers are the page numbers of the pdf document.

- 10 – I'm not understanding the FAR calculation. Note 1 says the FAR is calculated by dividing the allowed lot coverage by the total ground floor area. This is not the way FAR is typically calculated. 4.1
- 12 – contaminated soil is to be buried with 6" of new soil. On page 160 the 6" is also mentioned, but on page 174 it says contaminated soil will be buried with 6' of new soil. 4.2
- 13 – due alternatives 2 and 3 assume minimum and maximum allowed density? Just wondering how these unit numbers were arrived at. 4.3
- 24 – HYD-1 – it says impacts would be less than significant with mitigation, but no mitigation measures are proposed. 4.4
- 27 – TRA-1 states the proposed path is at the center of the site, but the plan and other parts of the document note the path connection to 116 is at the south end of the site as the O'Reilly owner did not want to grant the easement through the center of the property. This is also mentioned on page 265.
- 40 – Many of the site descriptions mention Hwy 116 as being north of the property. This is one example. This one also states the West County Trail is to the east, but really it is north, as is the Charter School, which is not often mentioned as an adjacent use. 4.5
- 61 – In the third paragraph of the discussion of climate and topography, I'm wondering if the second sentence is describing the summer conditions rather than winter. The third sentence also mentions winter months. 4.6
- 223 – Policy N-1.13 – Error! Reference source not found. This should be fixed or removed. 4.7
- 229 – Table 4.10-6 has a Construction Activity Phase of 'Architectural Coating'. I'm not familiar with this construction phase. What is this supposed to be? 4.8
- 532 – existing site conditions mentions a sports facility to the north. I think this is probably the Charter School. 4.9
- 624 – residential density is noted as 15.7 du/ac. Table ES-1 on page 10 states the density as 13.1 du/ac. If the 13.1 du/ac is correct, does this impact the VMT reduction calculation? 4.10
- 636 – The sight distance at the Mill Station Rd entrance is noted as being inadequate. Is mitigation not required as this is an existing condition? 4.11

Thanks!
Paul

fritz ARCHITECTURE URBANISM

P.O. Box 1074
Sebastopol, CA 95473

707.975.6220

John Jay

From: Kari Svanstrom
Sent: Tuesday, January 9, 2024 4:28 PM
To: John Jay
Subject: FW: tonight's Planning Commission meeting - cancellation

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From: Seth Hanley <Seth@studioblitz.com>
Sent: Tuesday, January 09, 2024 1:08 PM
To: Kari Svanstrom <ksvanstrom@cityofsebastopol.gov>; Nzuzi Mahungu <nmahungu@cityofsebastopol.gov>
Subject: Re: tonight's Planning Commission meeting - cancellation

Hi Kari, Nzuzi.

I appreciate the hard work that went into preparing this comprehensive report, my thanks to the Planning Dept. I will be present on Jan. 23rd.

Admittedly, I haven't reviewed every page in detail, and I'm also playing catch up since I wasn't party to any earlier applications or discussions. Hence, some of these questions, comments, observations may be redundant, but will facilitate my own learning here with respect to the project and the process.

1. I don't see a recommendation (neg dec, or mit neg dec, etc.). Does this only come after public comments on the draft report?
2. I'm curious as to why the development doesn't connect to Hurlbut Ave. It seems like an easy connection to make, and would facilitate funnelling traffic from the Canopy site to two intersections along Grav N. with existing stop lights (rather than adding the new driveway from the existing O'Reilly parking lot.
3. Has the FD weighed-in on access and driveway design as part of the EIR? I see the engineer has, but unclear on the FD (just curious).

Some other thoughts(and to be clear - I'm not sure if this in our remit as commissioners or not, so feel free to tell me these are out of our scope):
-Page ES-4: It is noted that 4 alternatives were studied, but only 3 are noted (is this a typo or is one missing?).
-Page ES-4: Alternative 2 is noted as 'environmentally superior', but it seems like it's worth noting that the developer is able to build what they're proposing (and could in fact build more - per Alt. 3 if I'm reading this correctly).
-Page 19-3: Under BIO-1, should the heading include wording "has the potential to impact", or, "if identified on site"? The current heading reads like there's a significant problem, and the body text suggests that a problem is not anticipated (just for clarity).
-Page 6.3: In Alt 2, it's not clear to me how the reduced number of 73 residential units was arrived at (based on what methodology/calc?). Can you clarify, if only for my own insight (my apologies if this is described elsewhere and I'm missing it).
-Page 6-10: In Alt 3, it's not clear to me how the increased number of 103 residential units was arrived at (based on what methodology/calc?). Can you clarify, if only for my own insight (my apologies if this is described elsewhere and I'm missing it).
-Page 6-2 (Integral Report): Page ES-3 of the EIR notes that 22 trees need to be removed to accommodate the new project, whereas the Integral report notes 41. Has the project been modified since the Integral report to reduce the number of removed trees (maybe it relates to tree radius)?

Best,
Seth.

Letter 4

COMMENTER: Paul Fritz

DATE: January 9, 2024

Response 4.1

The commenter requests clarification about how the Floor Area Ratio (FAR) is calculated.

Table ES-1 has been updated to replace the reference to FAR with the lot coverage, as FAR is not used in the R7 zone.

Table ES-1 Proposed Residential Development Summary

Feature	Details
Townhome Project Characteristics	
Residential area	69,317 square feet
Lot Coverage	Allowed: 40% or 106,333 sf Proposed: 26% or 69,317 sf +/-
~~Floor Area Ratio (FAR)~~	~~1.53~~[1]
Density	Allowed: 12.1 to 25 dwelling units/acre Proposed: 13.1 dwelling units/acre
Building Height	Allowed: 30 feet and 2 stories Proposed: 40 feet +/- and 3 stories with Density Bonus Waiver

Response 4.2

The commenter requests clarification about whether contaminated soil would be buried with 6" or 6' of new soil.

The on-site burial cells for excavated contaminated soil would be capped with six feet of new soil, and impacted soil to remain within the driplines of trees to be retained would be capped with six inches of new soil. Refer to Section 4.7, *Hazards and Hazardous Materials*, for more information.

Response 4.3

The commenter requests clarification about how alternatives 2 and 3 determined unit numbers, and if they assume minimum and maximum allowed density.

The numbers for Alternative 3 were derived from a previously proposed version of the same project. Alternative 2 was calculated using the minimum density allowed of 12.1 DU/acre. 12.1*6.1 acres = 73.81 but was rounded down to 73 units since it is not possible to build a portion of a unit.

Response 4.4

The commenter notes that HYD-1 states impacts would be less than significant with mitigation, but no mitigation measures are listed.

The commenter is correct that there is a typo on Page ES-16. As discussed in Section 4.8, *Hydrology and Water Quality*, implementation of Mitigation Measures HAZ-3a and HAZ-3b would reduce impacts to less than significant.

Page ES-16 has been revised with the following (changes shown in strikeout/underline):

Hydrology and Water Quality		
Impact HYD-1. Development facilitated by the project would not violate water quality standards or Waste Discharge Requirements, or otherwise substantially degrade surface or groundwater quality. Impacts would be less than significant with mitigation.	~~None required.~~ Mitigation Measure HAZ-3(a) and HAZ-3(b).	Less than Significant with Mitigation

Response 4.5

The commenter requests clarification about the location of Highway 116, West County Trail, and the Charter School in relation to the project site.

Regarding the commenter's question pertaining to Mitigation Measure TRA-1, the following changes have been made to Mitigation Measure TRA-1 for clarification:

TRA-1 Pedestrian Connectivity and Safety. A new pedestrian path shall be added ~~through the center of the project site in order~~ to link the project and mixed commercial office park to the new HAWK crossing across the north leg of the intersection of SR 116/Danmar Drive ~~after Caltrans constructs the HAWK crossing and~~ before an occupancy permit is issued.

Changes to Mitigation Measure TRA-1 do not rise to the level of "new information" as defined in Section 15088.5 of the *CEQA Guidelines*, and thus recirculation of the Draft EIR is not required.

Regarding the commenter's suggested correction, Page 2-4 has been revised with the following correction (changes shown in strikeout/underline):

The project site is currently undeveloped but includes existing vegetation and mature trees. An informal pedestrian pathway bisects the site to connect the existing O'Reilly Media Center parking lot to the West County Trail, allowing use of the trail. To the ~~east~~north, the site is directly adjacent to the West County Trail, a paved trail that links Sebastopol with areas to the Northwest, including Graton and Forestville. In addition, the trail connects in downtown Sebastopol to the Joe Rodota Trail, which connect downtown Santa Rosa and Sebastopol. These trails run parallel to Highway 116 to the North of the site and along Highway 12 from eastern Sebastopol to Santa Rosa and is a popular route for cyclists and pedestrians (Sonoma County 2023). ~~(Sonoma County 2023).~~

Response 4.6

The commenter asks if climate conditions described refer to winter or summer conditions.

The sentence on Page 4.2-1 described by the commenter describes summer climate conditions. Page 4.2-1 has been updated with the following correction (changes shown in strikeout/underline):

The major large-scale weather feature controlling climate in Sebastopol is a large high-pressure system located in the eastern Pacific Ocean, known as the Pacific High. During ~~winter~~summer months, marine air trapped in the lower atmosphere is often condensed into fog by the cool Pacific Ocean. Stratus-type clouds usually form offshore and move into the area during the evening hours. During winter months, the Pacific High becomes weaker and shifts south, allowing weather systems associated with the polar jet stream to affect the region. Low pressure systems produce periods of cloudiness, strong shifting winds, and precipitation. High-pressure systems are also common in winter, with low-level inversions that produce cool stagnant conditions.

Response 4.7

The commenter requests a reference be corrected.

The reference link on page 4.10-9 refers to the stationary (non-transportation) noise source standards in Table 4.10-3 in the Draft EIR. In Sebastopol's General Plan, Policy N-1.13 refers to Table N-2 in the General Plan, which shows the same stationary (non-transportation) noise source standards that are included in Table 4.10-3 in the Draft EIR.

Page 4.10-9 has been updated with the following correction (changes shown in strikeout/underline):

Policy N-1.13 Control non-transportation related noise from site specific noise sources to the standards shown in ~~Error! Reference source not found~~Table 4.10-3.

Response 4.8

The commenter requests an explanation of the architectural coating phase in Table 4.10-6.

The architectural coating phase of construction describes the process of applying architectural coatings to the buildings. Architectural coatings are protective products applied to buildings including house paints, stains, industrial maintenance coatings, traffic coatings, and many other products.

Response 4.9

The commenter suggests a reference to a sports facility may intend to refer to the Charter School.

The commenter is correct that the Charter School is located north of the project site. This reference is made in an Appendix to the EIR, and the information is provided for context but does not relate to impact analysis or conclusions, and thus does not pertain to the nature or adequacy of the analysis in the Draft EIR. However, Page 1 of the Biological Resource Analysis has been revised, and is contained in revised Appendix C, attached to this Final EIR.

Response 4.10

The commenter requests clarification about the project's residential density.

The project's residential density is 13.1 dwelling units/acre, not counting ADUs, and 15.7 dwelling units per acre including ADUs. A prior version of the Transportation Impact Study was provided as Appendix G to the Draft EIR, which listed the higher project density, while page 4.13-12 of the Draft EIR used the lower project density in order to ensure a conservative analysis. An updated version of the Transportation Impact Study has been provided (revisions to the VMT density can be found on pages 10-11) and is available as an appendix to the Final EIR. The project density described within the Draft EIR correctly corresponds to the updated version of the Transportation Impact Study. The lower project density was used for a more conservative analysis, as lower density projects receive a lower VMT reduction. See Table 4 in the Transportation Impact Study regarding the applicable VMT reduction and adjusted VMT. Neither project density results in a significant VMT impact. Therefore, the information contained within the Draft EIR, in conjunction with the updated Transportation Impact Study that will be provided in the Final EIR, would not constitute the addition of substantial new information and would not require recirculation of the Draft EIR.

Response 4.11

The commenter states that the sight distance at the Mill Station Road entrance is inadequate and asks if mitigation is required for this existing condition.

Sight distances are discussed on Page 4.13-13 of the Draft EIR. The commenter is correct that, as discussed therein, this is an existing condition of the roadway and would not change as a result of the proposed project. Therefore, it is not an impact caused by the project and mitigation is not required.

According to email correspondence with W-Trans on February 1, 2024, the sight distance at the private driveway location on Mill Station Road was field measured at approximately 100 feet in each direction. Towards the east, sight distance extends to the raised crossing of the West County Trail where the extension of Mill Station Road crosses the trail before accessing the Sebastopol Charter School. As traffic slows to 5-10 mph as it reaches the raised trail crossing, the existing sight distance would be considered adequate. Sight distance to the west and the intersection with SR116 is limited by trees and vegetation on the south side of the extension of Mill Station Road. This sight distance does not meet the stopping sight distance requirement of 200 feet in each direction for five mph over the prima facie speed limit of 25 mph. As landscaping and signage can impede sight lines, any landscaping or signage placed within the vision triangle at the driveway should be less than three feet or more than seven feet above the pavement surface to maintain a clear line of sight. As this is an existing condition, it would not be considered a significant impact of the project and could be addressed through clearing of brush and vegetation which blocks sight distance towards the SR116 intersection.

John Jay

From: Kari Svanstrom
Sent: Tuesday, January 9, 2024 4:28 PM
To: John Jay
Subject: FW: tonight's Planning Commission meeting - cancellation

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From: Seth Hanley <Seth@studioblitz.com>
Sent: Tuesday, January 09, 2024 1:08 PM
To: Kari Svanstrom <ksvanstrom@cityofsebastopol.gov>; Nzuzi Mahungu <nmahungu@cityofsebastopol.gov>
Subject: Re: tonight's Planning Commission meeting - cancellation

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2. I'm curious as to why the development doesn't connect to Hurlbut Ave. It seems like an easy connection to make, and would facilitate funnelling traffic from the Canopy site to two intersections along Grav N. with existing stop lights (rather than adding the new driveway from the existing O'Reilly parking lot. 5.2
3. Has the FD weighed-in on access and driveway design as part of the EIR? I see the engineer has, but unclear on the FD (just curious). 5.3

Some other thoughts(and to be clear - I'm not sure if this in our remit as commissioners or not, so feel free to tell me these are out of our scope):

-Page ES-4: It is noted that 4 alternatives were studied, but only 3 are noted (is this a typo or is one missing?). 5.4
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Best,
Seth.

On Tue, Jan 9, 2024 at 8:02 AM Kari Svanstrom <ksvanstrom@cityofsebastopol.gov> wrote:

> Hi all,
>
> Unfortunately the zoom phone number for the mtg tonight was missing from the Meeting Agenda, so we will need to postpone tonight's meeting until Jan 23. (given the Agenda does a not have the public access info, we will not be able to open the meeting. Staff WILL be at the youth annex and open the zoom mtg to let folks know of the change in time/date for the mtg).
>
> We will be able to maintain the same schedule for the project with the hearing on the Jan 23, but please let me know of any planned absences for that night (we also have another hearing on that date that will need a quorum).
>
> If you do have any questions on the Draft EIR document, we would appreciate a head's up so we can get any info prepared/answer any questions you might have on the 23rd. (Of note, this is still the 'draft' process for public and planning commissioner comments, the formal public hearing for the project decision will be March 12.)
>
> Thanks and please let myself or John know if you have any questions.
>
> Kari Svanstrom, AICP, Architect
>
> Planning Director
>
> City of Sebastopol |Planning Department
>
> 7120 Bodega Avenue |Sebastopol, CA 95472
>
> (707) 823-6167 phone
>
> www.cityofsebastopol.gov

City offices are currently closed to the public, but staff is available via email. City Offices are closed every Friday/and holidays

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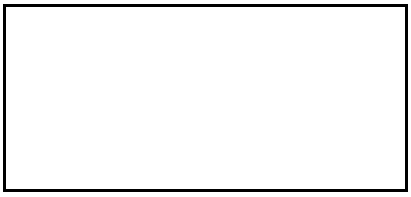
Please note that Blitz will be closed on Monday January 15th, 2024 in observance of Martin Luther King Jr Day

seth hanley *he/his*

PARTNER + ARCHITECT
AIA / LEED AP

_____

FYI, we are closed on Fridays.



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Letter 5

COMMENTER: Seth Hanley

DATE: January 9, 2024

Response 5.1

The commenter asks if a CEQA recommendation will be available after the public comment period.

The commenter mentions recommendations (negative declaration or mitigated negative declaration) that relate to Initial Study documents; however, the document being prepared for the proposed project is not an Initial Study, but rather an EIR. The environmental review process for an EIR is described in Section 1.5, *Environmental Review Process*, of the Draft EIR. Pursuant to *CEQA Guidelines* Section 15090, prior to making a decision on a proposed project, the City must certify that: a) the Final EIR has been completed in compliance with CEQA; b) the Final EIR was presented to the decision-making body of the lead agency; and c) the decision making body reviewed and considered the information in the Final EIR. After the final EIR is complete, the agency determines whether to approve the project or an alternative to the project. Pursuant with *CEQA Guidelines Section* 15094, the lead agency (the City of Sebastopol) will file a Notice of Determination (NOD) with the City Clerk after deciding to approve a project for which an EIR is prepared which will be posted for 30 days and sent to anyone previously requesting notice.

Response 5.2

The commenter asks why the development does not connect to Hurlbut Avenue.

In response to prior public input, there are currently deed restrictions on the parcel preventing a vehicular connection to Hurlbut Avenue. Additionally, Hurlbut Avenue is a small county-owned and county-maintained road with no pedestrian or bicycle facilities.

Response 5.3

The commenter asks if the Fire Department has reviewed the access and driveway design.

The Fire Department has reviewed the access and driveway design. A meeting was held with the fire chief, planning team, and project applicant to discuss road widths on August 17, 2022.

Response 5.4

The commenter states that ES-4 mentions that alternatives were studied, but that only 3 are discussed.

The commenter is correct and has identified a typo. Three alternatives were studied and discussed in Section 6, *Alternatives*.

Page ES-4 has been updated with the following correction (changes shown in strikeout/underline):

As required by the California Environmental Quality Act (CEQA), this EIR examines alternatives to the proposed project. Studied alternatives include the following ~~four~~three alternatives. Based on the alternatives analysis, Alternative 2 was determined to be the environmentally superior alternative.

- Alternative 1: No Project
- Alternative 2: Reduced Development Density
- Alternative 3: Increased Development Density

Response 5.5

The commenter suggests clarifying that while Alternative 2 is determined to be the environmentally superior alternative, the proposed project could feasibly be built.

This comment has been noted. As required by Section 15126.6 of the CEQA Guidelines, the Draft EIR examines a range of reasonable alternatives to the proposed project. While the EIR determined that Alternative 2 would be the environmentally superior alternative, as discussed on Page 6-3, Alternative 2 would not meet goals related to increasing housing inventory as effectively as the proposed project and may not be financially feasible due to development costs. Furthermore, as discussed on Page 6-9 of the Draft EIR, transportation impacts related to vehicle miles traveled for Alternative 2 would be slightly increased compared to the proposed project since it would result in a less dense development buildout.

Response 5.6

The commenter asks if text can be added to the header in impact BIO-1 for clarification.

Page 4.3-13 has been revised with the following changes for clarification (changes shown in strikeout/underline):

Impact BIO-1 THE PROJECT WOULD HAVE THE POTENTIAL TO RESULT IN A SUBSTANTIAL ADVERSE EFFECT ON SPECIAL STATUS ANIMAL SPECIES. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION.

Response 5.7

The commenter asks how the number of units was determined for Alternative 2.

Alternative 2 was calculated using the minimum density allowed of 12.1 DU/acre. 12.1*6.1 acres = 73.81 but was rounded down to 73 units since it is not possible to build a portion of a unit.

Response 5.8

The commenter asks how the number of units was determined for Alternative 3.

The numbers for Alternative 3 were derived from a previously proposed version of the same project.

Response 5.9

The commenter asks how many trees will be removed as a result of the project.

An updated Tree Impact Summary letter by Horticultural Associates was provided on January 23, 2024 and is included as an appendix to the Final EIR. The Tree Impact Summary states that one Coast Redwood at the project entrance was added as an addendum after completion of the original report, therefore, a total of 43 inventoried trees will be removed, including 29 protected trees. The Coast Redwood would be removed as part of the creation of the new driveway apron on the southern part of the site which has access from Hwy 116. The removal of the Coast Redwood would not substantially increase project impacts related to trees. Mitigation Measure BIO-2 would continue to apply. With implementation of Mitigation Measure BIO-2, impacts would be reduced to less than significant. Therefore, the information contained within the Draft EIR, in conjunction with the updated Tree Impact Summary that is provided in the Final EIR, would not constitute the addition of substantial new information and would not require recirculation of the Draft EIR. The Integral report the commenter refers to was provided as an Appendix to the Draft EIR for context

but does not need to be updated since the most up-to-date Tree Impact Summary will be provided in the Final EIR.

Page ES-3 of the Draft EIR has revised with the following (changes shown in strikeout/underline):

There are currently ~~133~~134 trees within the project site (including 92 protected trees), and the proposed project would involve the removal of ~~22~~43 trees (including 29 protected trees) while preserving the remaining ~~111~~91 trees (including 63 protected trees) primarily along the perimeter of the site. An existing large, mature coast live oak tree would be retained at the primary entrance to the project entry. Existing oak trees and redwoods would be preserved throughout the site. Additional trees, such as native maples, madrone and dogwood, are proposed to create onsite ecosystems that attract birds and butterflies. Proposed landscaping would include new plantings throughout the open spaces, including the paseo, at the setbacks along drive aisles, roadways, and streets, and surrounding the proposed buildings. Other amenities, including gardens, active and passive seating areas, children's play areas, and a meditation hammock garden are also proposed.

permit SONOMA

County of Sonoma
Permit & Resource Management Department

January 18, 2024 via email to jjay@cityofsebastopol.org

Planning Department
Attn: John Jay, Associate Planner
City of Sebastopol
7120 Bodega Avenue
Sebastopol, CA 95472

RE: "The Canopy" Condominium Project, County File PPR23-0020
1009-1011 Gravenstein Hwy N, APN 060-261-028, 060-261-026

Mr. Jay,

Thank you for the opportunity to comment on the proposed project at the above-referenced property. Staff have reviewed the Notice of Availability, Draft EIR, and associated project materials and determined the project to be consistent with the Sonoma County General Plan. Please see attached General Plan Consistency Determination.

Sonoma County faces a severe housing shortage at all affordability levels, exacerbated by the devastating fires of 2017, 2019, and 2020. Permit Sonoma supports city-centered housing projects like this 96-unit condominium project that help meet local housing needs. 6.1

Thank you for your time and attention to this matter.

If you have any questions, please feel free to contact Doug Bush at 707-565-5276 or email at Doug.Bush@sonoma-county.org.

Sincerely,

Tennis Wick, AICP
Director

Enclosure: General Plan Consistency Determination

cc: File No. PPR23-0020

GENERAL PLAN CONSISTENCY DETERMINATION

To:	John Jay, Associate Planner
From:	Doug Bush, Planner III
Date:	January 18, 2024
Project Applicant:	City Ventures
Project Name and File Number(s):	The Canopy Project (County File PPR22-0020)
Project Location/APN #:	060-261-028, 060-261-026 The 6.1 acre project site is bounded by the West County Trail to the north, Highway 116 to the west, unincorporated low density residential development to the north, and a mixed use development to the south. The property is within the Sebastopol City Limits, Urban Growth Boundary and Urban Service Area.
Project Description:	Conversion of a rural site containing remnant apple orchard and native trees, to an 80 unit, three story condominium development with 16 accessory dwelling units, including 160 garaged parking spaces, 58 surface parking spaces and 96 bicycle parking spaces.
General Plan Land Use:	Sebastopol General Plan
Zoning:	Sebastopol Zoning
General Plan Consistency Determination:	No Conflict

6.2

Applicable General Plan Policies:

Goal LU-2: Accommodate the major share of future growth within the nine incorporated cities and their expansion areas and within selected unincorporated communities, which are planned to have adequate water and sewer capacities.

Objective LU-2.5: Provide sufficient opportunities for higher density housing within the Urban Service Areas to accommodate the population growth quantified in the Housing Element Objectives for lower and moderate income units.

Goal LU-3: Locate future growth within the cities and unincorporated Urban Services Areas in a compact manner using vacant "infill" parcels and lands next to existing development at the edge of these areas.

Policy LU-3c: Avoid urban sprawl by limiting extension of sewer or water services outside of designated Urban Service Areas pursuant to the policies of the Public Facilities and Services Element.

Policy HE-3e: Continue to encourage affordable infill projects on underutilized sites within Urban Service Areas by allowing flexibility in development standards pursuant to state density bonus law (Government Code § 65915).

Policy PF-1f: Avoid extension of public sewer services outside of either a sphere of influence or Urban Service Area. To the extent allowed by law, consider exceptions to this policy only where necessary to resolve a public health hazard resulting from existing development.

Policy PF-1h: Avoid extension of public water service to a property that is outside of both the Urban Service Area and sphere of influence of the water provider. To the extent allowed by law, consider exceptions to this policy only where necessary to resolve a public health hazard resulting from existing development.

6.2

Goal OSRC-4: Preserve and maintain views of the night time skies and visual character of urban, rural, and natural areas, while allowing for nighttime lighting levels appropriate to the use and location.

Objective OSRC-4.1: Maintain night time lighting levels at the minimum necessary to provide for security and safety of the use and users to preserve night time skies and the night time character of urban, rural and natural areas.

Discussion

The proposed project is located within the City of Sebastopol and is not subject to the Sonoma County General Plan, or County Code. It is the policy of the County of Sonoma, to focus urban development within incorporated areas like the City of Sebastopol in a compact manner (Goal LU-3). The proposed project would create a total of 96 dwelling units, including 80 condominiums and 16 potential accessory dwelling units. Of the 80 units, 12 would be deed-restricted as affordable to moderate-income households. The region is experiencing a housing crisis, including severe housing shortages exacerbated by the loss of thousands of dwellings through repeated local wildfire events. City centered housing development, particularly projects that contribute a range of housing types to meet a range of affordability needs, and those which are located near amenities and support alternative transportation like this one, are an important part of addressing present housing needs without contributing to sprawl.

6.3

The project is adjacent to the West County Trail and project materials reference integration with this amenity. Staff recommends that the project be referred to Sonoma County Regional Parks for their consideration and comment. 6.4

The project plans available at the time of this review contained only conceptual lighting plans. The County encourages lighting to be designed consistent with Goal OSRC-4 and Objective OSRC-4.1 as listed above, to minimize impacts to the night sky and avoid glare on adjacent properties. 6.5

Letter 6 (Cover Letter)

COMMENTER: Tennis Wick, AICP (Permit Sonoma)

DATE: January 18, 2023

Response 6.1

The commenter provides a cover letter stating that the project has been determined to be consistent with the Sonoma County General Plan and states that Permit Sonoma supports city-centered housing projects.

This comment has been noted and passed on to decision makers.

Response 6.2

The commenter provides the General Plan Consistency Determination of "no conflict" and lists applicable General Plan policies.

This comment has been noted and passed on to decision makers.

Response 6.3

The commenter summarizes details about the proposed project and states that it is not subject to the Sonoma County General Plan or County Code. The commenter states that projects like the proposed project help address housing needs without contributing to sprawl.

This comment has been noted and passed on to decision makers.

Response 6.4

The commenter recommends referring the project to Sonoma County Regional Parks for their consideration and comment.

Sonoma County Regional Parks was contacted on January 23, 2024 in response to comments from the County of Sonoma and will be referred to the project as part of the entitlement process going forward.

Response 6.5

The commenter encourages lighting to be designed consistent with Goal OSRC-4 and Objective OSRC-4.1 to minimize impacts to the night sky and avoid glare on adjacent properties.

This comment has been noted and passed on to decision makers. Regarding the recommendation for lighting to be designed consistent with Goal ORSC-4 and Objective ORSC-4.1, please refer to Response 3.17 for more information about how the project's impacts to nighttime lighting levels will be reduced to a less than significant level with the implementation of Mitigation Measure AES-4.

Department of Toxic Substances Control

Meredith Williams, Ph.D., Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Yana Garcia
Secretary for
Environmental Protection

Gavin Newsom
Governor

SENT VIA ELECTRONIC MAIL

January 19, 2024

John Jay
Associate Planner
City of Sebastopol
7120 Bodega Avenue
Sebastopol, CA 95472
jjay@cityofsebastopol.org

RE: DRAFT ENVIRONMENTAL IMPACT REPORT (DEIR) FOR THE CANOPY RESIDENTIAL PROJECT – 1009 – 1011 GRAVENSTEIN HIGHWAY NORTH, DATED DECEMBER 07, 2023 (STATE CLEARINGHOUSE NUMBER: 2023070072)

Dear John Jay,

The Department of Toxic Substances Control (DTSC) has reviewed the Draft Environmental Impact Report (DEIR) for The Canopy Residential Project - 1009-1011 Gravenstein Highway North, which evaluates the proposed development of 80 townhome-style condominiums and up to 16 accessible accessory dwelling units on a vacant lot located at 1009-1011 Gravenstein Highway North in the City of Sebastopol, California.

7.1

As mentioned in the DEIR, DTSC and City Ventures Homebuilding, LLC, entered into a Standard Voluntary Agreement (SVA) on April 26, 2023 (Docket No. HSA-FY22/23-022), to oversee the investigation and cleanup of approximately 6.1 acres on Sonoma County Assessor's Parcel Numbers 060-261-026 and 060-261-028 (Site). As part of the SVA, a Removal Action Workplan (RAW) has been prepared to address arsenic and

lead-impacted soils at the Site. Implementation of the RAW would include the excavation of the impacted soil outside of the protected tree line, on-Site burial and capping of impacted soil, and adoption of a deed restriction. Information about the Site and the proposed cleanup activities can be viewed by visiting DTSC's EnviroStor website for 1009 - 1011 Gravenstein Highway.

The RAW is subject to review and approval by DTSC and is considered a decision document that must comply with the California Environmental Quality Act (CEQA). As a Responsible Agency under CEQA and the lead agency for site remediation, DTSC anticipates utilizing the Environmental Impact Report (EIR) to comply with CEQA since remedial activities presented in the RAW would be fundamentally incorporated as part of the site preparation and construction activities for the residential development project. DTSC generally concurs with the analysis provided in the DEIR but wishes to provide the following comments in order to clarify some details regarding the Site's disposition and DTSC's cleanup oversight process for this project: 7.1 cont.

1) Section 4.7.3 and Table ES-2 of the DEIR state the Site is included on a list of hazardous materials sites compiled pursuant to Section 65962.5 (also known as the "Cortese List"). As of the date of this letter, the Site is not included among any of the lists identified subsection 65962.5(a) which make up DTSC's portion of the Cortese List. A list of DTSC sites included on the Cortese List is available to view on DTSC's EnviroStor Hazardous Waste and Substances Site List (Cortese) page.

   For clarification, the Site appears on DTSC's EnviroStor website so information regarding the cleanup process for the subject Site is available for public review. EnviroStor is utilized to provide information about numerous sites, not all of which are Cortese List sites. While it is correct that DTSC and the project proponent have entered into a Standard Voluntary Agreement, this is not a condition described in Health and Safety Code section 65962.5(a). DTSC recommends correcting text in the DEIR to clarify that the Site is not on the Cortese List. For more information on the Cortese List, please visit CalEPA's Cortese List Data Resources webpage. 7.2

2) Sections 1.4 and 2.7 of the DEIR state that DTSC is responsible for approving the Soil Management Plan (SMP) associated with cleanup activities at the Site. While it is correct that DTSC will review and approve the SMP as part of the cleanup oversight process, DTSC wishes to clarify that the Removal Action Workplan (RAW) is the primary decision document for which DTSC is responsible for reviewing and approving for the Site. DTSC recommends revising text in the DEIR as needed and/or making note of this distinction in a Response to Comments to clarify this point. 7.3

3) Section 4.7.1.e summarizes information from the RAW, including the RAW's recommended removal action alternative. In addition to the information presented there, DTSC would like to note that the RAW is still under review. As part of this process, the RAW will be made available for public review and comment. Notice of this public review period will be provided via a Community Update mailed to surrounding property owners and residents as well as a Public Notice published in a local newspaper. The notice will announce the proposed remedy, how to review the draft RAW, and the start of the public comment period. 7.4

DTSC appreciates the opportunity to review and comment on the DEIR for The Canopy Residential Project - 1009-1011 Gravenstein Highway North and the City of Sebastopol's consideration of these comments. If you have any questions or concerns, please contact me or a member of our CEQA Unit Team.

Sincerely,

Dave Kereazis

Dave Kereazis
Associate Environmental Planner
CEQA Unit-Permitting/HWMP
Department of Toxic Substances Control
Dave.Kereazis@dtsc.ca.gov

cc: (via email)

Governor's Office of Planning and Research
CEQA State Clearinghouse
State.Clearinghouse@opr.ca.gov

Gavin McCreary
Project Manager
Site Mitigation and Restoration Program
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Tamara Purvis
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Tamara.Purvis@dtsc.ca.gov

Letter 7

COMMENTER: Dave Kereazis, Associate Environmental Planner (Department of Toxic Substances Control)

DATE: January 19, 2024

Response 7.1

The commenter confirms that the Department of Toxic Substances Control (DTSC) has reviewed the Draft EIR and that DTSC and City Ventures Homebuilding, LLC, entered into a Standard Voluntary Agreement (SVA) to oversee the investigation and cleanup of the project site. The commenter states that a Removal Action Workplan (RAW) has been prepared to address arsenic lead-impacted soils at the project site. The commenter states that DTSC anticipates utilizing the EIR to comply with CEQA.

This comment has been noted and passed to decision makers.

Response 7.2

The commenter recommends a change to text in Section 4.7.3 of the Draft EIR to clarify that the project site is not included in lists identified in subsection 65962.5(a) that make up DTSC's portion of the Cortese List.

The following correction has been made on page 4.7-16 for clarification (changes shown in strikeout/underline):

~~As detailed under *Environmental Setting*~~While not listed on Government Code Section 65962.5(a), which constitutes DTSC's portion of the Cortese List, the project site is associated with an active Voluntary Agreement cleanup case with regulatory agency oversight by the DTSC (DTSC 2023a). ~~Therefore, the project site is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5.~~

Response 7.3

The commenter recommends an update to Sections 1.4 and 2.7 of the Draft EIR to clarify that the RAW is the primary decision document the DTSC is responsible for reviewing and approving for the project site.

The following revision has been made on page 1-5 for clarification (changes shown in strikeout/underline):

A responsible agency refers to a public agency other than the lead agency that has discretionary approval over the project. The Department of Toxic Substances Control (DTSC) is a responsible agency. DTSC is responsible for reviewing and approving the Removal Action Workplan (RAW) for the project site and the Soil Management Plan (SMP) for the project ~~prior to construction (grading) activities at the project site.~~ as part of the cleanup oversight process.

The following revision has been Made on page 2-12 for clarification (changes shown in strikeout/underline):

The Department of Toxic Substances Control (DTSC) is a responsible agency. DTSC is responsible for reviewing and approving the Removal Action Workplan (RAW) for the project site and the Soil Management Plan (SMP) for the project ~~prior to construction (grading) activities at the project site.~~ as part of the cleanup oversight process.

Response 7.4

The commenter notes that the RAW is still under review and will be made available for public review and comment via a mailed community update and public notice published in a local newspaper.

This comment has been noted. The commenter also states that information about the Site and the proposed cleanup activities can be viewed by visiting DTSC's EnviroStor website for 1009 - 1011 Gravenstein Highway (https://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=60003135). Because the RAW was under review when the Draft EIR was written, the status remains the same and no updates to the Draft EIR are required.

City of Sebastopol
Planning Department

January 22, 2024

To: Katie Green, Rincon Consultants

Re: Canopy Draft EIR public comments.

Hello Katie,

I received a phone call from Linda Berg on January 22nd, 2024 and her comments are listed below for the project.

- Where is the contaminated soil going and where is the new soil coming from? As the Charter School is a direct neighbor to the north the wind will likely blow any soil to that campus. 8.1
- What is the estimated amount of tonnage of soil being removed and replaced and what are those truck load counts. 8.2
- The project is located within a wildlife corridor of the West County Trail and that corridor does not end at the property lines. 8.3
- Requests that the applicant withdraw the application because the EIR is not in the best interest of the City and the document is full of fraud. 8.4

Sincerely,

John Jay, Associate Planner
jjay@cityofsebastopol.gov

Letter 8 (Verbal Comment Memo)

COMMENTER: Linda Berg

DATE: January 22, 2024

Response 8.1

The commenter asks where contaminated soil from the project site will be located and where the new soil will be sourced. The commenter notes that the Charter School is located directly north of the project site.

As discussed on Page 4.8-10 of the Draft EIR, the project would implement Mitigation Measure HAZ-3a, which would require the DTSC continue to be utilized for agency oversight of assessment and remediation of the project site through completion of construction activities, and Mitigation Measure HAZ-3b, which requires the preparation of a Soil Management Plan (SMP) prior to commencement of construction and grading activities at the project site. A Removal Action Plan (referred to by the DTSC as a Removal Action Workplan) was prepared for the project site and determined soil burial, capping, and deed restriction was the recommended removal action for the project site (Stantec, 2023). Excavated contaminated soil would be buried under six feet of clean soil on top of the on-site burial cells. Soil would be provided from an offsite location.

Regarding the location of the Charter School, as discussed on page 4.7-15 of the EIR, the proposed project is located within 0.25 mile of the Sebastopol Independent Charter School. Dust control measures to limit the exposure of construction workers and public would be required. Impacts related to the project's potential to emit hazardous materials within 0.25 miles of an existing or proposed school were determined to be less than significant with the implementation of Mitigation Measure 3b (as described above). Furthermore, licensed hazardous materials transporters would be required to reach the closest designated transport route by the shortest path; US Highway 101, State Route 116 and State Route 12 are the closest designated routes. Therefore, it is unlikely transporters would be required to drive past the school while carrying hazardous materials.

Response 8.2

The commenter asks how much soil will be removed from and replaced on the project site and how many truck loads will be required to move soil.

As stated on page 4.2-13 of the Draft EIR, during Phase I construction, approximately 2,092 cubic yards of soil would be imported during the construction grading phase. In addition, approximately 1,566 cubic yards of soil would be imported during the grading phase of Phase II construction. The number of truck trips that would be required were estimated using CalEEMod (Appendix B). The CalEEMod calculations for Phase I assume a total of 262 one-way (131 round trips) truck trips would occur, and for Phase II, a total of 196 one-way (98 round trips) truck trips would occur.

Response 8.3

The commenter states that the project is located within a wildlife corridor on the West County Trail.

Refer to Response 3.7.

Response 8.4

The commenter requests that the applicant withdraw the project application and claims the Draft EIR is not in the best interest of the City and contains fraud.

This comment will be noted and passed on to decision-makers. However, expressions of opinion relating to the proposed project are not related to the adequacy of the analysis and conclusions in the EIR, and the commenter does not provide specifics regarding their claim.

From: Janet Waring <janetwaring@gmail.com>
Sent: Tuesday, January 23, 2024 10:57 AM
To: John Jay
Cc: Janet Waring
Subject: Canopy Project Comments on Draft EIR

To: John Jay, as Project Contact for the Canopy Project

Comments on the Draft Environmental Impact Report

My property is adjacent to the site. NOISE is one of my biggest concerns, both during construction and long term. I am a “noise-sensitive receptor” living on property that is directly adjacent to the project. 9.1

Short term noise:
The hours for construction are 7 am - 8 pm for the duration of the construction: several years! I am not a morning person. I am not awake at 7 am. But I will be, for several years, if you proceed as planned. This will negatively affect my health. The decibel levels are proposed to be as high as the 80s, in a clearly unacceptable range according to Sebastopol General plan. If you are going to proceed with unacceptable levels, then you must reduce the hours. 9.2

I would request that the hours be adjusted to working hours 8:00 am to 7:00 pm.. Anything more is quite unreasonable.

Long-term noise:
The sound tests you did for current 24-hour ambient noise level was done on the quietest part of the project, L1, which happens to also be my backyard. I purchased this property because of the large buffer of silence. The results of your test were 47, well below normal sound elsewhere.

However, your plan now includes putting the outdoor common recreation area in that location, which will generate noise level “Beyond typical conversation.” It makes no sense to put a common recreation area into a place that is already nicely quiet..Why would you not locate that recreation area in an already noisy environment and protect some semblance of quiet. Also you have two uses for common area- one is hammock garden and seating area, which might maintain the quiet, and the other is “organic children’s play area." (This is Item 6, on page 35 of the City Ventures Submitted Drawings). 9.3

I ask that you separate the two, and ensure that the playground is NOT located in the quiet area adjacent to my property.

In the draft EIR, the mitigation and comment says you do not expect the common areas to be used, but then why are you building it in the first place? Therefore, I do not agree that the noise levels are not "significant." 9.4

Other Long term noise
The mechanical and electrical units are expected to generate operational noise levels within 60 feet of my property. The high-density barrier wall to minimize impact is not clearly located to let me know that my property will be protected. Please clarify and insure that there will be protection for my adjacent property. 9.5

Letter 9

COMMENTER: Janet Waring

DATE: January 19, 2024

Response 9.1

The commenter expresses concerns about construction and operational noise and states that they are a noise-sensitive receptor living adjacent to the project site.

This comment has been noted. Impacts related to noise are addressed in Section 4.10, *Noise*, of the Draft EIR. As discussed therein, impacts related to temporary or permanent increase in ambient noise levels in the vicinity of the project would be less than significant with implementation of Mitigation Measure NOI-1, which requires a solid barrier with a height blocking the line-of-sight to the nearby noise sensitive receptors to reduce noise due to mechanical equipment. Once the final equipment selection is made, Mitigation Measure NOI-1 also requires the completion of an acoustical analysis of the noise from project mechanical and electrical equipment to surrounding properties prior to final design to verify compliance with the City's nighttime exterior noise standard of 45 dBA.

Response 9.2

The commenter states that noise levels associated with construction would be in a range inconsistent with the Sebastopol General Plan and requests that working hours be adjusted to 8:00 a.m. to 7:00 p.m.

This comment has been noted and passed on to decision makers. Noise impacts related to construction are discussed in Section 4.10, *Noise*, of the Draft EIR. As described on page 4.10-10, Section 8.25.060 of the Sebastopol Municipal Code establishes the noise level standards for residential land uses, which are consistent with the standards from the Noise Element within the City's General Plan. As described on Page 4.10-11, Item 6 within section 8.25.060 of Sebastopol's Municipal Code lists exemptions to the Noise Ordinance, including noise generated by any construction equipment which is operated during daytime hours, defined for the purposes of this section as from 7:00 a.m. to 8:00 p.m., Monday through Friday, 8:00 a.m. to 5:00 p.m. on Saturdays, and from 8:00 a.m. to 5:00 p.m. on Sundays. Therefore, the temporary noise levels associated with construction of the project would be exempt from Sebastopol's Noise Ordinance.

Response 9.3

The commenter states the opinion that 24-hour noise level measurements were taken at the quietest portion of the project site. The commenter expresses concerns about the location of the proposed common recreation area and requests that a children's play area is not located adjacent to their property.

This comment has been noted and passed on to decision makers. Noise monitoring locations were chosen to characterize ambient noise levels in the project vicinity. As described on page 4.10-12 of the Draft EIR, the proposed project would result in a significant impact if noise from project stationary operational noise sources exceeds 45 dBA Leq at a residential property line during nighttime hours between 10:00 p.m. and 7:00 a.m. or 55 dBA Leq during daytime hours between 7:00 a.m. and 10:00 p.m. HVAC and transformer operational noise source noise levels were analyzed

at the nearest location to a sensitive receptor property line, as they have the greatest noise levels. All other potential noise sources would be lower and located at a further distance away. With implementation of Mitigation Measure NOI-1, noise levels from operational noise sources would be attenuated to below the City's 45 dBA Leq Nighttime Noise Standard.

The conceptual recreation area is shown on page L-4 of the project plans (available here: https://www.cityofsebastopol.gov/project/the-canopy-1009-1011-gravenstein-highway-north/#tab2). No operating hours are available at this time. Noise produced by the recreation area would be typical of a small, recreational site and consistent with the residential use of the project site. Speech levels are rated lower than the proposed mechanical equipment and would be intermittent and during daytime hours; therefore, to be more conservative, analysis was conducted using noise increases from HVAC units.

Response 9.4

The commenter asks why common areas are proposed as part of the project. The commenter states disagreement with the determination that noise level impacts are less than significant.

As discussed in Section 4.12, *Public Services*, Chapter 17.28 of the SMC requires all new residential development projects and subdivisions are required to provide park and recreation property at a minimum of five acres for each 1,000 persons within the City. As discussed in Section 4.9, *Land Use*, General Plan Policy COS 12-11 requires usable open space for residential and major commercial developments. Noise impacts are discussed in Section 4.13, *Noise*. As described therein, operational impacts would be less than significant with implementation of Mitigation Measure NOI-1.

Regarding the commenter's comment about the Draft EIR analysis assuming the common areas will not be used, while it is unclear exactly what the commenter is referring to, this may be a reference to a statement on page 18 of Appendix I, which notes that since each residential unit would have a courtyard, large gatherings are not expected to occur in the common area; therefore, impacts relating to large gatherings are assumed to be less than significant. See Response 9.3 for more information regarding speech levels.

Response 9.5

The commenter requests clarification regarding the location of high-density barriers.

This comment has been passed on to decision makers. Once the exact equipment is chosen, then exact height, density and locations will be determined to figure out how much noise attenuation (if any) will be needed at each sensitive receptor to comply with the performance standard within Mitigation Measure NOI-1.

From: tcsandymathews@gmail.com
Sent: Tuesday, January 23, 2024 8:02 PM
To: John Jay
Subject: Canopy development

Importance: High

Dear John,

I attended the Canopy meeting this evening through zoom, where it was stated that tonight was the last time that questions would be answered regarding the environmental impact of the project. We were encouraged to contact you tonight and were assured that we would receive an answer.

10.1

I have severe reservations about the movement of contaminated soil in and around the property. I live two houses down, or approximately 150-200 feet away, and this is a real concern. Please explain how that will be mitigated by the builder.

Regarding the environmental impact that the additional traffic will have on Hurlbut Ave and East Hurlbut Ave, those streets have already been destroyed by the constant cut-through traffic from Santa Rosa.

10.2

I feel like the people making the decisions could care less about the County neighbors. They talk about how this will only impact a handful of homes…but there are still people living in those homes.

10.3

Thank you,
Sandy Mathews

Sandy Mathews
992 Hurlbut Ave.
(707) 322-5757

Letter 10

COMMENTER: Sandy Mathew

DATE: January 23, 2024

Response 10.1

The commenter states that they attended the public meeting on January 23 via Zoom. The commenter expresses concerns about movement of contaminated soil and asks how it will be mitigated.

The commenter is incorrect that the public meeting on January 23 was the final time to get questions answered about the environmental impacts of the project. The project requires a recommendation from the planning commission and a decision by the City Council, during which meetings the public may comment on the project. Please refer to Response 8.1 regarding mitigation for contaminated soil.

Response 10.2

The commenter expresses concerns about traffic on Hurlbut Avenue and East Hurlbut Avenue and states that cut through traffic has destroyed those streets.

This comment has been noted and will be passed on to decision makers. Please note there are currently deed restrictions on the parcel preventing vehicular access from the project site to Hurlbut Avenue. It is owned by the County, and not owned by the City of Sebastopol. Regarding the commenter's description of the existing conditions of the roadway, existing conditions are not a result of the proposed project. Therefore, they are not an impact caused by the project and mitigation is not required.

Refer to Response 3.10 for information regarding traffic impacts.

Response 10.3

The commenter opines that decisionmakers do not care about the County neighbors.

This comment will be noted and passed on to decision-makers. However, expressions of opinion are not related to the adequacy of the analysis and conclusions in the EIR.

From: Jacob Harris <musik9000@gmail.com>
Sent: Tuesday, January 23, 2024 8:31 PM
To: John Jay
Subject: "Canopy" EIR responses for tonight (before your deadline)

To John Jay, Sebastopol City

RE: tonight's meeting responses to the EIR for the Canopy project.

Hi John, thank you for considering the neighbor's opinions and concerns regarding the Canopy Project. I just scanned the EIR and have a few comments. The below impacts as reported on the EIR do not seem accurate to me:

1. "Impact AES-3. The proposed project is in a non-urbanized area and would not substantially degrade the existing visual character or quality of public views of the site and its surroundings. Impacts would be less than significant." 11.1

My response: The quality of public views in the neighborhood due to the site would be severely impacted. This needs to be re-evaluated.

2. "Impact GHG-2. The proposed project would be consistent with goals and policies from CARB's 2022 Scoping Plan, Plan Bay Area 2050, the City's Climate Action Framework, and the General Plan. Therefore, this impact would be less than significant." 11.2

My response: as commented tonight during the meeting, clearly the proposed development is NOT consistent with the general plan. The plan's building height are more than double almost all adjacent residences. There are zero 3 story houses in the area.

3. "Impact LU-2. The project would not conflict with the goals or policies in the City's General Plan or the SMC. This impact would be less than significant." 11.3

Read #2 above for my response.

4. "Impact TRA-3. The proposed project would not introduce design features or incompatible uses that could increase traffic hazards. This impact would be less than significant." 11.4

My response. This has been mentioned to the city Council before. The amount of traffic and the egress from the planned project will definitely create traffic hazards. I am concerned that people might get seriously hurt in traffic accidents due to the layout of this project?

5. Impact UTIL-2. There are sufficient water supplies available to serve the proposed project during normal, dry, and multi-dry year conditions. Impacts would be less than significant. 11.5

My response. I am a very close neighbor to this project. I had to drill my well much deeper because the ground water has become much less available. Adding 200 inhabitants to the neighborhood will only create a huge use in water for the area. My neighbors will likely have to drill deeper Wells. This will cost hundreds of thousands of dollars. The huge influx of inhabitants will end up financially damaging the existing neighbors.

Please respond to each of my concerns and responses.

Thank You

Jacob Harris

1/23/24

8:20 pm

Letter 11

COMMENTER: Jacob Harris

DATE: January 23, 2024

Response 11.1

The commenter expresses concerns about public views as analyzed in Impact AES-3 and opines impacts to public views need to be re-evaluated.

This comment has been noted and passed on to decision makers. The commenter does not provide specific details about how the quality of public views from the project site would be impacted beyond the impacts analyzed in the Draft EIR. According to Appendix G of the CEQA Guidelines, and as analyzed in Section 4.1, *Aesthetics*, of the EIR, an impact related to public views is considered significant if development under the proposed project would result in one or more of the following conditions: In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings (public views are those that are experienced from publicly accessible vantage point). If in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality. The project site is located in a non-urbanized area. Impacts related to public views are discussed in Section 4.1, *Aesthetics*. As described under Impact AES-3, public views of the site are available from State Route 116; however, views of the site are minimized due to intervening development directly abutting State Route 116 and trees along the State Route. The project would not constitute a substantial degradation of the existing character or visual quality of the project site because the proposed development would be visually consistent with surrounding residential and commercial areas. Refer to Response 3.14 regarding more about impacts to aesthetics.

Response 11.2

Regarding Impact GHG-1 in the Draft EIR, the commenter claims that the EIR's statement that the project would be consistent with goals and policies of the 2022 Scoping Plan, Plan Bay Area 2050, the City's Climate Action Framework, and the General Plan is incorrect because the development does not appear to be consistent with the General Plan due to concerns about building heights.

Impact GHG-2 is focused on General Plan goals related to greenhouse gas emissions; impacts related to potential conflicts with the goals and policies of the City's General Plan are also discussed in Section 4.9, *Land Use*. The project's consistency with the City of Sebastopol General Plan is detailed in Table 4.9-1 and the project's consistency with SMC R7 Development Standards is shown in detail in Table 4.9-2. As described therein, the project would require approval of a State Density Bonus law waiver to increase building height from two stories to three stories. With approval of the Density Bonus, the project would be consistent with the land use and zoning designations and would not conflict with the General Plan or Municipal Code. While the project would be taller than adjacent residences, it would be consistent with the height of adjacent office buildings. Please see response 11.1 regarding design review requirements.

Response 11.3

Regarding Impact LU-2 in the Draft EIR, the commenter expresses concerns about building heights and states that the proposed project would not be consistent with the General Plan.

Please refer to Response 11.2, specifically regarding Table 4.9-2 in the Draft EIR.

Response 11.4

Regarding Impact TRA-3, the commenter expresses concerns related to traffic, egress from the project site, and safety due to the proposed layout the project site.

This comment has been noted. The commenter does not specify which features of the proposed project layout or egress would introduce safety hazards. Site access and hazards due to design features are discussed in Section 4.13, *Transportation*. As described on Page 4.13-13, the project would not introduce design features or incompatible uses that would increase traffic hazards and impacts would be less than significant.

Additionally, primary access to the site would be provided at two locations. The existing private drive links the existing office development adjacent to the project to the intersection of SR116/Mill Station Road. This intersection is controlled by a traffic signal. As shown in Table 1 of the traffic study (Appendix TRA), this intersection has an existing collision rate that is significantly less than the statewide average collision rate for similar intersections. The other access would be via the southernmost drive aisle of the office development's parking lot. A new curb cut and driveway would be created at the southernmost point of this drive aisle to provide more direct access to SR 116. On this section of SR 116, there is an existing center two-way left-turn lane (TWLTL) which would allow for "two-stage left-turn movements" for vehicles existing the project. In other words, existing traffic would make left-turn movement in two stages (left-turn into the turn lane then merge right with traffic). The TWLTL offers a higher level of safety by providing space for left-turn movement out of the flow of traffic and serving left-turn movements turning onto the main road. Therefore, the project traffic would be served by traffic facilities at both ends that offer a higher level of safety.

Refer to Response 1.1 regarding emergency response and Response 3.10 regarding traffic impacts.

Response 11.5

Regarding Impact UTIL-2, the commenter expresses concerns about groundwater demand resulting from the project and the need and cost for neighbors to dig deeper wells due to groundwater availability.

Groundwater recharge is addressed on pages 4.8-12 through 4.8-13 of the Draft EIR. As described therein, runoff from impervious surfaces would be detained in detention basins and recharged adjacent to the site, resulting in the same amount of groundwater recharge post-project as under existing conditions. Therefore, the project would not substantially interfere with groundwater recharge at the project site. Please see Response 3.11 regarding water demand and adequacy of water supply related to the project.

Regarding the potential need and cost for neighbors to dig wells, pursuant to CEQA Guidelines Section 15131, economic effects of a project shall not be treated as a significant effect on the environment. As such, formal analysis of economic impacts is not required, which includes costs associated with off-site infrastructure. Additionally, groundwater would not be pumped from the project site. The site would be served by the City of Sebastopol, and water would be pumped from existing City wells. It is the responsibility of the City to ensure its pumping actions do not adversely affect existing wells near the City-owned water supply wells.

Dear Planning Commission,

I'm writing in support of the Canopy project. It provides much needed family housing in an ideal location – close to a school, bike trail, commercial area and transportation corridor. The building plans are thoughtful and include garages, which are key for many working families. 12.1

There is good integration with the JRT and existing sidewalks on 116. I am glad to see the 6' wide sidewalk connecting 116 to the JRT.

My only comment is that is seems that instead of a gate at East Hurlbut there should be vehicle access for residents and emergency vehicles. It seems this would be prudent in case of emergency and also for ease of use for residents who live in units closer to East Hurlbut. 12.2

I am glad to see more family housing being built in Sebastopol close to a school and other public amenities. 12.3

Best,
Kate Haug

Letter 12

COMMENTER: Katie Haug

DATE: January 23, 2024

Response 12.1

The commenter expresses support for the project including its location; proximity to schools, bike trails, and transportation; building plans; and the inclusion of garages.

This comment has been noted and passed on to decision makers.

Response 12.2

The commenter recommends including vehicular access for residents and emergency vehicles at East Hurlbut instead of a gate.

This comment has been noted and passed on to decision makers. Regarding vehicular access at East Hurlbut Avenue, there are currently deed restrictions on the parcel preventing vehicular access to the project site from Hurlbut Avenue, which currently connects East Hurlbut Avenue to the project site. Additionally, a meeting was held on August 17, 2022 with the fire chief, planning team, and project applicant, to discuss road widths. The Fire Chief determined that Hurlburt Avenue would be unsuitable for use by emergency vehicles. However, more information regarding impacts relating to emergency vehicle access are discussed on Page 4.13-13 and in Appendix TRA, which determined that site access and circulation would function acceptably for emergency response vehicles and the project would have a less than significant impact on emergency response.

Response 12.3

The commenter expresses support for more family housing in Sebastopol.

This comment has been noted and passed on to decision makers.

From: Kathy O <backroad@sonic.net>
Sent: Wednesday, January 24, 2024 10:21 AM
To: John Jay
Subject: Canopy Edits & Questions

EDITS

PDF page 9
ES-1 Last Paragraph, 3rd line: "east" should be "north" …to the West County Trail 13.1

PDF page 15
ES-7 Impact AQ-2, Mitigation: None required, but Residual Impact: Less than Significant with Mitigation 13.2

PDF page 265
4.13-11 Pedestrian Facilities: 1st paragraph: "...on-site" pedestrian and bicycle features." (not on-side). 13.3

QUESTIONS

Executive Summary

Page 18 Population & Housing - Impact PS-1: Do our fire truck ladders reach 3-4 stories? 13.4

Page 19 Transportation - Impact TRA-1: Is the pedestrian path at Hurlbut open to the public, as an urban sidewalk would be open to the public for walking through, or around an adjacent neighborhood? Is there a gate? 13.5

If there is a locked gate, this is **significant** because our General Plan promotes pedestrian access and connections between neighborhoods and uses. Also, pedestrians have historically been able to walk on the the site's existing pathways accessed from other locations.

Table 2-1 page 42 Will the optional ADUs be sold/built as either ADUs or bedrooms? After purchase, could a bedroom later be converted to an ADU, or ADU back to a bedroom? 13.6

Would garages be allowed to convert to either ADUs or additional bedrooms or offices at purchase or in the future? 13.7

Letter 13

COMMENTER: Kathy Oetinger

DATE: January 23, 2024

Response 13.1

The commenter suggests that a reference to the West County Trail on Page ES-1 should state it is to the north of the project site.

Page ES-1 has been revised with the following correction (changes shown in strikeout/underline):

The project site is currently undeveloped but includes existing vegetation and mature trees. An informal pedestrian pathway bisects the site to connect the existing O'Reilly Media Center parking lot to the West County Trail, allowing use of the trail. To the ~~east~~north, the site is directly adjacent to the West County Trail, a paved trail that links Sebastopol with areas to the Northwest, including Graton and Forestville. In addition, the trail connects in downtown Sebastopol to the Joe Rodota Trail, which connect downtown Santa Rosa and Sebastopol. These trails run parallel to Highway 116 to the North of the site and along Highway 12 from eastern Sebastopol to Santa Rosa and is a popular route for cyclists and pedestrians (Sonoma County 2023). ~~(Sonoma County 2023).~~

Response 13.2

The commenter suggests there is an inconsistency regarding Impact AQ-2 on page ES-7.

The commenter is correct that there is a typo on Page ES-7.

Page ES-7 has been revised with the following correction (changes shown in strikeout/underline):

Air Quality		
Impact AQ-1. The project would not conflict with or obstruct implementation of the 2017 Clean Air Plan. Impacts would be less than significant.	None required.	Less than Significant
Impact AQ-2. Project construction and operation would not Exceed the Regional Threshold for any criteria pollutant. The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard. Impacts would be less than significant.	None required.	Less than Significant ~~with Mitigation~~

Response 13.3

The commenter suggests correcting a typo on page 4.13-11.

The commenter is correct that there is a typo on Page 4.13-11.

Page 4.13-11 has been revised with the following correction (changes shown in strikeout/underline):

Pedestrian facilities serving the project site are adequate. The paths proposed and recommended as part of the project would provide adequate access to the existing pedestrian facilities, with the exception of connectivity to the new HAWK crossing across the north leg of the intersection of SR 116/Danmar Drive. General Plan Action CIR 1f requires that development projects "provide complete streets to the extent feasible; facilitating walking, biking, and transit modes" and requires that development projects "provide appropriate ~~on-side~~on-site pedestrian and bicycle features."

Response 13.4

The commenter asks if fire truck ladders would be able to reach 3 to 4 story buildings.

The Fire Department was contacted to address this concern and the Fire Department confirmed that they would be able to fight fires at the proposed three-story height in the event of a fire.

Response 13.5

The commenter asks if the pedestrian path at Hurlbut would be open to the public or if there would be a gate. The commenter suggests that a locked gate would be contrary to the General Plan's goals to promote pedestrian access and connections between neighborhoods and users.

This comment has been noted and will be passed on to decision makers for consideration.

Response 13.6

The commenter asks if optional ADUs would be sold and built as ADUs or bedrooms and if they could be converted to one or the other after purchase.

ADU options would be selected during the purchasing contract phase. If the ADU option is not selected, then it would be a standard room which could be converted to an ADU in the future and would be subject to Zoning standards. This information and question do not pertain to the analysis or conclusions of the EIR.

Response 13.7

The commenter asks if garages could be converted to ADUs, offices, or additional bedrooms at the time of purchase or in the future.

As discussed on Page 4-3 of the Draft EIR, the project would have the potential for up to 16 units designed to potentially have a bedroom converted to an ADU. These future units would be subject to SMC 17.220.020 regarding Sebastopol's ADU ordinances. This comment does not pertain to the adequacy of the analysis in the EIR.

CALIFORNIA STATE TRANSPORTATION AGENCY GAVIN NEWSOM, GOVERNOR

California Department of Transportation

DISTRICT 4
OFFICE OF REGIONAL AND COMMUNITY PLANNING
P.O. BOX 23660, MS–10D | OAKLAND, CA 94623-0660
www.dot.ca.gov

January 24, 2024

SCH #: 2023070072
GTS #: 04-SON-2023-00849
GTS ID: 30372
Co/Rt/Pm: SON/116/25.279

John Jay, Associate Planner
City of Sebastopol
7120 Bodega Ave
Sebastopol, CA 95472

Re: The Canopy Residential Project — 1009-1011 Gravenstein Highway North – Draft Environmental Impact Report (DEIR)

Dear John Jay:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the Canopy Residential Project. We are committed to ensuring that impacts to the State's multimodal transportation system and to our natural environment are identified and mitigated to support a safe, sustainable, integrated and efficient transportation system.

The Local Development Review (LDR) Program reviews land use projects and plans to ensure consistency with our mission and state planning priorities. The following comments are based on our review of the December 2023 DEIR. 14.1

Project Understanding

The proposed project would construct 80 solar all-electric, three-story townhome-style condominiums, with the potential for up to 16 American Disabilities Act (ADA) Addition Dwelling Units (ADUs). This project site is located close to State Route (SR)-116.

Travel Demand Analysis

With the enactment of Senate Bill (SB) 743, Caltrans is focused on maximizing efficient development patterns, innovative travel demand reduction strategies, and multimodal improvements. For more information on how Caltrans assesses Transportation Impact Studies, please review Caltrans' Transportation Impact Study Guide (*link*). 14.2

The project Vehicle Miles Traveled (VMT) analysis and significance determination are undertaken in a manner consistent with the Office of Planning and Research's (OPR) Technical Advisory. Per the Traffic Impact Study, this project is found to have a less than significant VMT impact, therefore working towards meeting the State's VMT reduction goals. 14.2 cont.

Project Driveway
The DEIR states that the northwest entry point would use the existing intersection at Mill Station Road, and the southwest entry point would provide access through one new curb cut connecting to Gravenstein Highway. If this southwest entry/exit point is not the driveway across Danmar Drive, please indicate this new driveway in the plan. Please refer to Highway Design Manual *(link)* 205.3 Urban Driveway for design standard. 14.3

Lead Agency
As the Lead Agency, the City is responsible for all project mitigation, including any needed improvements to the State Transportation Network (STN). The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures. 14.4

Encroachment Permit
Please be advised that any permanent work or temporary traffic control that encroaches onto Caltrans' Right-of-Way (ROW) requires a Caltrans-issued encroachment permit. If the proposed project will add a new driveway connection off SR-116, it will require an encroachment permit. As part of the encroachment permit submittal process, you may be asked by the Office of Encroachment Permits to submit a completed encroachment permit application package, digital set of plans clearly delineating Caltrans' ROW, digital copy of signed, dated and stamped (include stamp expiration date) traffic control plans, this comment letter, your response to the comment letter, and where applicable, the following items: new or amended Maintenance Agreement (MA), approved Design Standard Decision Document (DSDD), approved encroachment exception request, and/or airspace lease agreement. Your application package may be emailed to D4Permits@dot.ca.gov. 14.5

To obtain information about the most current encroachment permit process and to download the permit application, please visit Caltrans Encroachment Permits (*link*).

Thank you again for including Caltrans in the environmental review process. Should you have any questions regarding this letter, please contact Melissa Hernandez, Associate Transportation Planner, via LDR-D4@dot.ca.gov. For future early coordination opportunities or project referrals, please contact LDR-D4@dot.ca.gov.

Sincerely,

YUNSHENG LUO
Branch Chief, Local Development Review
Office of Regional and Community Planning

c: State Clearinghouse

Letter 14

COMMENTER: Yungsheng LUO Branch Chief, Local Development Review (Office of Regional and Community Planning)

DATE: January 23, 2024

Response 14.1

The commenter expresses gratitude for being included in the environmental review process for the project and describes the Local Development Review Program's role to review land use projects and ensure consistency with its mission and planning priorities.

This comment has been noted.

Response 14.2

The commenter provides information about Senate Bill 743 and states that the VMT analysis and significance determination in the Draft EIR are undertaken in a manner consistent with the Office of Planning and Research's Technical Advisory. The commenter states that the less than significant impact finding works towards meeting the State's VMT reduction goals.

This comment has been noted.

Response 14.3

The commenter requests that the new curb cut at the southwest entry/exit point described in the Draft EIR be indicated on the plans if it is different than the driveway across Danmar Avenue.

This comment has been passed on to decision makers. The proposed entrance is in a different location than the driveway across Danmar Avenue. The location of the proposed entrance is shown on page 48 of the Canopy Project Plans and Drawings which can be accessed on the City's website via this link: The-Canopy-DR-Submittal-Drawings-compressed.pdf (cityofsebastopol.gov).

Response 14.4

The commenter states that the City is responsible for all project mitigation including improvements to the State Transportation Network and that the project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures.

This comment is noted. The project does not include any mitigation regarding the State Transportation Network. The Mitigation and Monitoring Reporting Program document will include details regarding the timing, frequency, and responsibility of any mitigation measures.

Response 14.5

The commenter advises that any permanent work or temporary traffic control that encroaches onto Caltrans' Right-of-Way requires a Caltrans-issued encroachment permit including if the project will add a new driveway connection off SR-116. The commenter provides information about the encroachment permit application process.

This comment has been noted.

3 Public Hearing Comments and Responses

Verbal comments received at the public meeting (held on January 23, 2024) from the public are summarized below. The verbal comments were similar to those identified in the written letters that are responded to in Chapter 2 of this document. Several of the verbal comments made by The Commission were discussed and addressed verbally during the public meeting.

- *The commentors expressed concern about the project's consistency with the General Plan citing height requirements, density, and low-income housing requirements.*

Please see Response 11.2 regarding the project's consistency with height requirements.

Regarding the project's density and how it will meet housing-related goals, as required by Section 15126.6 of the CEQA Guidelines, the Draft EIR examines a range of reasonable alternatives to the proposed project including an alternative with reduced density and an alternative with increased density compared to the proposed project. While the EIR determined that Alternative 2 (reduced development density) would be the environmentally superior alternative, as discussed on Page 6-3, Alternative 2 would not meet goals related to increasing housing inventory as effectively as the proposed project and may not be financially feasible due to development costs. Furthermore, as discussed on Page 6-9 of the Draft EIR, transportation impacts related to vehicle miles traveled for Alternative 2 would be slightly increased compared to the proposed project since it would result in a less dense development buildout.

Regarding the comment about LU-2.4, this goal relates to the Urban Growth Boundary (UGB) administration, i.e., when a project is located within the sphere of influence of the city and not city limits. This project is within City limits and would not be subject to this goal.

- *The commenters expressed concerns about traffic including during school pick up and drop off times.*

Transportation impacts are discussed in Section 4.13, *Transportation*. As noted therein, pursuant to Section 15064.3 of the *CEQA Guidelines*, traffic delay or congestion, which is what LOS measures and describes, shall not constitute a significant environmental impact for land use projects. However, General Plan Policy CIR1-7 requires projects with potentially significant impacts to circulation to provide a circulation impact report to provide decisionmakers with a picture of the impacts associated with a project and allow decision-makers to determine appropriate improvements to alleviate traffic impacts. In addition, General Plan Policy CIR 1-8 requires review of multi-modal LOS objectives where applicable. While that information may not be used to justify a significant impact, an LOS study has been provided in detail in the Transportation Impact Study (Appendix G) for reference. Therefore, the proposed project would be consistent with all applicable General Plan policies and impacts would be less than significant.

- *The commentors expressed concerns about contaminated soils and how remediation policies will be implemented and enforced.*

As discussed on Page 4.8-10 of the Draft EIR, the project would implement Mitigation Measure HAZ-3a which would require the DTSC continue to be utilized for agency oversight of assessment and remediation of the project site through completion of construction activities and Mitigation Measure HAZ-3b which requires the preparation of a Soil Management Plan (SMP) prior to commencement of construction and grading activities at the project site. A Removal Action Plan (referred to by the DTSC as Removal Action Workplan) was prepared for the project site and determined soil burial, capping, and deed restriction was the recommended removal action for the project site (Stantec, 2023). Excavated contaminated soil would be buried under six feet of clean soil on top of the on-site burial cells.

DTSC notes that the RAW is still under review and will be made available for public review and comment via a mailed community update and public notice published in a local newspaper. Information about the Site and the proposed cleanup activities can be viewed by visiting DTSC's EnviroStor website for 1009 - 1011 Gravenstein Highway (https://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=60003135).

Regarding mitigation, pursuant to *CEQA Guidelines*, §15126.4, subd. (a)(2), mitigation measures must be fully enforceable through permit conditions, agreements, or other legally binding instruments. In the case of the adoption of a plan, policy, regulation, or other public project, mitigation measures can be incorporated into the plan, policy, regulation, or project design. To evaluate mitigation measures, the City is including a Mitigation Monitoring or Reporting Program (MMRP) for the proposed project pursuant to *CEQA Guidelines*, §15097.

- *The commentors expressed concerns about consistency with zoning and community character, and express disagreement with the Draft EIR's description of the project site being near residential uses. The commenters request transparency from the City during the environmental review process.*

This comment has been noted and passed on to decision makers. Impacts related to land use are discussed in Section 4.9, *Land Use*. The project's consistency with the City of Sebastopol General Plan is shown in Table 4.9-1 and the project's consistency with SMC R7 Development Standards is shown in detail in Table 4.9-2. As described therein, with approval of the Density Bonus, the project would be consistent with the land use and zoning designations and would not conflict with the General Plan or Municipal Code. Please see Response 3.14 for clarification regarding existing conditions around the project site and impacts regarding community character.

- *The commentors asked if an extension could be granted for comment period.*

The minimum public review period for a Draft EIR is 45 days. The comment period for this project exceeds the minimum public review period and no extension is planned.

- *A commentor opposes the Density Bonus and waiver to allow 3-story buildings, and suggests the project should instead consist of 2-story buildings.*

This comment has been noted and passed on to decision makers for consideration. Please refer to Response 11.2 for analysis regarding proposed building heights.

- *Commentors express concerns about the existing condition of pedestrian sidewalks and future safety of pedestrians. A commenter asked if there would be a cyclist or pedestrian path around the entrance to Hurlbut Avenue.*

Existing conditions of the sidewalks would not change as a result of the proposed project. Therefore, it is not an impact caused by the project and mitigation is not required. The adequacy of pedestrian facilities is discussed on page 4.13-11. As described therein, pedestrian facilities serving the project site are adequate. The paths proposed and recommended as part of the project would provide adequate access to the existing pedestrian facilities, with the exception of connectivity to the new HAWK crossing across the north leg of the intersection of SR 116/Danmar Drive. Please see Response 4.5 regarding updates to Mitigation Measure TRA-1, which requires a new pedestrian path to link the project and mixed commercial office park to the new HAWK crossing across the north leg of the intersection of SR 116/Danmar Drive. General Plan Action CIR 1f requires that development projects "provide complete streets to the extent feasible; facilitating walking, biking, and transit modes" and requires that development projects "provide appropriate on-site pedestrian and bicycle features."

Regarding entrances to the project site, there is an option for a pedestrian path directly from the project site to Hurlbut Avenue (shown as #23 on Figure 1 below). A locked gate was added as an option that will be at the discretion of the City and it has not yet been determined if that pedestrian path will be open to the public. For the central part of the property, on the south side the project proposes a new, enhanced 6-foot-wide pedestrian pathway to connect the West County Trail to Gravenstein Highway (shown as #22 on Figure 1). The project will also include a path connection to the West County Trail just east of Mill Station Road crossing of the trail. The West County trail then provides access to Hurlbut Avenue and the other sections of the West County trail towards downtown.

Figure 1 Conceptual Site Plan

- *Commenters express concern about vehicular access to and from the project site during an emergency or evacuation scenario. A commenter also expresses concerns about vehicular access through the business park and how vehicles would access SR 116.*

Vehicular and emergency access to the project site are discussed in Section 4.13, *Transportation*. Primary access to the site would be provided at two locations: by an existing private drive that links the existing office development adjacent to the project to Mill Station Road and via the southernmost drive aisle of the office development's parking lot. A new curb cut and driveway, which would be separate from the existing driveway entrance to the business park across from Danmar, would be created at the southernmost point of this drive aisle to provide more direct access to SR 116. According to email correspondence with W-Trans on February 1, 2024, on this section of SR 116, there is an existing center two-way left-turn lane (TWLTL) which would allow for "two-stage left-turn movements" for vehicles existing the project. In other words, existing traffic would make left-turn movement in two stages (left-turn into the turn lane then merge right with traffic). The TWLTL offers a higher level of safety by providing space for left-turn movement out of the flow of traffic and serving left-turn movements turning onto the main road. Therefore, the project traffic would be served by a traffic facilities at both ends that offer a higher level of safety.

Impacts regarding emergency vehicle access are discussed on Page 4.13-13 and in Appendix TRA which determined that site access and circulation would function acceptably for emergency response vehicles and the project would have a less than significant impact on emergency response. Please see Response 1.1 for more information regarding emergency response.

Impacts related to the potential for the project to conflict with emergency response or evacuation plans are discussed on page 4.7-19 of the Draft EIR. As described therein, the proposed project would not conflict with the Emergency Operations Plan and would not impair evacuation. The proposed project does not include any characteristics (e.g., permanent road closures) that would physically impair or otherwise interfere with access to these critical routes or obstruct emergency response or evacuation in the project vicinity. Standard traffic management practices related to construction staging and parking would ensure that temporary road closures during construction would not impair or interfere with emergency response or evacuation. Furthermore, industry practices require the notification of area emergency responders prior to any such closures, ensuring that in the event of an emergency, responders and managers would already be aware of any potential obstacles related to project construction. Accordingly, potential impacts related to interference with an adopted emergency response plan or emergency evacuation plan would be less than significant.

- *Commenters expressed concerns about the project's potential to increase fire hazards to nearby properties.*

Wildfire impacts are discussed in Section 4.16, *Impacts Found to be Less than Significant*. As stated therein, the project site is not located within or near a Very High Fire Hazard Severity Zone or state responsibility area. The nearest Very High Fire Hazard Severity Zone is located approximately 3.25 miles west of the project site (CalFire 2007). As the project site is not located in or near a Very High Fire Hazard Severity Zone, no impact would occur. Regarding access emergency access to the site, the Sebastopol Fire Department was consulted to determine the appropriate location for emergency vehicle access during a meeting with the fire chief, planning team, and project applicant on August 17, 2022. Impacts regarding emergency

vehicle access are discussed on Page 4.13-13 and in Appendix TRA which determined that site access and circulation would function acceptably for emergency response vehicles and the project would have a less than significant impact on emergency response. Impacts related to the potential for the project to conflict with emergency response or evacuation plans are discussed on Page 4.7-19 of the Draft EIR. As described therein, the proposed project would not conflict with the Emergency Operations Plan and would not impair evacuation.

- *A commenter expressed concerns about the project meeting applicable CalGREEN standards.*

As described on Page 4.2-15 of the Draft EIR, the proposed project would include solar and all electric appliances to the project. In addition, the proposed project would exceed the energy efficiency measures with the 2022 Title 24 Building Efficiency Standards by five to 10 percent. For example, the project would dedicate circuitry for electric vehicle charging stations for all townhome garages, which is beyond the requirement of the 2022 Title 24 Standards. The CALGreen standards are updated every three years and become increasingly more stringent over time. The proposed project would be required to comply with all water conservation standards of CALGreen that are in effect at that time. The project would include ultra-low flow water fixtures, low Impact landscaping, and onsite stormwater capture. Furthermore, as stated on Page 4.6-18 of the Draft EIR, Mitigation Measure GHG-1 requires a minimum of 15 percent of the total number of parking spaces to be equipped with EV charging stations. Energy impacts are described on page 4.16-2 of the Draft EIR. As described therein, no conflict with an applicable plan, policy or regulation adopted for the purpose of renewable energy or energy efficiency is anticipated and there would be no impact.

- *A commenter states they live at 896 Hurlbut Avenue and request information about the distance of the project site from their property line.*

This information and question do not pertain to the analysis or conclusions of the EIR. However, refer to Table 10 in Appendix I regarding this property's distance from the center of the project site.

4 Revisions to the Draft EIR

Chapter 4 presents specific changes to the text of the Draft EIR that are being made in response to comments received or to make corrections. In no case do these revisions result in a greater number of impacts or impacts of a substantially greater severity than those set forth in the Draft EIR. Where revisions to the main text are called for, the page and paragraph are set forth, followed by the appropriate revision. Added text is indicated with underlined and deleted text is indicated with ~~strikeout~~. Page numbers correspond to the page numbers of the Draft EIR. The revisions to the Draft EIR would not constitute the addition of substantial new information or a substantial increase in any environmental impacts and would not require recirculation of the Draft EIR.

Page ES-2

Table ES-2 Proposed Residential Development Summary

Feature	Details
Townhome Project Characteristics	
Residential area	69,317 square feet
Lot Coverage	Allowed: 40% or 106,333 sf Proposed: 26% or 69,317 sf +/-
~~Floor Area Ratio (FAR)~~	~~1.53[1]~~
Density	Allowed: 12.1 to 25 dwelling units/acre Proposed: 13.1 dwelling units/acre
Building Height	Allowed: 30 feet and 2 stories Proposed: 40 feet +/- and 3 stories with Density Bonus Waiver

Page ES-3

There are currently ~~133~~134 trees within the project site (including 92 protected trees), and the proposed project would involve the removal of ~~22~~43 trees (including 29 protected trees) while preserving the remaining ~~111~~91 trees (including 63 protected trees) primarily along the perimeter of the site. An existing large, mature coast live oak tree would be retained at the primary entrance to the project entry. Existing oak trees and redwoods would be preserved throughout the site. Additional trees, such as native maples, madrone and dogwood, are proposed to create onsite ecosystems that attract birds and butterflies. Proposed landscaping would include new plantings throughout the open spaces, including the paseo, at the setbacks along drive aisles, roadways, and streets, and surrounding the proposed buildings. Other amenities, including gardens, active and passive seating areas, children's play areas, and a meditation hammock garden are also proposed.

Page ES-4

As required by the California Environmental Quality Act (CEQA), this EIR examines alternatives to the proposed project. Studied alternatives include the following ~~four~~three alternatives. Based on the alternatives analysis, Alternative 2 was determined to be the environmentally superior alternative.

- Alternative 1: No Project
- Alternative 2: Reduced Development Density
- Alternative 3: Increased Development Density

Page ES-4

Alternative 1 (No Project) assumes that the proposed residential development and subsequent construction of internal roadways, parking, and associated site improvements would not occur, and that the current, undeveloped use of the site would remain. Because no construction or development would occur under the Alternative 1, the ~~22~~43 trees proposed to be removed for the project would not be removed and the existing ~~133~~134 trees on site would remain. The No Project Alternative would not meet project objectives related to increasing housing inventory to address statewide and local housing needs or provide housing opportunities for a variety of income levels and life stages within the city of Sebastopol, as residential development would not occur under this alternative.

Page ES-7

Air Quality		
Impact AQ-1. The project would not conflict with or obstruct implementation of the 2017 Clean Air Plan. Impacts would be less than significant.	None required.	Less than Significant
Impact AQ-2. Project construction and operation would not Exceed the Regional Threshold for any criteria pollutant. The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard. Impacts would be less than significant.	None required.	Less than Significant ~~with Mitigation~~

Page ES-14

HAZ-3a DTSC Regulatory Agency Submittal. The DTSC shall continue to be utilized for agency oversight of assessment and remediation of the project site through completion of grading and site construction activities. Prior to commencement of construction and grading activities at the project site, the project applicant shall submit the following documents to the DTSC project manager of the open Voluntary Agreement cleanup case:

- Current development plan and any modifications to the development plan
- All environmental documents completed for the project, including this ~~Initial Study~~ EIR document
- ~~All~~Any future environmental documents completed for the project

Upon submittal of the information above, and in accordance with the project's 2023 DTSC Standard Voluntary Agreement, DTSC may require actions such as: development of subsurface investigation workplans; completion of soil, soil vapor, and/or groundwater subsurface investigations; installation of soil vapor or groundwater monitoring wells; soil excavation and

offsite disposal; completion of human health risk assessments; and/or completion of remediation reports or case closure documents. ~~Subsurface soil, soil vapor, and groundwater investigations, if required, shall be conducted in accordance with a sampling plan that shall be reviewed and approved by the DTSC.~~ The DTSC approval ~~documents~~ shall be submitted to and reviewed and accepted by the City prior to issuing grading permits.

HAZ-3b Soil Management Plan. Prior to commencement of construction and grading activities at the project site, the project applicant shall retain a qualified consultant (Professional Geologist [PG] or Professional Engineer [PE]) to prepare a Soil Management Plan (SMP) for the project site. The SMP shall address:

1. On-site handling and management of impacted soils or other impacted wastes (e.g., stained soil, and soil or groundwater with solvent or chemical odors) if such soils or impacted wastes are encountered, and
2. Specific actions to reduce hazards to construction workers and offsite receptors during the construction phase.

The SMP must establish remedial measures and soil management practices to ensure construction worker safety, the health of future workers and residents, and prevent the off-site migration of contaminants from the project site. These measures and practices may include, but are not limited to:

- Stockpile management, including stormwater pollution prevention and the installation of BMPs
- Proper disposal procedures for contaminated materials
- Investigation procedures for encountering known and unexpected odorous or visually stained soils, other indications of hydrocarbon piping or equipment, and/or debris during ground-disturbing activities
- Monitoring and reporting
- A health and safety plan for contractors working at the project site that addresses the safety and health hazards of each phase of project site construction activities with the requirements and procedures for employee protection
- The health and safety plan shall outline proper soil handling procedures and health and safety requirements to minimize worker and public exposure to hazardous materials during construction.

The DTSC shall review and approve the SMP prior to construction (grading) activities at the project site. The City shall ~~review and approve~~ confirm that DTSC has approved the ~~DTSC approved~~ SMP prior to issuing grading permits. The project applicant shall implement the SMP during grading and construction at the project site.

Page ES-16

Hydrology and Water Quality		
Impact HYD-1. Development facilitated by the project would not violate water quality standards or Waste Discharge Requirements, or otherwise substantially degrade surface or groundwater quality. Impacts would be less than significant with mitigation.	~~None required.~~ Mitigation Measure HAZ-3(a) and HAZ-3(b).	Less than Significant with Mitigation

Page ES-19

TRA-1 Pedestrian Connectivity and Safety. A new pedestrian path shall be added ~~through the center of the project site in order~~ to link the project and mixed commercial office park to the new HAWK crossing across the north leg of the intersection of SR 116/Danmar Drive ~~after Caltrans constructs the HAWK crossing and~~ before an occupancy permit is issued.

Page 1-1

The proposed project would construct 80 solar all-electric, three-story townhome-style condominiums, with the potential for up to 16 Americans with Disability Act (ADA) accessible accessory dwelling units (ADUs). Other components of the project include newly constructed internal roadways, 160 automobile parking spaces in garages and 58 automobile surface spaces across the site, and 96 bicycle parking spaces. The project would involve the removal of ~~22~~43 trees while the remaining ~~111~~91 trees would be preserved. Additional trees and amenities including gardens, active and passive seating areas, children's play areas, and a meditation hammock garden are proposed.

Page 1-5

A responsible agency refers to a public agency other than the lead agency that has discretionary approval over the project. The Department of Toxic Substances Control (DTSC) is a responsible agency. DTSC is responsible for reviewing and approving the Removal Action Workplan (RAW) for the project site and the Soil Management Plan (SMP) for the project ~~prior to construction (grading) activities at the project site.~~ as part of the cleanup oversight process.

Page 2-4

The project site is currently undeveloped but includes existing vegetation and mature trees. An informal pedestrian pathway bisects the site to connect the existing O'Reilly Media Center parking lot to the West County Trail, allowing use of the trail. To the ~~east~~north, the site is directly adjacent to the West County Trail, a paved trail that links Sebastopol with areas to the Northwest, including Graton and Forestville. In addition, the trail connects in downtown Sebastopol to the Joe Rodota Trail, which connect downtown Santa Rosa and Sebastopol. These trails run parallel to Highway 116 to the North of the site and along Highway 12 from eastern Sebastopol to Santa Rosa and is a popular route for cyclists and pedestrians (Sonoma County 2023). ~~(Sonoma County 2023).~~

Page 2-6

Table 2-1 Proposed Residential Development Summary

Feature	Details
Townhome Project Characteristics	
Residential area	69,317 square feet
Lot Coverage	Allowed: 40% or 106,333 sf Proposed: 26% or 69,317 sf +/-
~~Floor Area Ratio (FAR)~~	~~1.53[1]~~
Density	Allowed: 12.1 to 25 dwelling units/acre Proposed: 13.1 dwelling units/acre
Building Height	Allowed: 30 feet and 2 stories Proposed: 40 feet +/- and 3 stories with Density Bonus Waiver

Page 2-7

There are currently ~~133~~134 trees within the project site (including 92 protected trees), and the proposed project would involve the removal of ~~22~~43 trees (including 29 protected trees) while preserving the remaining ~~111~~91 trees (including 63 protected trees) primarily along the perimeter of the site. An existing large, mature coast live oak tree would be retained at the primary entrance to the project entry. Existing oak trees and redwoods would be preserved throughout the site. Additional trees, such as native maples, madrone and dogwood, are proposed to create onsite ecosystems that attract birds and butterflies. Proposed landscaping would include new plantings throughout the open spaces, including the paseo, at the setbacks along drive aisles, roadways, and streets, and surrounding the proposed buildings. Other amenities, including gardens, active and passive seating areas, children's play areas, and a meditation hammock garden are also proposed.

Page 2-12

2.7 Required Approvals

The proposed project would require approval of the following entitlements by the City of Sebastopol City Council:

- Conditional Use Permit for 80 townhouse units within the OLM zoning district
- A Vesting Tentative Map
- State Density Bonus law waiver to increase building height from two stories to three stories
- Site Design Review
- Removal of ~~22~~29 protected ~~existing~~ onsite trees

The Department of Toxic Substances Control (DTSC) is a responsible agency. DTSC is responsible for reviewing and approving the Removal Action Workplan (RAW) for the project site and the Soil Management Plan (SMP) for the project ~~prior to construction (grading) activities at the project site.~~ as part of the cleanup oversight process.

Page 4.1-7

General Plan Policy COS 11-8 requires all outdoor lighting to be constructed with full shielding and/or recessed to reduce light trespass to adjoining properties and to reduce illumination of the night sky and be directed downward and away from adjoining properties and public rights-of way, so that no light fixture directly illuminates an area outside of the site. Policy COS 11-~~8~~7 restricts outdoor lighting and glare from development projects to retain the quality of night skies by minimizing light pollution.

Page 4.2-1

The major large-scale weather feature controlling climate in Sebastopol is a large high-pressure system located in the eastern Pacific Ocean, known as the Pacific High. During ~~winter~~summer months, marine air trapped in the lower atmosphere is often condensed into fog by the cool Pacific Ocean. Stratus-type clouds usually form offshore and move into the area during the evening hours. During winter months, the Pacific High becomes weaker and shifts south, allowing weather systems associated with the polar jet stream to affect the region. Low pressure systems produce periods of cloudiness, strong shifting winds, and precipitation. High-pressure systems are also common in winter, with low-level inversions that produce cool stagnant conditions.

Page 4.3-13

Impact BIO-1 THE PROJECT WOULD HAVE THE POTENTIAL TO RESULT IN A SUBSTANTIAL ADVERSE EFFECT ON SPECIAL STATUS ANIMAL SPECIES. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION.

Page 4.13-11

Pedestrian facilities serving the project site are adequate. The paths proposed and recommended as part of the project would provide adequate access to the existing pedestrian facilities, with the exception of connectivity to the new HAWK crossing across the north leg of the intersection of SR 116/Danmar Drive. General Plan Action CIR 1f requires that development projects "provide complete streets to the extent feasible; facilitating walking, biking, and transit modes" and requires that development projects "provide appropriate ~~on-side~~on-site pedestrian and bicycle features."

TRA-1 Pedestrian Connectivity and Safety.

A new pedestrian path shall be added ~~through the center of the project site in order~~ to link the project and mixed commercial office park to the new HAWK crossing across the north leg of the intersection of SR 116/Danmar Drive ~~after Caltrans constructs the HAWK crossing and~~ before an occupancy permit is issued.

Page 4.7-16

~~As detailed under *Environmental Setting*~~While not listed on Government Code Section 65962.5(a), which constitutes DTSC's portion of the Cortese List, the project site is associated with an active Voluntary Agreement cleanup case with regulatory agency oversight by the DTSC (DTSC 2023a). ~~Therefore, the project site is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5.~~

Page 4.7-17

HAZ-3a DTSC Regulatory Agency Submittal. The DTSC shall continue to be utilized for agency oversight of assessment and remediation of the project site through completion of grading and site construction activities. Prior to commencement of construction and grading activities at the project site, the project applicant shall submit the following documents to the DTSC project manager of the open Voluntary Agreement cleanup case:

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2. Specific actions to reduce hazards to construction workers and offsite receptors during the construction phase.

The SMP must establish remedial measures and soil management practices to ensure construction worker safety, the health of future workers and residents, and prevent the off-site migration of contaminants from the project site. These measures and practices may include, but are not limited to:

- Stockpile management, including stormwater pollution prevention and the installation of BMPs
- Proper disposal procedures for contaminated materials
- Investigation procedures for encountering known and unexpected odorous or visually stained soils, other indications of hydrocarbon piping or equipment, and/or debris during ground-disturbing activities
- Monitoring and reporting
- A health and safety plan for contractors working at the project site that addresses the safety and health hazards of each phase of project site construction activities with the requirements and procedures for employee protection

- The health and safety plan shall outline proper soil handling procedures and health and safety requirements to minimize worker and public exposure to hazardous materials during construction.

The DTSC shall review and approve the SMP prior to construction (grading) activities at the project site. The City shall ~~review and approve~~ confirm that DTSC has approved the ~~DTSC approved~~ SMP prior to issuing grading permits. The project applicant shall implement the SMP during grading and construction at the project site.

Page 4.10-9

Policy N-1.13 Control non-transportation related noise from site specific noise sources to the standards shown in ~~Error! Reference source not found~~Table 4.10-3.

Page 6-2

The No Project Alternative assumes that the proposed residential development and subsequent construction of internal roadways, parking, and associated site improvements would not occur, and that the current, undeveloped use of the site would remain. Because no construction or development would occur under the Alternative 1, the ~~22~~43 trees proposed to be removed for the project would not be removed and the existing ~~133~~134 trees on site would remain. The No Project Alternative would not meet project objectives related to increasing housing inventory to address statewide and local housing needs or provide housing opportunities for a variety of income levels and life stages within the city of Sebastopol, as residential development would not occur under this alternative.

Page 6-4

The proposed project would require the removal of ~~22~~43 trees. Because Alternative 2 would involve development of fewer residential units, slightly fewer trees would need to be removed under this alternative. Similar to the proposed project, Alternative 2 would preserve the existing trees as much as possible. Tree replanting under the direction of a qualified forester, arborist, or horticulturalist pursuant to Sebastopol Municipal Code (SMC) would also be required under this alternative. Implementation of Mitigation Measure BIO-2 would be required. Impacts would be less than significant with mitigation under Alternative 2, similar to the proposed project.

Appendix B

Biological Resources Analysis

Biological Resource Analysis

"The Canopy"

Sebastopol, Sonoma County, California

Prepared for
City Ventures
444 Spear Street
Suite 200
San Francisco, CA 94105

Prepared by

Integral Consulting Inc.
433 Visitacion Avenue
Brisbane, CA 94005

July 2023

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ACRONYMS AND ABBREVIATIONS

AMSL	above mean sea level
BMP	best management practice
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CWA	Clean Water Act
DPS	Distinct Population Segment
FESA	Federal Endangered Species Act
LID	Low Impact Development
MBTA	Migratory Bird Treaty Act
MND	Mitigated Negative Declaration
MS4s	municipal separate storm sewer systems
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PBF	physical or biological features
Porter Cologne	Porter Cologne Water Quality Control Act
quad	quadrangle
Regional Water Board	Regional Water Quality Control Board
SWRCB	California State Water Resources Control Board
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WDR	waste discharge requirements
WOTUS	waters of the U.S./State

1 INTRODUCTION

1.1 PURPOSE OF THE DOCUMENT

The City of Sebastopol is requiring a Biological Resource Analysis for the construction of an approximately 6.1-acre medium-density residential development ("The Canopy" [the Project]) within the City of Sebastopol, in accordance with the requirements of the California Environmental Quality Act (CEQA) (California Public Resources Code, Division 13, Section 2100 et seq.) and CEQA Guidelines (Title 14, California Code of Regulations, Chapter 3, Section 15000 et seq.). The City of Sebastopol is the CEQA Lead Agency for the Project.

The purpose of this Biological Resource Analysis is to gather information necessary to complete a review of biological resources and potential Project effects to those resources under CEQA. The analysis herein considers the Project location in conjunction with proposed work activities to analyze potential Project-related impacts on the natural environment.

1.2 PROJECT LOCATION

The 6.1-acre Gravenstein Highway Residential Project site (Project site) is located at 1003-1011 Gravenstein Highway North in Sebastopol, Sonoma County, California (Figure 1. Project Site and Vicinity Map). The site is composed of two parcels: Assessor's Parcel Numbers 060-261-028 and 060-261-026. For the purposes of this BRA, the Project site assessed herein includes the approximately 6.1-acre Project Site is located on the northern boundary of the City of Sebastopol, Sonoma County, California (the approximate center of the Project Site is at 38°41'17.26"N, 122°84'03.34"W). The Project Site is located east of the intersection of Mill Station Road and the Gravenstein Highway. The Project Site is bound to the north by a public trail, existing residential development, and a charter school, to the south by existing residential development and an existing commercial development (including buildings and parking lots), and to the east by Hurlburt Avenue, and to the west by Gravenstein Highway.

2 PROPOSED PROJECT

2.1 PROJECT OVERVIEW

The proposed Project includes the construction of an approximately 6.1-acre residential development, with 80 townhome style condominiums, and associated infrastructure, utilities, an access road, a play area, and landscaping, as well as a 6' wide pedestrian pathway to connect the Joe Rodota Trail to Gravenstein Highway on the southern border of the site. Project implementation would include the, mass grading of the entire Project site (with the exception of locations where trees are to be protected in-place which includes the area roughly within the dripline of the trees), and construction of project components.

The Project would be constructed using typical site grading, site improvement, and Type 'V' wood-framed construction techniques per the California Building Code requirements. Project implementation would require the use of water trucks, scrapers, compactors, bulldozers, caterpillars, back-hoes, augers, concrete trucks, and assorted other hand tools and professional grade equipment.

Pending Project approval, grading is anticipated to commence in mid-2024 with Project completion proposed for late-2025. Crews typically would work during daylight hours and consistently with the City of Sebastopol's ordinances for construction. These dates and times are subject to change, pending issuance of project permits and agency authorizations.

2.2 SIGNIFICANCE THRESHOLDS FOR PROJECT IMPACTS

Potential impacts associated with implementation of the Project are addressed in the following sections. In accordance with Appendix G of the State CEQA Guidelines, Project-related impacts would be considered significant if the Project would result in one or more of the following effects:

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 CDFW or USFWS; or

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 CDFW or USFWS; or

c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means; or

d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites; or

e. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

3 CURRENT CONDITION OF NATURAL ENVIRONMENT

3.1 PERSONNEL AND SURVEY DATES

3.1.1 General Site Survey

Integral Consulting Inc personnel Cameron Johnson conducted a general site survey of the Project site on May 21, 2021, to record biological resources and to assess the likelihood of resource agency regulated areas on the Project site. Sadie McGarvey and Luke Davies conducted an updated survey of the Project site on July 18, 2023, to document current site conditions. These surveys involved searching all habitats on the site and recording all plant and wildlife species observed, cross-referencing the onsite habitats against the habitat requirements of regionally known special-status species to determine suitability of the Project site to support such species.

3.2 LIMITATIONS AND ASSUMPTIONS THAT MAY INFLUENCE RESULTS

All necessary portions of the Project site were accessible to the surveying biologists. protocol rare-plant surveys have not been completed. Wildlife species, however, may be cryptic, generally difficult to detect, transient, nocturnal, or migratory species that may only occur within the Project site for short or fleeting time periods. Wildlife species may only be active during particular times of the year, such as the breeding season, or may only use the Project site temporarily. For these reasons, plant and wildlife species may be present but not observed. This limitation may influence the study results.

3.3 EXISTING CONDITIONS

The Project Site overall is relatively flat with a gentle western-facing slope, with elevations ranging from approximately 200 feet above mean sea level (AMSL) at the eastern border to approximately 190 feet AMSL at the northwestern corner of the site. The Project Site consists of a remnant apple orchard that is interspersed with native trees including coast live oak (*Quercus agrifolia*), Douglas fir (*Pseudotsuga menziesii*), valley oak (*Quercus lobata*), and Coast redwood (*Sequoia sempervirens*).

The southeastern portion of the Project site was formerly occupied by a community garden, however, at the time the July 2023 survey, the garden boxes had been removed and the site was dominated by ruderal vegetation. Ruderal vegetation is characterized by species that colonize and thrive in disturbed areas, collectively referred to as ruderal species. These species may be native or non-native, but are often thought of as “weedy” species. Dominant species included non-native herbaceous species such as bristly ox-tongue (*Helminthotheca*

echioides), French broom (*Genista monspessulana*), wild radish (*Raphanus sativus*), and hairy cat's-ear (*Hypochaeris radicata*). Lesser dominants include non-native grasses such as slender wild oats (*Avena barbata*), rip-gut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), and foxtail barley (*Hordeum murinum*).

Overall, the Project site is highly disturbed and actively managed. At the time of the site visit, the orchard portions of the site had been recently disced and there was minimal herbaceous vegetation present, and the ruderal portion of the site had been recently mowed and there was evidence of significant weedy herbaceous vegetation present on the site prior to mowing. The edges of the Project Site are dominated by dense Himalayan blackberry (Rubus armeniacus) thickets and ruderal vegetation, in areas where the equipment could not access. A list of all observed onsite plant species is included in Table 1.

3.3.1 Soils

According to the Natural Resource Conservation Service, two soil units, or types, have been mapped on the Project Site (NRCS 2021): Goldridge fine sandy loam, 2 to 9 Percent Slopes, representing approximately 21% of the on-site soils, and Sebastopol sandy loam, 2 to 9% slopes, representing approximately 79% of the onsite soils. Goldridge fine sandy loam is listed as a hydric soil on the California Hydric Soils List for Sonoma County; Sebastapol sandy loam is not a listed hydric soil.

4 POTENTIAL IMPACTS TO SPECIAL-STATUS SPECIES

4.1 APPLICABLE LAWS

Special-status species include species considered to be rare by federal and/or state resource agencies (USFWS, National Marine Fisheries Service (NMFS), CDFW) and/or the scientific community (CNPS) and are accordingly legally protected pursuant to the federal, state, and/or local laws described below in addition to CEQA.

4.1.1 Endangered Species Act of 1973

The Endangered Species Act of 1973 (referred to as the Federal Endangered Species Act [FESA]) prohibits the "take" of any wildlife species listed by the USFWS or NMFS (collectively referred to as the Services) as threatened or endangered, including the destruction of habitat that could hinder species recovery. The term "take" is defined by FESA as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct, with habitat protected under the "harm" and "harass" definitions. The USFWS and NMFS oversee the implementation of FESA (50 Code of Federal Regulations (CFR) § 402.7, Section 305(b)(4)(B)) and have regulatory authority over listed plants, wildlife, and fish. When species are listed as endangered or threatened under FESA, the federal government is also directed to designate critical habitat for these species. To remain compliant with the FESA, federal agencies, such as USACE, are required to consult with the resource agencies prior to issuance of a permit if a project may adversely affect a federally listed species. If USACE is able to determine the project would have no effect on a listed species (when there is no potential for presence of a listed species), no additional consultation is required.

The USFWS and NMFS administer the FESA and authorize exceptions to the take provisions through issuance of Biological Opinions in consultation with the federal action agency (e.g., USACE or the Federal Emergency Management Agency). The USFWS has primary responsibility for terrestrial and freshwater organisms, whereas the responsibilities of the NMFS are mainly marine wildlife, such as whales, and anadromous fish, such as salmon.

4.1.2 Migratory Bird Treaty Act (MBTA)

The MBTA of 1918 (16 United States Code (U.S.C.) 703-712; Ch. 128; July 13, 1918; 40 Stat. 755; as amended in 1936; 1960, 1968, 1969, 1974, 1978, 1986, and 1998) (between the United States, Canada, Mexico, and Japan) prohibits the take (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct) of any migratory bird or any part, nest, or egg of any such bird. The USFWS issues permits for take of migratory birds related to scientific collecting, banding and marking, falconry, raptor propagation, depredation, import, export, taxidermy, waterfowl sale and disposal, and special purposes.

4.1.3 California Endangered Species Act (CESA)

The CESA prohibits the "take" of any wildlife species listed as endangered and threatened by the State of California. The term "take" is defined by Fish and Game Code Section 86 as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill. Section 2090 of the CESA requires state agencies to comply with regulations for protection and recovery of listed species and to promote conservation of these species. CDFW administers the CESA and authorizes exceptions to the take provisions through Section 2081 agreements (Incidental Take Permits) (except for designated "fully protected species"). Regarding rare plant species, the CESA defers to the California Native Plant Protection Act of 1977. Species that the California Fish and Game Commission has noticed as being under review for listing by CDFW are likewise given full CESA protection.

4.1.4 California Native Plant Protection Act and California Fish and Game Code (Plants)

The CNPS designates California Rare Plants through a ranking system. Ranks 1A, 1B, and 2 meet the definitions established in Section 1901, Chapter 10 (Native Plant Protection Act of 1977) or Sections 2062 and 2067 of the CESA and are eligible for state listing. Some Rank 3 and 4 plants may fall under Section 15380 of the CEQA Guidelines.

4.1.5 California Fish and Game Code (Fully Protected Species)

The State of California designated 37 species of wildlife that were rare or faced possible extinction with the classification of Fully Protected in the 1960s to provide additional protection to those species. To provide additional protections for wildlife that is rare or faces potential extinction, California Fish and Game Code Sections 3511, 4700, 5050, and 5515 designate "fully protected" status for specific birds, mammals, reptiles, amphibians, and fish. Fully protected species cannot be taken or possessed at any time and no licenses or permits can be issued for their take. Exceptions are established for scientific research collection, relocation of the bird species for the protection of livestock, and take resulting from recovery activities for state-listed species.

4.1.6 California Fish and Game Code (Birds)

California Fish and Game Code Section 3503 prohibits the take of nest or eggs of any bird. Raptors and other fully protected bird species are further protected in Sections 3503.5 and 3511, which state that these species or parts thereof may not be taken or possessed at any time.

4.1.7 CDFW Species of Special Concern

A species of special concern is an administrative designation given by CDFW to a native species that meets one or more of the following criteria: is extirpated from the state; is federally (but not state) listed; is experiencing, or formerly experienced, population declines or range restrictions; or has naturally small populations at high risk of declines. While this designation carries no legal status, CEQA Guidelines Section 15380 clearly indicates that species of special concern should be included in an analysis of project impacts.

4.2 METHODOLOGY

Information about special status species that could occur on the Project site was obtained from the following sources:

- CNDDB RareFind 5 (CDFW 2021; CDFW 2023)
- CNPS Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2023)
- Existing literature as cited in the text

The CNDDB was used to query all special-status species with known occurrences within 3 miles of the Project site. A query of the CNPS Inventory of Rare, Threatened, and Endangered Plants of California was conducted for state and federally listed and candidate species, as well as CNPS-ranked species known to occur within the same U.S. Geological Survey 7.5-Minute quadrangle (quad) as the Project site (Sebastopol quad) and/or one or more of the 8 quads surrounding the Project site, to determine additional special-status plants with potential to occur on the Project site.

The species identified in these searches were compiled in tables (Appendix A) and evaluated for likelihood of occurrence on the Project site. The potential for species to be adversely affected by the Project was classified as high, moderate, low, or none using the following definitions:

- **High:** The potential for a species to occur was considered high when the Project site was located within the range of the species, recorded observations were identified within known dispersal distance of the Project site, and suitable habitat was present on the Project site.
- **Moderate:** The potential for a species to occur was considered moderate when the Project site was located within the range of the species, recorded observations were identified nearby but outside known dispersal distance of the Project site, and suitable habitat was present on the Project site. A moderate classification was also assigned when recorded observations were identified within known dispersal distance of the Project site but habitat on the Project site was of limited or marginal quality.

- **Low:** The potential for a species to occur was considered low when the Project site was within the range of the species, but no recorded observations within known dispersal distance were identified, and habitat on the Project site was limited or of marginal quality. The potential for a species to occur was also classified as low when the Project site was located at the edge of a species' range and recorded observations were extremely rare, but habitat on the Project site was suitable.
- **None:** The potential for a species to occur was considered none when a species was not expected to occur within or adjacent to the Project site due to lack of suitable habitat and recorded observations within dispersal distance from the Project site.

4.3 SPECIAL-STATUS PLANTS IN VICINITY OF THE PROJECT SITE

According to the CNDDB and the CNPS Inventory of Rare, Threatened, and Endangered Plants of California, a total of 39 special-status plant species are known to occur in the vicinity of the Project site. All of these species require specialized habitats that *do not* occur within the Project site's ruderal and orchard vegetation communities, including chapparal, bogs and fens, marshes and swamps, meadows and seeps, riparian, coastal habitats, woodlands and forests. A brief description of each of these species is included within Appendix A (Table A-1), including the species' status, habitat, and probability of occurring on the Project site. No special-status plants have been observed onsite during general surveys.

4.4 SPECIAL-STATUS WILDLIFE IN VICINITY OF THE PROJECT SITE

According to the CNDDB and existing literature, a total of 7 special-status wildlife species are known to occur within 3 miles of the Project site. A brief description of each of these species is included in Appendix A (Table A-2), including the species' status, habitat, and probability of occurring within the Project site.

Due to lack of suitable habitat, all of the regionally known special-status wildlife species identified as occurring in the vicinity of the Project site are not expected to occur on the Project site. The routinely disturbed and actively managed ruderal and orchard habitats on the Project site do not provide necessary habitat components for these special-status species, which require the following habitat types:

- streams/rivers (Coho salmon - Central California Coast Evolutionary Significant Unit [*Oncorhynchus kisutch*], steelhead - Central California Coast Distinct Population Segment [*Oncorhynchus mykiss irideus*] and California freshwater shrimp [*Syncaris pacifica*])
- marshes/lagoons or emergent wetlands (tri-colored blackbird [*Agelaius tricolor*])

- habitats adjacent to ponds and/or streams (California giant salamander [*Dicamptodon ensatus*], western pond turtle [*Emys marmorata*], and California red-legged frog [*Rana draytonii*])
- grasslands adjacent to seasonal wetlands and ponds on the Santa Rosa Plain (California tiger salamander [*Ambystoma californiense*])

4.4.1 Special-Status Birds

The ruderal habitat and the onsite trees provide suitable nesting habitat for a variety of birds including passerines and raptors. No nests were observed onsite, however, owing to the mobile nature of birds and the seasonality of their nesting cycle, and in light of the presence of abundant suitable nesting habitat onsite, it is possible that birds could nest on the Project site during future nesting seasons.

4.5 IMPACT ASSESSMENT

4.5.1 Special-Status Birds

As part of site preparation activities, the entire Project site (with the exception of locations where trees are to be protected in-place) would be graded and compacted, and onsite shrubs and trees would be removed, resulting in permanent impacts to suitable nesting bird habitat. While it is unlikely that the Project would result in take of individual birds, active nests (i.e., nests with viable eggs and/or chicks) may be affected by Project-related activities that result in nest abandonment or destruction.

Implementation of the Mitigation Measure BIO-1, which requires preconstruction nesting bird surveys as well as monitoring of nests observed onsite until a qualified biologist determines that nesting is complete and young have fledged, would minimize potential for adverse effects on nesting birds. Accordingly, while Project implementation could result in impacts to special-status birds, these impacts would be reduced to a level considered less than significant pursuant to CEQA.

5 POTENTIAL IMPACTS TO SPECIAL-STATUS HABITATS

5.1 APPLICABLE LAWS

Aquatic resources and special status species habitats are regulated by state and federal resource agencies (USACE, California State Water Resources Control Board [SWRCB], and CDFW) and are accordingly legally protected via the federal and/or state laws defined below in addition to CEQA.

5.1.1 Section 404 Clean Water Act (CWA)

Section 404 of the CWA, administered by USACE, establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including open water. Per Section 404, a permit is required prior to discharge of fill material into waters of the United States, unless the activity is exempt from Section 404 regulation.

Waters of the United States generally include tidal waters, lakes, ponds, rivers, streams (including intermittent streams), and wetlands. Other waters are non-tidal, perennial, and intermittent watercourses and tributaries to such watercourses [33 C.F.R. 328.3(a), 51 F.R. 41250, November 13, 1986].

5.1.2 National Pollutant Discharge Elimination System (NPDES) Permit Program

The NPDES Permit Program, also authorized by the CWA, controls water pollution by regulating point sources (discrete conveyances such as pipes or constructed ditches) that discharge pollutants into waters of the United States. The implementation of this federal program has been charged to the State of California for implementation through the SWRCB and Regional Water Quality Control Boards (Regional Water Board). In California, NPDES permits are also referred to as waste discharge requirements (WDR) that regulate discharges to waters of the United States.

Also implemented by the Regional Water Board is the Municipal Storm Water Permitting Program, which regulates storm water discharges from municipal separate storm sewer systems (MS4s). The MS4 Permit Program was established to restore and maintain the chemical, physical, and biological integrity waters of the U.S./State and reduce/eliminate storm water pollution.

5.1.3 Section 401 Clean Water Act (CWA)

The SWRCB and its nine regional water boards have been charged with the protection and enhancement of water quality in the state of California. Pursuant to the Porter Cologne Water Quality Control Act (Porter Cologne), waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state." This is generally taken to include all waters of the U.S., all surface waters not considered to be waters of the U.S. (non-jurisdictional wetlands), groundwater, and territorial seas (with territorial boundaries extending 3.0 nautical miles beyond outermost islands, reefs, and rocks and includes all waters between the islands and the coast). Per Porter Cologne, the Regional Water Board has authority to regulate discharges of fill and dredged material into Waters of the State.

5.1.4 FESA

When species are listed as endangered or threatened under FESA, the federal government is also directed to designate critical habitat for these species. Critical habitat is designated by the Services to protect areas that are essential to the survival of federally listed wildlife species. Under FESA, critical habitat is defined as a "specific geographic areas that contain features essential to the conservation of an endangered or threatened species and that may require special management and protection." When designating critical habitat, the Services focused on the principal biological or physical features in the defined area that are essential to the conservation of the listed species. These features are termed primary constituent elements. The 2016 critical habitat regulations (81 FR 7214, Feb. 11, 2016, codified at 50 CFR 402.02) replaced this term with physical or biological features (PBFs). The FESA requires Federal agencies to use their authorities to conserve endangered and threatened species and to consult USFWS and/or NMFS about actions that they carry out, fund, or authorize to ensure that they will not destroy or adversely modify critical habitat.

5.2 METHODOLOGY

Information about aquatic resources and special-status habitats that could occur on the Project site was obtained from the following sources:

- CNDDB RareFind 5 (CDFW 2021; CDFW 2023
- USFWS Critical Habitat shapefiles
- Existing literature as cited in the text

The CNDDB was used to query all special-status habitats with known occurrences within 3 miles of the Project site. USFWS shapefiles were used to map critical habitat in the vicinity of the Project site.

5.3 AQUATIC RESOURCES

The Project site does not support any potentially jurisdictional WOTUS under the jurisdiction of the USACE pursuant to the CWA (Section 404) and under the jurisdiction of the State Water Quality Control Board pursuant to the CWA (Section 401) and Porter Cologne.

5.4 CRITICAL HABITAT

The Project site does not occur within or near any designated critical habitat. A single designated critical habitat unit occurs approximately 1.2 miles east of the Project site. This critical habitat was designated for the Sonoma County California tiger salamander Distinct Population Segment (DPS) in 2011 (Federal Register 76:54346-54372)(Figure 3. Critical Habitat Map).

5.5 WILDLIFE CORRIDORS AND NURSERY SITES

The Project site does not act as a wildlife corridor or a nursery site. A wildlife corridor is a portion of land that adjoins two or more larger areas of similar natural environment, often connecting wildlife populations separated by natural or created activities, disturbances, or structures. Wildlife corridors are used for dispersal and migration of wildlife, allowing for genetic exchange, population growth, and access to larger stretches of suitable habitats, and reducing habitat fragmentation. While the Project site provides marginal resting and roosting habitat, it is isolated from adjacent parcels by development and the heavily trafficked Highway 12 and Sebastopol Road.

A nursery site is an area where juveniles occur at higher densities, avoid predation more successfully, or grow faster there than in a different habitat (Beck et. al. 2001). The Project site exhibits no evidence of being a nursery site. While suitable nesting bird habitat occurs onsite, the site's small size, disturbed condition, and location within a developed and disturbed setting preclude its use as a nursery location.

5.6 SENSITIVE NATURAL COMMUNITIES

No Sensitive Natural Communities occur on the Project site. According to the CNDDB, three Sensitive Natural Communities occur in the vicinity of the Project site: Northern Hardpan Vernal Pool, Northern Vernal Pool, and Coastal and Valley Freshwater Marsh. However, there is no evidence for any of these Sensitive Natural Communities on site. No vernal pools or marshes occur on the Project site, and these Sensitive Natural Communities likewise do not occur onsite.

Coast Live Oak, a component of Coast Live Oak Woodland and Forest Sensitive Natural Community (Code 71.060.00), occurs on the Project site. The collective definition of Coast Live Oak Woodland and Forest provided by CNPS (CNPS 2023b) includes coast live oak as a dominant or co-dominant in the upland tree canopy with big leaf maple (*Acer macrophyllum*), madrone (*Arbutus menziesii*), California black walnut (*Juglans californica*), blue oak (*Quercus douglasii*), Engelmann oak (*Quercus engelmannii*), California black oak (*Quercus kelloggii*), valley oak, and California bay (*Umbellularia californica*), with a relative canopy cover of 50%. Coast live oaks do not make up 50% or greater of the canopy cover in areas where they occur on the Project site. Accordingly, the plant community associated with the Coast Live Oak Woodland and Forest community does not occur onsite.

Waters of the State are generally likewise identified as a sensitive natural community by CDFW, however there are no waters of the State that occur on the Project site.

5.7 IMPACT ASSESSMENT

5.7.1 Waters of the U.S./State

Project implementation would not result in impacts to waters of the U.S./State.

5.7.2 Critical Habitat

Project implementation would not result in impacts to designated critical habitat.

5.7.3 Wildlife Corridors and Nursery Sites

Project implementation would not result in impacts to wildlife corridors or nursery sites.

5.7.4 Sensitive Natural Communities

Project implementation would not result in impacts to Sensitive Natural Communities.

6 APPLICABLE LOCAL PLANS, ORDINANCES, AND LAWS

6.1 SEBASTOPOL GENERAL PLAN 2035

The General Plan 2035 was adopted by the City of Sebastopol in 2016. The General Plan is the guiding document for development within the City of Sebastopol and addresses issues related to physical development, growth management, transportation services, public facilities, community design, energy efficiency, and conservation of resources through Goals and Policies that are required for projects within the City of Sebastopol Planning Area.

Additional local natural resource conservation and land use policies presented within the 2035 General Plan are applicable to the proposed Project. Only policy measures and recommendations regarding impacts to natural resources and deemed pertinent to the proposed Project are addressed in this section. Policies regarding specific project requirements such as County implementation of the review process and specific action recommendations for local, state, or federal agencies are not addressed below. Similarly, policy measures and recommendations that are clearly referring to projects or activities that are not related to the proposed Project (e.g., development on hillsides, filling and dredging of lagoons, etc.) are not addressed below.

6.1.1 Goal COS 6: Conserve, Protect, and Enhance Trees and Native Vegetation

Policy COS 6-1
Conserve existing native vegetation where possible and integrate regionally native plant species into development and infrastructure projects where appropriate.

A total of 41 trees and additional understory vegetation will be removed as part of site preparation, both native and non-native species will be included. The city of Sebastopol prescribes a replacement ratio of 2:1 for native trees with a d.b.h of at least 10 inches and non-native trees with a d.b.h of at least 20 inches. Implementation of Mitigation Measure BIO-2 below, which would include replacement of trees removed from the Project site would ensure that the Project would not result in a conflict with General Plan Policy COS 6-1.

Policy COS 6-2
Require the use of primarily locally sourced native and drought-tolerant plants and trees for landscaping on public projects, if feasible, and strongly encourage their use for landscaping on private projects.

The trees to be planted for landscaping purposes on the Project site will be native species. Landscape plans shall be approved by the City prior to issuance of building permits.

Policy COS 6-3
Avoid removal of large, mature trees that provide wildlife habitat or contribute to the visual quality of the environment through appropriate project design and building siting. If full avoidance is not possible, prioritize planting of replacement trees on-site over off-site locations. Replacement trees for high-quality mature trees should generally be of like kind, and provide for comparable habitat functionality, where appropriate site conditions exist.

A total of 41 trees as defined by the City of Sebastopol are to be removed from the project site. Implementation of Mitigation Measure BIO-2 below, which would include replacement of trees removed from the Project site would ensure that the Project would not result in a conflict with General Plan Policy COS 6-3.

Policy COS 6-4
Facilitate the preservation of existing trees, the planting of additional street trees, and the replanting of trees lost through disease, new construction or by other means.

A total of 41 trees as defined by the City of Sebastopol are to be removed from the project site. Implementation of Mitigation Measure BIO-2 below, which would include replacement of trees removed from the Project site would ensure that the Project would not result in a conflict with General Plan Policy COS 6-4.

Policy COS 6-5
Require new development to incorporate trees in landscape plans.

Native trees shall be incorporated into the landscaping plans of the development. Landscape plans shall be approved by the City prior to issuance of building permits.

6.2 SEBASTOPOL TREE ORDINANCE

The City of Sebastopol adheres to a tree ordinance (Municiple Code: Chapter 8.12 – Trees Protection) (Tree Ordinance) in order to regulate the removal of large and/or significant trees (which include heritage, protected, or street trees). For undeveloped properties, the removal, alteration (i.e., trimming), or relocation of trees 4-inch or greater in diameter requires a tree removal permit. Further, the tree ordinance requires that proposed development preserve and protect heritage trees present onsite to the greatest extent possible.

An arborist survey was conducted on the Project site by Horticultural Associates in October 2022 (Appendix B). A total of 133 trees with a diameter of 6-inches or greater were identified onsite. Project implementation would require removal of 16 Coast Live Oak, 1 valley oak, 14 Coast redwood, 2 Black Oak, 5 Douglas Fir, and 3 ornamental trees. Orchard trees such as apple and pears are not included in the arborist survey as they are not protected species and

most are generally over-mature, declining, decayed or dying back. The City of Sebastopol prescribes tree replacement for all trees removed. Implementation of Mitigation Measure BIO-2 below, which would include replacement of trees removed from the Project site would ensure that the Project would not result in a conflict with the Tree Ordinance.

7 MITIGATION MEASURES

Potential impacts associated with implementation of the proposed Project are addressed below. With implementation of the specific mitigation measures recommended below, all Project-related impacts to natural resources can be reduced to a level considered less than significant.

7.1 BIOLOGICAL IMPACT 1: NESTING BIRDS

The onsite vegetation and structures provide suitable nesting habitat for various birds protected pursuant to the Migratory Bird Treaty Act and California Fish and Game Code, Sections 3503, 3503.5, and 3511. Project-related activities could result in take of protected birds in the form of disturbance causing nest abandonment or destruction. The mitigation measure presented below would reduce these impacts to a level considered less than significant pursuant to the CEQA.

7.1.1 Mitigation Measure BIO-1

Vegetation removal, ground disturbance, or structure removal (collectively referred to as construction activities) shall be scheduled to avoid the bird nesting season to the greatest extent possible. The nesting season for most birds and raptors in the San Francisco Bay Area is February 1 thought September 15.

If construction activities cannot be scheduled to occur between September 16 and January 31, pre-construction surveys for nesting birds and raptors shall be completed by a qualified ornithologist or biologist to ensure that no nests shall be disturbed during project implementation. This survey shall be completed no more than 14 days prior to the initiation of construction activities. During this survey, the qualified ornithologist/biologist shall inspect all suitable nesting habitat on the Project site and within the zone of influence (the area immediately surrounding the Project site that supports suitable nesting habitat that could be impacted by the proposed Project due to visual or auditory disturbance associated with the removal of vegetation and construction activities scheduled to occur during the nesting season)

If an active nest is found sufficiently close to the work areas to be disturbed by construction activities, the qualified ornithologist/biologist, in consultation with the California Department of Fish and Wildlife, shall determine the extent of a construction free buffer zone to be established around the nest, typically 250 feet, to ensure than protected bird and raptor nests shall not be disturbed during project construction. This buffer shall remain in place until such a time as the young have been determined (by a qualified ornithologist/biologist) to have fledged.

Prior to the initiation of construction activities, the qualified ornithologist/biologist shall submit a report indicating the results of the survey and any designated buffer zones to the satisfaction of the Director of the Planning, Building, and Code Enforcement or the Director's designee.

7.2 BIOLOGICAL IMPACT 2: TREES

A total of 41 trees would be removed from the Project site as a result of Project implementation. As such, implementation of the Project has the potential to conflict with the City of Sebastopol Tree Ordinance. The following mitigation measure would ensure that the Project does not conflict with the City of Sebastopol Tree Ordinance.

7.2.1 Mitigation Measure BIO-2

All protected ordinance-sized trees removed from the Project site shall be replaced as appropriate for the size class and species of the tree removed, based on the City of Sebastopol tree mitigation requirements for native, non-native, and orchard trees. Replacement ratios for individual trees to be removed is 2:1.). Replacement trees shall be either planted onsite or at a City-approved offsite location, or a fee of $75 per replacement tree would be provided to the City of Sebastopol tree fund in-lieu off-site tree planting in the community. If onsite/offsite planting is implemented, a replacement tree planting plan shall be approved by the City along with landscape plans prior to Project implementation.

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Table A-1. Special-Status Plant Species Known to Occur in the Vicinity of the Project Site

Common Name	Scientific Name	Status	Habitat Type/Components	Occurrence Information	Probability of Occurring on the Project Site
Sonoma alopecurus	*Alopecurus aequalis var. sonomensis*	Federally Endangered CNPS Rank 1B.1	Freshwater marshes and swamps, and riparian scrub	This species has been recorded on the same USGS quad as the Project site (Sebastopol)	None. No marshes or swamps or riparian habitats occur on or near the Project site. The Project site does not provide suitable habitat for this species.
Vine Hill Manzanita	*Arctostaphylos densiflora*	State Endangered CNPS Rank 1B.1	Acid marine sand chaparral	This species has been recorded on the same USGS quad as the Project site (Sebastopol)	None. No chaparral occurs on or near the Project site. The Project site does not provide suitable habitat for this species.
Rincon Ridge Manzanita	*Arctostaphylos stanfordiana ssp. decumbens*	CNPS Rank 1B.1	Rhyolitic chaparral and cismontane woodland	CNPS Inventory 9-Quad Search	None. No woodlands or chaparral occur on or near the Project site. The Project site does not provide suitable habitat for this species.
Sonoma Sunshine	*Blennosperma bakeri*	Federally Endangered California Endangered CNPS Rank 1B.1	Mesic valley and foothill grassland, and vernal pools	The closest record for this species occurs approximately 1.4 miles west of the Project site (CNDDB Occurrence No. 37).	None. The project site does not provide suitable mesic habitat for this species.
Bolander's Reed Grass	*Calamagrostis bolanderi*	CNPS Rank 4.2	Bogs and fens, broadleafed upland forest, closed-cone coniferous forest, coastal scrub, mesic meadows and seeps, freshwater marshes and swamps, and North Coast coniferous forest	CNPS Inventory 9-Quad Search	None. No bogs, fens, forests, scrub, meadows, seeps, or marshes/swamps occur on or near the Project site. This Project site does not provide suitable habitat for this species.
Thurber's Reed Grass	*Calamagrostis crassiglumis*	CNPS Rank 2B.1	Mesic coastal scrub and freshwater marshes and swamps	CNPS Inventory 9-Quad Search	None. No marshes/swamps or scrub habitats occur on or near the Project site. This Project site does not provide suitable habitat for this species.
Johnny-nip	*Castilleja ambigua var. ambigua*	CNPS Rank 4.2	Coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, valley and foothill grassland, and margins of vernal pools	CNPS Inventory 9-Quad Search	None. The Project site does not provide suitable habitat for this species.
Pitkin Marsh Paintbrush	*Castilleja uliginosa*	CNPS Rank 1A	Freshwater marshes and swamps	CNPS Inventory 9-Quad Search	None. No marshes/swamps occur on or near the Project site. This Project site does not provide suitable habitat for this species.
Rincon Ridge Ceanothus	*Ceanothus confusus*	CNPS Rank 1B.1	Closed-cone coniferous forest, chaparral, and cismontane woodland	CNPS Inventory 9-Quad Search	None. No forests, woodlands, or chaparral occur on or near the Project site. The Project site does not provide suitable habitat for this species.

Table A-1. Special-Status Plant Species Known to Occur in the Vicinity of the Project Site

Common Name	Scientific Name	Status	Habitat Type/Components	Occurrence Information	Probability of Occurring on the Project Site
Vine Hill Ceanothus	*Ceanothus foliosus var. vineatus*	CNPS Rank 1B.1	Chaparral	CNPS Inventory 9-Quad Search	None. No chaparral occurs on or near the Project site. The Project site does not provide suitable habitat for this species.
Glory Brush	*Ceanothus gloriosus var. exaltatus*	CNPS Rank 4.3	Chaparral	CNPS Inventory 9-Quad Search	None. No chaparral occurs on or near the Project site. The Project site does not provide suitable habitat for this species.
Holly-leaved Ceanothus	*Ceanothus purpureus*	CNPS Rank 1B.2	Chaparral and cismontane woodland	CNPS Inventory 9-Quad Search	None. No woodlands or chaparral occur on or near the Project site. The Project site does not provide suitable habitat for this species.
Sonoma spineflower	*Chorizanthe valida*	Federally Endangered State Endangered CNPS Rank 1B.1	Sandy coastal prairie	This species has been recorded on the same USGS quad as the Project site (Sebastopol)	None. The Project site does not occur within the coastal region and does not provide suitable habitat for this species.
Vine Hill clarkia	*Clarkia imbricata*	Federally Endangered State Endangered CNPS Rank 1B.1	Chaparral, and valley and foothill grassland	This species has been recorded on the same USGS quad as the Project site (Sebastopol)	None. The highly disturbed and actively managed nature of the Project site precludes presence of this species.
Peruvian dodder	*Cuscuta obtusiflora var. glandulosa*	CNPS Rank 2B.2	Chaparral (openings), cismontane woodland, and valley and foothill grassland	CNPS Inventory 9-Quad Search	None. While the ruderal habitat occurring on the Project site provide marginal habitat for this species, this species has not been observed onsite.
Golden larkspur	*Delphinium luteum*	Federally Endangered State Rare CNPS Rank 1B.1	Chaparral, coastal prairie, and coastal scrub	This species has been recorded on the same USGS quad as the Project site (Sebastopol)	None. No chapparal or coastal region habitats occur on or near the Project site. The Project site does not provide suitable habitat for this species.
Dwarf Downingia	*Downingia pusilla*	CNPS Rank 2B.2	Mesic valley and foothill grassland, and vernal pools	The closest record for this species occurs approximately 2.0 miles south of the Project site (CNDDB Occurrence No. 86).	None. The project site does not provide suitable mesic habitat for this species.
Swamp harebell	*Eastwoodiella californica*	CNPS Rank 1B.2	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, marshes and swamps, and North Coast coniferous forest	CNPS Inventory 9-Quad Search	None. The Project site does not provide suitable habitat for this species.
Slender cottongrass	*Eriophorum gracile*	CNPS Rank 4.3	Bogs and fens, meadows and seeps, and upper montane coniferous forest	CNPS Inventory 9-Quad Search	None. No bogs, fens, meadows, seeps, or forests occur on or near the Project site. The Project site does not provide suitable habitat for this species.

Table A-1. Special-Status Plant Species Known to Occur in the Vicinity of the Project Site

Common Name	Scientific Name	Status	Habitat Type/Components	Occurrence Information	Probability of Occurring on the Project Site
Fragrant fritillary	*Fritillaria liliacea*	CNPS Rank 1B.2	Cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland	CNPS Inventory 9-Quad Search	None. The highly disturbed and actively managed nature of the Project site precludes presence of this species.
Congested-headed hayfield tarplant	*Hemizonia congesta* ssp. *congesta*	CNPS Rank 1B.2	Valley and foothill grassland	The closest record for this species occurs approximately 1.0 mile west of the Project site (CNDDB Occurrence No. 27).	None. The highly disturbed and actively managed nature of the Project site precludes presence of this species.
Thin-lobed horkelia	*Horkelia tenuiloba*	CNPS Rank 1B.2	Broadleafed upland forest, chaparral, and valley and foothill grassland	CNPS Inventory 9-Quad Search	None. The highly disturbed and actively managed nature of the Project site precludes presence of this species.
Harlequin lotus	*Hosackia gracilis*	CNPS Rank 4B.2	Broadleafed upland forest, coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal prairie, coastal scrub, meadows and seeps, marshes and swamps, North Coast coniferous forest, and valley and foothill grassland	CNPS Inventory 9-Quad Search	None. The highly disturbed and actively managed nature of the Project site precludes presence of this species.
Coast iris	*Iris longipetala*	CNPS Rank 4B.2	Coastal prairie, lower montane coniferous forest, and meadows and seeps	CNPS Inventory 9-Quad Search	None. No prairies, forests, meadows, or seeps occur on or near the Project site. This Project site does not provide suitable habitat for this species.
Burke's goldfields	*Lasthenia burkei*	Federally Endangered State Endangered CNPS Rank 1B.1	Meadows and seeps (mesic), and vernal pools	The closest record for this species occurs approximately 1.1 miles northwest of the Project site (CNDDB Occurrence No. 28).	None. The Project site does not provide suitable mesic habitat for this species.
Baker's goldfields	*Lasthenia californica ssp. bakeri*	CNPS Rank 1B.2	Openings in closed-cone coniferous forest, coastal scrub, meadows and seeps, and marshes and swamps	CNPS Inventory 9-Quad Search	None. No forests, scrub, meadows, seeps, or marshes or swamps occur on or near the Project site. The Project site does not provide suitable habitat for this species.
Legenere	*Legenere limosa*	CNPS Rank 1B.1	Vernal pools	The closest record for this species occurs approximately 1.8 miles southwest of the Project site (CNDDB Occurrence No. 39).	None. No vernal pools occur on or near the Project site. The Project site does not provide suitable habitat for this species.

Table A-1. Special-Status Plant Species Known to Occur in the Vicinity of the Project Site

Common Name	Scientific Name	Status	Habitat Type/Components	Occurrence Information	Probability of Occurring on the Project Site
Pitkin marsh lily	*Lilium pardalinum* ssp. *pitkinense*	Federally Endangered State Endangered CNPS Rank 1B.1	Cismontane woodland, meadows and seeps, and freshwater marshes and swamps	This species has been recorded on the same USGS quad as the Project site (Sebastopol)	None. No woodlands, meadows, seeps, or marshes/swamps occur on or near the Project site. This Project site does not provide suitable habitat for this species.
Sebastopol meadowfoam	*Limnanthes vinculans*	Federally Endangered State Endangered CNPS Rank 1B.1	Vernally mesic meadows and seeps, valley and foothill grassland, and vernal pools	The closest record for this species occurs approximately 0.9 mile west of the Project site (CNDDB Occurrence No. 22).	None. The Project site does not provide suitable mesic habitat for this species
Marsh microseris	*Microseris paludosa*	CNPS Rank 1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grassland	The closest record for this species occurs approximately 2.7 miles south of the Project site (CNDDB Occurrence No. 20).	None. The highly disturbed and actively managed nature of the Project site precludes presence of this species.
Baker's navarretia	*Navarretia leucocephala ssp. bakeri*	CNPS Rank 1B.1	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools	The closest record for this species occurs approximately 0.9 mile west of the Project site (CNDDB Occurrence No. 21).	None. The highly disturbed and actively managed nature of the Project site precludes presence of this species.
Lobb's aquatic buttercup	*Ranunculus lobbii*	CNPS Rank 4B.2	Cismontane woodland, North Coast coniferous forest, valley and foothill grassland, and vernal pools	CNPS Inventory 9-Quad Search	None. The highly disturbed and actively managed nature of the Project site precludes presence of this species.
White beaked-rush	*Rhynchospora alba*	CNPS Rank 2B.2	Bogs and fens, meadows and seeps, and freshwater marshes and swamps	CNPS Inventory 9-Quad Search	None. No bogs, fens, meadows, seeps, or marshes/swamps occur on or near the Project site. This Project site does not provide suitable habitat for this species.
California beaked-rush	*Rhynchospora californica*	CNPS Rank 1B.1	Bogs and fens, lower montane coniferous forest, meadows and seeps, and freshwater marshes and swamps	CNPS Inventory 9-Quad Search	None. No bogs, fens, forests, meadows, seeps, or marshes/swamps occur on or near the Project site. This Project site does not provide suitable habitat for this species.
Brownish beaked-rush	*Rhynchospora capitellata*	CNPS Rank 2B.2	Lower montane coniferous forest, meadows and seeps, marshes and swamps, and upper montane coniferous forest	CNPS Inventory 9-Quad Search	None. No forests, meadows, seeps, or marshes/swamps occur on or near the Project site. This Project site does not provide suitable habitat for this species.
Round-headed beaked-rush	*Rhynchospora globularis*	CNPS Rank 2B.1	Freshwater marshes and swamps	CNPS Inventory 9-Quad Search	None. No marshes/swamps occur on or near the Project site. This Project site does not provide suitable habitat for this species.

Table A-1. Special-Status Plant Species Known to Occur in the Vicinity of the Project Site

Common Name	Scientific Name	Status	Habitat Type/Components	Occurrence Information	Probability of Occurring on the Project Site
Two-fork clover	*Trifolium amoenum*	Federally Endangered CNPS Rank 1B.1	Coastal bluff scrub and valley and foothill grassland (sometimes serpentinite)	An historic record for this species occurs in the vicinity of the Project site (CNDDB Occurrence No. 20).	None. The highly disturbed and actively managed nature of the Project site precludes presence of this species.
Saline clover	*Trifolium hydrophilum*	CNPS Rank: 1B.2	Mesic soils in marshes and swamps, valley and foothill grassland, and vernal pools	The closest record for this species occurs approximately 2.5 miles west of the Project site (CNDDB Occurrence No. 16).	None. The project site does not provide suitable mesic habitat for this species.
Oval-leaved viburnum	*Viburnum ellipticum*	CNPS Rank: 2B.3	Mesic soils in marshes and swamps, valley and foothill grassland, and vernal pools	CNPS Inventory 9-Quad Search	None. The project site does not provide suitable mesic habitat for this species.

Table A-2. Special-Status Wildlife Species Known to Occur in the Vicinity of the Project Site

Common Name	Scientific Name	Status	Habitat Type/Components	Occurrence Information	Probability of Occurring on the Project Site
Tri-colored Blackbird	*Agelaius tricolor*	California Candidate Endangered	Nests in emergent wetland with tall, dense cattails or tules, or thickets of willow, blackberry, or tall herbs	An historic record (1976) for this species is located at the Project site (CNDDB Occurrence No. 831).	None. Emergent wetlands do not occur on or near the Project site. The Project site does not provide suitable habitat for this species.
California Tiger Salamander	*Ambystoma californiense*	Federally Endangered California Threatened	Grasslands adjacent to seasonal wetlands and ponds	The closest record for this species occurs approximately 2 miles east of the Project site (CNDDB Occurrence No. 60).	None. The Project site occurs outside of the known range for this species.
California Giant Salamander	*Dicamptodon ensatus*	California Species of Special Concern	In or near streams in damp forests and riparian habitats	The closest record for this species is located approximately 2.8 miles northwest of the Project site (CNDDB Occurrence No. 221).	None. No damp forests or riparian habitats occur on or near the Project site. The Project site does not provide suitable habitat for this species.
Western Pond Turtle	*Emys marmorata*	California Species of Special Concern	A variety of habitats adjacent to permanent or nearly permanent water.	The closest record for this species is located approximately 1.2 mile east of the Project site (CNDDB Occurrence No. 682).	None. This Project site does not provide suitable habitat for this species.
Coho Salmon - Central California Coast ESU	*Oncorhynchus kisutch*	Federally Endangered	Spawn from streams and freshwater tributaries to estuarine and marine waters of the Pacific Ocean, from Punta Gorda, CA to Aptos Creek, including the San Francisco Bay and tributaries.	The closest record for this species is located approximately 3 miles northwest of the Project site (CNDDB Occurrence No. 25) in Mark West Creek.	None. No streams or rivers on the Project site. The Project site does not provide suitable habitat for this species.
California Red-Legged Frog	*Rana draytonii*	Federally Threatened California Species of Special Concern	Grassland and riparian habitats adjacent to creeks/streams with plunge pools or ponds	The closest record for this species is located approximately 2.4 miles south of the Project site (CNDDB Occurrence No. 742).	None. No streams or ponds occur on or near the Project site. The Project site does not provide suitable habitat for this species. Further, this species is not known to occur in Sebastopol.
California Freshwater Shrimp	*Syncaris pacifica*	Federally Endangered California Endangered	Perennially flowing streams with slow moving water and flat gradients	The closest record for this species is located approximately 1 mile southwest of the Project site (CNDDB Occurrence No. 9).	None. No perennially flowing streams or rivers occur on or near the Project site. The Project site does not provide suitable habitat for this species.

HORTICULTURAL
Associates

Consultants in Horticulture and Arboriculture

TREE PRESERVATION AND MITIGATION REPORT

Gravenstein Village
Sebastopol, CA

Prepared For:

City Ventures
444 Spear Street, Suite 200
San Francisco, CA 94105

Prepared by:

John C. Meserve
International Society of Arboriculture
ISA Certified Arborist, WE #0478A
ISA Qualified Tree Risk Assessor

July 18, 2019

HORTICULTURAL Associates

Consultants in Horticulture and Arboriculture
P.O Box 1261, Glen Ellen, CA 95442

July 18, 2019

Samantha Hauser
City Ventures
444 Spear Street, Suite 200
San Francisco, CA 94105

Re: Updated *Tree Preservation and Mitigation Report*, Gravenstein Village, Sebastopol, California

Samantha,

Attached you will find our updated Tree Preservation and Mitigation Report for the above noted site in Sebastopol. A total of 133 trees were evaluated, and this includes all protected trees over 10 inches in trunk diameter and non-protected trees between 6 and 9 inches in diameter.

The Sebastopol Tree Ordinance requires protected trees 10 inches and greater to be included in an Arborist Report. We have also included trees 6 inches to 9 inches to be thorough. Trees of this smaller size are not protected, and 42 of the 133 in this report are in this smaller size category.

There are a number of large Acacias at this site, and this species was also not included in our Inventory because it is found on the Sebastopol 'escaped exotic' list and does not require retention.

This site is a remnant apple orchard which originated in the early 1900's, according to CEQA documents prepared in the late 1990's. Apples are also not a protected species, and most are generally over-mature, declining, decayed, or dying back. No apples were included in this Inventory.

Each tree is identified in the field with a numbered aluminum tag placed on the trunk at approximately eye level.

All trees in this report were evaluated and documented for species, size, health, and structural condition. The *Tree Inventory Chart* also includes our evaluation of the expected impacts of the proposed development and based on that impact a recommendation for preservation or removal is provided. The *Tree Location Plan* shows the location and numbering sequence of all evaluated trees.

~ Voice 707-935-3911 Fax 707-935-7103 ~

EXISTING SITE CONDITIONS SUMMARY

The project site consists of an abandoned apple orchard bordered on one side by a walking path, three sides by residential development, one side by a City street, and one side by commercial development.

EXISTING TREE SUMMARY

Native species present include Coast Live Oak, Black Oak, Douglas Fir, and Valley Oak.

California native species that have been planted as ornamentals include Coast Redwood, White Alder, and Incense Cedar.

Non-native species other than Acacia and Apple include Honey Locust, Pine, Deodar Cedar, and Chinese Pistache.

Some large off-site trees that overhang the site were also included in this inventory.

Please feel free to contact me if you have questions or if additional discussion is required.

Regards,

John C. Meserve
Consulting Arborist and Horticulturist
ISA Certified Arborist, WE #0478A
ISA Tree Risk Assessment Qualified

KEY TO TREE INVENTORY CHART

KEY TO TREE INVENTORY CHART

Gravenstein Village
Healdsburg, California

Tree Number

Each tree has been identified in the field with an aluminum tag and reference number. Tags are attached to the trunk at approximately eye level and the *Tree Location Plan* illustrates the location of each numbered tree.

Species

Each tree has been identified by genus, species and common name. Many species have more than one common name.

Trunk

Each trunk has been measured, to the nearest one-half inch, to document its diameter at 4 feet above adjacent grade. Trunk diameter is a good indicator of age, and is commonly used to determine mitigation replacement requirements.

Height

Height is estimated in feet, using visual assessment.

Radius

Radius is estimated in feet, using visual assessment. Since many canopies are asymmetrical, it is not uncommon for a radius estimate to be an average of the canopy size.

Health

The following descriptions are used to rate the health of a tree. Trees with a rating of 4 or 5 are very good candidates for preservation and will tolerate more construction impacts than trees in poorer condition. Trees with a rating of 3 may or may not be good candidates for preservation, depending on the species and expected construction impacts. Trees with a rating of 1 or 2 are generally poor candidates for preservation.

(5) Excellent - health and vigor are exceptional, no pest, disease, or distress symptoms.

(4) Good - health and vigor are average, no significant or specific distress symptoms, no significant pest or disease.

(3) Fair - health and vigor are somewhat compromised, distress is visible, pest or disease may be present and affecting health, problems are generally correctable.

(2) Marginal - health and vigor are significantly compromised, distress is highly visible and present to the degree that survivability is in question.

(1) Poor - decline has progressed beyond the point of being able to return to a healthy condition again. Long-term survival is not expected. This designation includes dead trees.

Structure

The following descriptions are used to rate the structural integrity of a tree. Trees with a rating of 3 or 4 are generally stable, sound trees which do not require significant pruning, although cleaning, thinning, or raising the canopy might be desirable. Trees with a rating of 2 are generally poor candidates for preservation unless they are preserved well away from improvements or active use areas. Significant time and effort would be required to reconstruct the canopy and improve structural integrity. Trees with a rating of 1 are hazardous and should be removed.

(4) Good structure - minor structural problems may be present which do not require corrective action.

(3) Moderate structure - normal, typical structural issues which can be corrected with pruning.

(2) Marginal structure - serious structural problems are present which may or may not be correctable with pruning, cabling, bracing, etc.

(1) Poor structure - hazardous structural condition which cannot be effectively corrected with pruning or other measures, may require removal depending on location and the presence of targets.

Expected Impacts

Considering the proximity of construction activities, type of activities, tree species, and tree condition - the following ratings are used to estimate the amount of impact on tree health and stability. Most trees will tolerate a (1) rating, many trees could tolerate a (2) rating with careful consideration and mitigation, but trees with a (3) rating are poor candidates for preservation due to their very close proximity to construction or because they are located within the footprint of construction and cannot be preserved.

(3) A significant impact on long term tree integrity can be expected as a result of proposed development.

(2) A moderate impact on long term tree integrity can be expected as a result of proposed development.

(1) A minor impact on long term tree integrity can be expected as a result of proposed development.

(0) No impact is expected

Recommendations

Recommendations are provided for removal or preservation. For those being preserved, protection measures and mitigation procedures to offset impacts and improve tree health are provided.

(1) Preservation appears to be possible.

(2) Removal is required due to significant development impacts.

(3) Removal is recommended due to poor health or hazardous structure.

(4) Removal is required due to significant development impacts and poor existing condition.

(5) Removal is recommended due to poor species characteristics.

(6) Install temporary protective fencing at the edge of the dripline, or edge of approved construction, prior to beginning grading or construction. Maintain fencing in place for duration of all construction activity in the area.

(7) Maintain existing grade within the fenced portion of the dripline. Route drainage swales and all underground work outside the dripline.

(8) Place a 4" layer of chipped bark mulch over the soil surface within the fenced dripline prior to installing temporary fencing. Maintain this layer of mulch throughout construction.

(9) Prune to clean, raise, or provide necessary clearance. Prune to reduce branches that are over-loaded, over-extended, largely horizontal, arching, or have foliage concentrated near the branch ends, per International Society of Arboriculture Pruning Standards.

Pruning to occur by, or under the supervision of, an Arborist certified by the International Society of Arboriculture. Pruning Standards are attached to this report.

TREE INVENTORY CHART

TREE INVENTORY
Gravenstein Village
Sebastopol, CA

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1-5)	Structure (1-4)	Not Protected	Special Notes	Expected Impact	Recommendations
1	*Quercus agrifolia*	Coast Live Oak	7+9	18	12	4	3	X		3	2
2	*Quercus agrifolia*	Coast Live Oak	8.5+multiple	20	20	4	3	X		3	2
3	*Quercus agrifolia*	Coast Live Oak	10.5+13	25	20	4	3			1	1, 6, 7, 8, 9
4	*Quercus agrifolia*	Coast Live Oak	20.5	35	20	4	3			1	1, 6, 7, 8, 9
5	*Quercus agrifolia*	Coast Live Oak	7.5+5+4+4	15	9	4	3	X		1	1, 6, 7, 8, 9
6	*Quercus agrifolia*	Coast Live Oak	11.5+10+7.5+8	20	18	4	3			3	2
7	*Quercus agrifolia*	Coast Live Oak	6+multiple	15	14	4	3	X		3	2
8	*Quercus agrifolia*	Coast Live Oak	8.5	15	12	3	3	X		2	1, 6, 7, 8, 9
9	*Quercus lobata*	Valley Oak	13	40	20	4	3			3	2
10	*Quercus kelloggi*	Black Oak	13+10	30	22	4	3			3	2
11	*Quercus agrifolia*	Coast Live Oak	13+14.5	35	24	4	2		Already braced	3	2
12	*Sequoia sempervirens*	Coast Redwood	14.5	35	14	4	3			1	1, 6, 7, 8, 9
13	*Quercus agrifolia*	Coast Live Oak	16	25	18	4	3			3	2

TREE INVENTORY
Gravenstein Village
Sebastopol, CA

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1-5)	Structure (1-4)	Not Protected	Special Notes	Expected Impact	Recommendations
14	*Sequoia sempervirens*	Coast Redwood	12	25	10	4	3			2	1, 6, 7, 8, 9
15	*Sequoia sempervirens*	Coast Redwood	15	35	11	4	3			2	1, 6, 7, 8, 9
16	*Sequoia sempervirens*	Coast Redwood	14.5	35	10	4	3			2	1, 6, 7, 8, 9
17	*Sequoia sempervirens*	Coast Redwood	16	35	11	4	3			2	1, 6, 7, 8, 9
18	*Quercus agrifolia*	Coast Live Oak	8	20	12	4	3	X		3	2
19	*Sequoia sempervirens*	Coast Redwood	8	25	9	4	3	X		2	1, 6, 7, 8, 9
20	*Sequoia sempervirens*	Coast Redwood	11.5	35	12	4	3			3	2
21	*Pseudotsuga menziesii*	Douglas Fir	±24	60	22	3	3			2	1, 6, 7, 8, 9
22	*Quercus agrifolia*	Coast Live Oak	9	12	9	3	3	X	Drought stressed in past, good new growth this season	3	2
23	*Quercus agrifolia*	Coast Live Oak	11.5	16	12	3	3		Drought stressed in past, good new growth this season	2	1, 6, 7, 8, 9
24	*Pseudotsuga menziesii*	Douglas Fir	8.5	22	10	3	3	X		2	1, 6, 7, 8, 9
25	*Quercus agrifolia*	Coast Live Oak	10	15	11	3	3		Drought stressed in past, good new growth this season	2	1, 6, 7, 8, 9
26	*Quercus kelloggi*	Black Oak	7+7	18	13	4	3	X		3	2

TREE INVENTORY
Gravenstein Village
Sebastopol, CA

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1-5)	Structure (1-4)	Not Protected	Special Notes	Expected Impact	Recommendations
27	*Quercus agrifolia*	Douglas Fir	8+7.5	18	14	3	3	X		3	2
28	*Pseudotsuga menziesii*	Douglas Fir	8	30	11	4-3	3	X		2	1, 6, 7, 8, 9
29	*Quercus agrifolia*	Coast Live Oak	11.5	18	14	3	3		Drought stressed in past, good new growth this season	3	2
30	*Sequoia sempervirens*	Coast Redwood	15	35	11	4	3			3	2
31	*Sequoia sempervirens*	Coast Redwood	11	30	10	4	3			3	2
32	*Sequoia sempervirens*	Coast Redwood	14.5	35	12	4	3			3	2
33	*Sequoia sempervirens*	Coast Redwood	16	38	13	4	3			3	2
34	*Pseudotsuga menziesii*	Douglas Fir	7	22	9	3	3	X		1	1, 6, 7, 8, 9
35	*Pseudotsuga menziesii*	Douglas Fir	9	20	9	3	3	X		3	2
36	*Sequoia sempervirens*	Coast Redwood	17	3	11					3	2
37	*Sequoia sempervirens*	Coast Redwood	15	4	11	4	3			3	2
38	*Sequoia sempervirens*	Coast Redwood	15	35	11	4	3			3	2
39	*Sequoia sempervirens*	Coast Redwood	14	35	10	4	3			3	2

TREE INVENTORY
Gravenstein Village
Sebastopol, CA

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1-5)	Structure (1-4)	Not Protected	Special Notes	Expected Impact	Recommendations
40	*Sequoia sempervirens*	Coast Redwood	16	40	12	4	3			3	2
41	*Sequoia sempervirens*	Coast Redwood	13	35	10	4	3			3	2
42	*Sequoia sempervirens*	Coast Redwood	15.5	35	11	4	3			3	2
43	*Sequoia sempervirens*	Coast Redwood	16	40	11	4	3			3	2
44	*Quercus agrifolia*	Coast Live Oak	14+7.5	25	18	4	3			1	1, 6, 7, 8, 9
45	*Sequoia sempervirens*	Coast Redwood	14	30	10	4	3			1	1, 6, 7, 8, 9
46	*Sequoia sempervirens*	Coast Redwood	14	35	12	4	3			1	1, 6, 7, 8, 9
47	*Quercus agrifolia*	Coast Live Oak	28	45	24	4	3		Co-dominant trunks	1	1, 6, 7, 8, 9
48	*Quercus lobata*	Valley Oak	7+5+2.5	18	11	4	3	X		1	1, 6, 7, 8, 9
49	*Quercus agrifolia*	Coast Live Oak	±6+8+8	25	16	4	3	X		1	1, 6, 7, 8, 9
50	*Quercus agrifolia*	Coast Live Oak	7.5+6+6.5+6	20	11	4	3	X		1	1, 6, 7, 8, 9
51	*Sequoia sempervirens*	Coast Redwood	12	35	11	4	3			1	1, 6, 7, 8, 9
52	*Sequoia sempervirens*	Coast Redwood	13.5	38	12	4	3			1	1, 6, 7, 8, 9

TREE INVENTORY
Gravenstein Village
Sebastopol, CA

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1-5)	Structure (1-4)	Not Protected	Special Notes	Expected Impact	Recommendations
53	*Sequoia sempervirens*	Coast Redwood	15.5	35	12	4	3			1	1, 6, 7, 8, 9
54	*Sequoia sempervirens*	Coast Redwood	14	35	12	4	3			1	1, 6, 7, 8, 9
55	*Sequoia sempervirens*	Coast Redwood	12	30	10	4	3			1	1, 6, 7, 8, 9
56	*Quercus agrifolia*	Coast Live Oak	11.5	20	14	3	3			1	1, 6, 7, 8, 9
57	*Sequoia sempervirens*	Coast Redwood	15	35	12	4	3			1	1, 6, 7, 8, 9
58	*Sequoia sempervirens*	Coast Redwood	16	35	12	4	3			1	1, 6, 7, 8, 9
59	*Sequoia sempervirens*	Coast Redwood	15.5	35	12	4	3			1	1, 6, 7, 8, 9
60	*Sequoia sempervirens*	Coast Redwood	12.5	30	10	4	3			1	1, 6, 7, 8, 9
61	*Sequoia sempervirens*	Coast Redwood	16.5	38	14	4	3			3	2
62	*Quercus agrifolia*	Coast Live Oak	9+7.5	22	13	4	3	X		1	1, 6, 7, 8, 9
63	*Pseudotsuga menziesii*	Douglas Fir	11	30	16	4	3			1	1, 6, 7, 8, 9
64	*Pseudotsuga menziesii*	Douglas Fir	11.5	35	11	4	3			1	1, 6, 7, 8, 9
65	*Quercus agrifolia*	Coast Live Oak	9	16	12	4	3	X		1	1, 6, 7, 8, 9

TREE INVENTORY
Gravenstein Village
Sebastopol, CA

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1-5)	Structure (1-4)	Not Protected	Special Notes	Expected Impact	Recommendations
66	*Quercus agrifolia*	Coast Live Oak	14.5	20	17	4	3			1	1, 6, 7, 8, 9
67	*Quercus agrifolia*	Coast Live Oak	11	20	16	4	3			1	1, 6, 7, 8, 9
68	*Sequoia sempervirens*	Coast Redwood	14.5	30	11	4	3			2	1, 6, 7, 8, 9
69	*Sequoia sempervirens*	Coast Redwood	12.5	30	10	4	3			2	1, 6, 7, 8, 9
70	*Sequoia sempervirens*	Coast Redwood	13	35	10	4	3			2	1, 6, 7, 8, 9
71	*Sequoia sempervirens*	Coast Redwood	11.5	30	9	4	3			1	1, 6, 7, 8, 9
72	*Sequoia sempervirens*	Coast Redwood	9	25	9	4	3	X		1	1, 6, 7, 8, 9
73	*Sequoia sempervirens*	Coast Redwood	9	26	9	4	3	X		1	1, 6, 7, 8, 9
74	*Sequoia sempervirens*	Coast Redwood	8	20	8	4	3	X		1	1, 6, 7, 8, 9
75	*Sequoia sempervirens*	Coast Redwood	6+8.5	25	8	4	3	X		1	1, 6, 7, 8, 9
76	*Quercus agrifolia*	Coast Live Oak	23	40	26	4	3			2	2
77	*Quercus agrifolia*	Coast Live Oak	26	60	26	3	3			1	1, 6, 7, 8, 9
78	*Quercus agrifolia*	Coast Live Oak	13+11+18.5+12.5+11.5	35	26	3	3			1	1, 6, 7, 8, 9

TREE INVENTORY
Gravenstein Village
Sebastopol, CA

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1-5)	Structure (1-4)	Not Protected	Special Notes	Expected Impact	Recommendations
79	*Sequoia sempervirens*	Coast Redwood	8.5	22	9	4	3	X		1	1, 6, 7, 8, 9
80	*Quercus agrifolia*	Coast Live Oak	8+8.5	20	25	3	3	X		1	1, 6, 7, 8, 9
81	*Quercus agrifolia*	Coast Live Oak	8+16.5+12+14+15	50	25	3	3		Co-dominant trunks	1	1, 6, 7, 8, 9
82	*Quercus agrifolia*	Coast Live Oak	16	30	27	4	3			1	1, 6, 7, 8, 9
83	*Quercus agrifolia*	Coast Live Oak	22+12+22.5	50	27	3	3		Co-dominant trunks, included bark, anthracnose infection	1	1, 6, 7, 8, 9
84	*Pseudotsuga menziesii*	Douglas Fir	7	20	6	3	3	X		1	1, 6, 7, 8, 9
85	*Quercus agrifolia*	Coast Live Oak	15.5+14.5+15	40	25	3	3			1	1, 6, 7, 8, 9
86	*Sequoia sempervirens*	Coast Redwood	15	35	12	4	3			1	1, 6, 7, 8, 9
87	*Sequoia sempervirens*	Coast Redwood	11	30	10	4	3			1	1, 6, 7, 8, 9
88	*Sequoia sempervirens*	Coast Redwood	13	35	12	4	3			1	1, 6, 7, 8, 9
89	*Quercus agrifolia*	Coast Live Oak	7.5+10+6+6	25	16	3	3			1	1, 6, 7, 8, 9
90	*Quercus agrifolia*	Coast Live Oak	±8	18	12	3	3	X		1	1, 6, 7, 8, 9
91	*Quercus agrifolia*	Coast Live Oak	10.5+18	20	19	4	3			1	1, 6, 7, 8, 9

TREE INVENTORY
Gravenstein Village
Sebastopol, CA

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1-5)	Structure (1-4)	Not Protected	Special Notes	Expected Impact	Recommendations
92	*Quercus agrifolia*	Coast Live Oak	15+10+5+11	25	18	3	3			1	1, 6, 7, 8, 9
93	*Pseudotsuga menziesii*	Douglas Fir	11.5	30	11	4	3			1	1, 6, 7, 8, 9
94	*Pseudotsuga menziesii*	Douglas Fir	10.5	30	11	3	3			1	1, 6, 7, 8, 9
95	*Quercus agrifolia*	Coast Live Oak	14+18	25	14	4	3			2	1, 6, 7, 8, 9
96	*Quercus agrifolia*	Coast Live Oak	7	18	10	4	3	X		1	1, 6, 7, 8, 9
97	*Quercus agrifolia*	Coast Live Oak	12	28	20	3	3			3	2
98	*Quercus agrifolia*	Coast Live Oak	18.5	30	22	4	3			1	1, 6, 7, 8, 9
99	*Quercus agrifolia*	Coast Live Oak	14.5+11	30	18	3	3			3	2
100	*Quercus agrifolia*	Coast Live Oak	6+8.5	20	18	4	3	X		1	1, 6, 7, 8, 9
101	*Quercus agrifolia*	Coast Live Oak	11+11+6	30	18	4	3			1	1, 6, 7, 8, 9
102	*Quercus agrifolia*	Coast Live Oak	10+13.5+12+9+13	28	24	4	3			1	1, 6, 7, 8, 9
103	*Quercus agrifolia*	Coast Live Oak	8+multiple	18	16	4	3	X		1	1, 6, 7, 8, 9
104	*Quercus agrifolia*	Coast Live Oak	6+6+5+4+5	18	12	4	3	X		3	2

TREE INVENTORY
Gravenstein Village
Sebastopol, CA

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1-5)	Structure (1-4)	Not Protected	Special Notes	Expected Impact	Recommendations
105	*Quercus agrifolia*	Coast Live Oak	9+10+multiple	25	18	4	3			3	2
106	*Quercus agrifolia*	Coast Live Oak	8.5	20	16	4	3	X		1	1, 6, 7, 8, 9
107	*Quercus agrifolia*	Coast Live Oak	14+12.5	30	16	4	3			3	2
108	*Quercus agrifolia*	Coast Live Oak	30	30	20	4	3			1	1, 6, 7, 8, 9
109	*Quercus agrifolia*	Coast Live Oak	18+29	30	25	3	3		Co-dominant trunks, included bark, anthracnose infection	3	2
110	*Pseudotsuga menziesii*	Douglas Fir	8	20	6	4	3	X		3	2
111	*Gleditsia triacanthos*	Honey Locust	14	38	22	3	3			3	2
112	*Pinus sp.*	Pine	18	60	18	2	3		Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated	1	1, 6, 7, 8, 9
113	*Pinus sp.*	Pine	16	60	18	3	2		Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated	1	1, 6, 7, 8, 9
114	*Cedrus deodara*	Deodar Cedar	22	50	22	4	3		Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated	1	1, 6, 7, 8, 9
115	*Cedrus deodara*	Deodar Cedar	26	60	26	4	3		Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated	1	1, 6, 7, 8, 9
116	*Calocedrus decurrens*	Incense Cedar	9	18	7	4	3	X	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated	1	1, 6, 7, 8, 9
117	*Salix matsudana "Tortuosa"*	Curly willow	14+ mulitiple	30	20	2	2		Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated	1	1, 6, 7, 8, 9

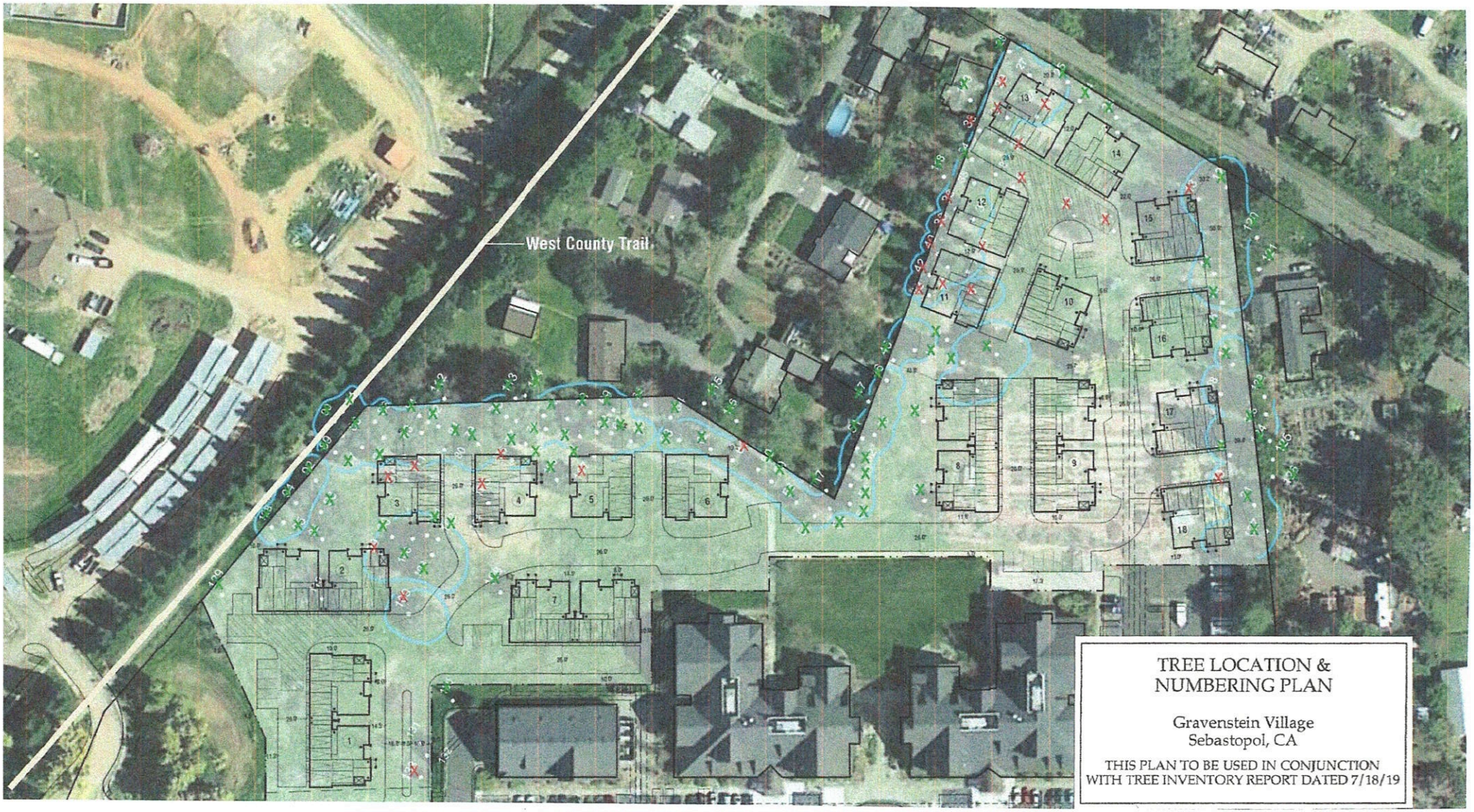
TREE INVENTORY
Gravenstein Village
Sebastopol, CA

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1-5)	Structure (1-4)	Not Protected	Special Notes	Expected Impact	Recommendations
118	*Gleditsia triacanthos*	Honey Locust	8	18	18	3	3	X	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated	1	1, 6, 7, 8, 9
119	*Pinus radiata*	Monterey pine	30+ multiple	80	35	4	2		Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated	1	1, 6, 7, 8, 9
120	*Ulmus americana*	American Elm	20	25	14	3	2		Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated	1	1, 6, 7, 8, 9
121	*Sequoia sempervirens*	Coast Redwood	32	50	17	4	2		Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated	1	1, 6, 7, 8, 9
122	*Sequoia sempervirens*	Coast Redwood	9	30	10	4	3	X	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated	1	1, 6, 7, 8, 9
123	*Cedrus deodara*	Deodar Cedar	9	30	12	4	3	X	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated	1	1, 6, 7, 8, 9
124	*Sequoia sempervirens*	Coast Redwood	33	60	18	4	3		Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated	1	1, 6, 7, 8, 9
125	*Sequoia sempervirens*	Coast Redwood	36	60	18	4	3		Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated	1	1, 6, 7, 8, 9
126	*Cedrus deodara*	Deodar cedar	14	45	15	3	3		Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated	1	1, 6, 7, 8, 9
127	*Alnus rhombifolia*	Alder	10	18	8	2	2		Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated	1	1, 6, 7, 8, 9
128	*Alnus rhombifolia*	Alder	7	18	5	2	1	X	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated	1	1, 6, 7, 8, 9
129	*Sequoia sempervirens*	Coast Redwood	13	25	10	4	3			1	1, 6, 7, 8, 9
130	*Pseudotsuga menziesii*	Douglas Fir	6	16	10	3	3	X		1	1, 6, 7, 8, 9

TREE INVENTORY
Gravenstein Village
Sebastopol, CA

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1-5)	Structure (1-4)	Not Protected	Special Notes	Expected Impact	Recommendations
131	*Pseudotsuga menziesii*	Douglas Fir	7	15	9	3	3	X		3	2
132	*Pseudotsuga menziesii*	Douglas Fir	8	16	10	3	3	X		3	2
133	*Pseudotsuga menziesii*	Douglas Fir	8	16	10	3	3	X		3	2
	Not protected trees = 9" trunk diameters or less										

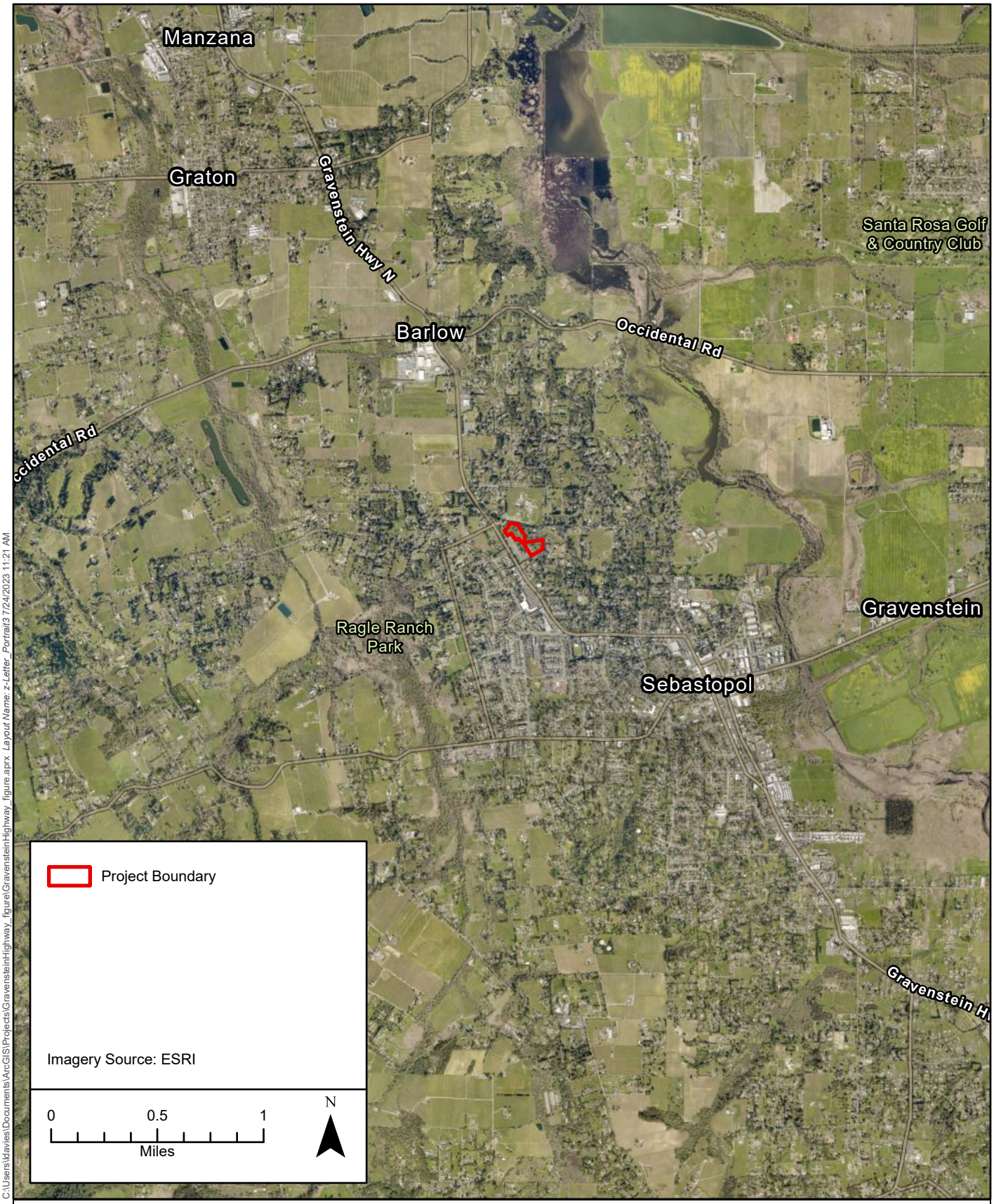
TREE LOCATION PLAN



TREE LOCATION & NUMBERING PLAN

Gravenstein Village
Sebastopol, CA

THIS PLAN TO BE USED IN CONJUNCTION WITH TREE INVENTORY REPORT DATED 7/18/19



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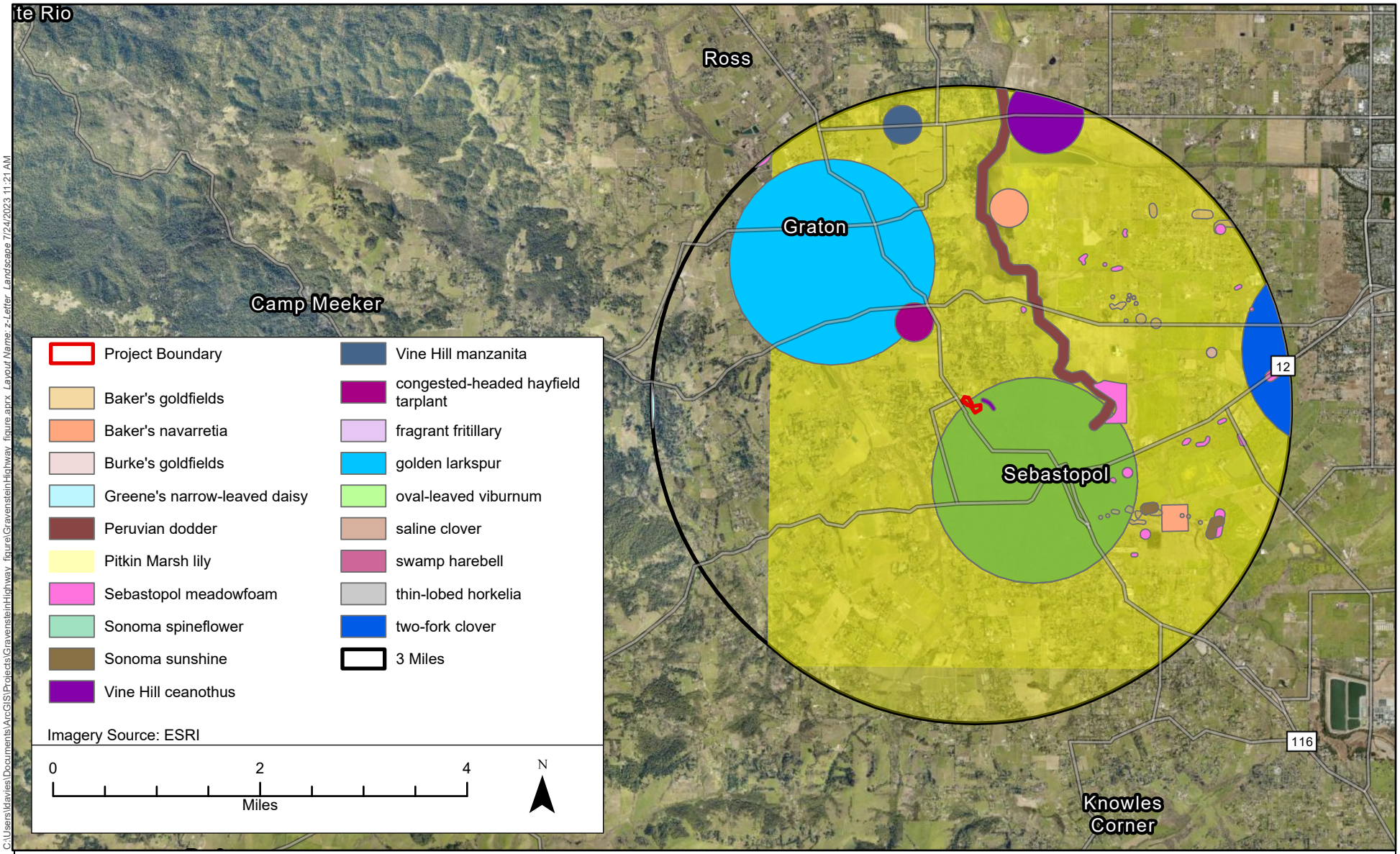
integral consulting inc.

The Canopy Project Figure 1.
Site and Vicinity Map



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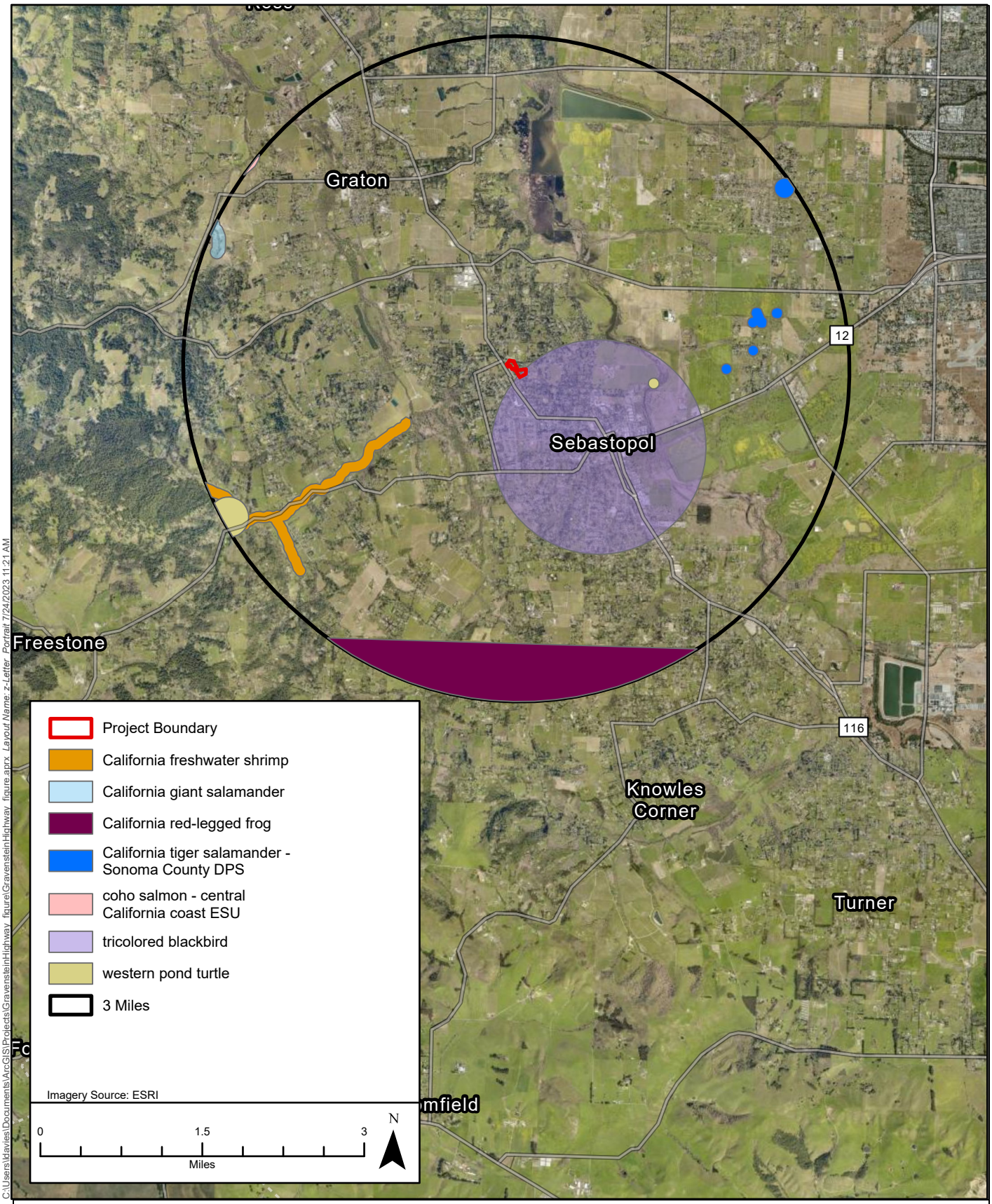
integral consulting inc.

The Canopy Project Figure 2.
Rare Plants Map



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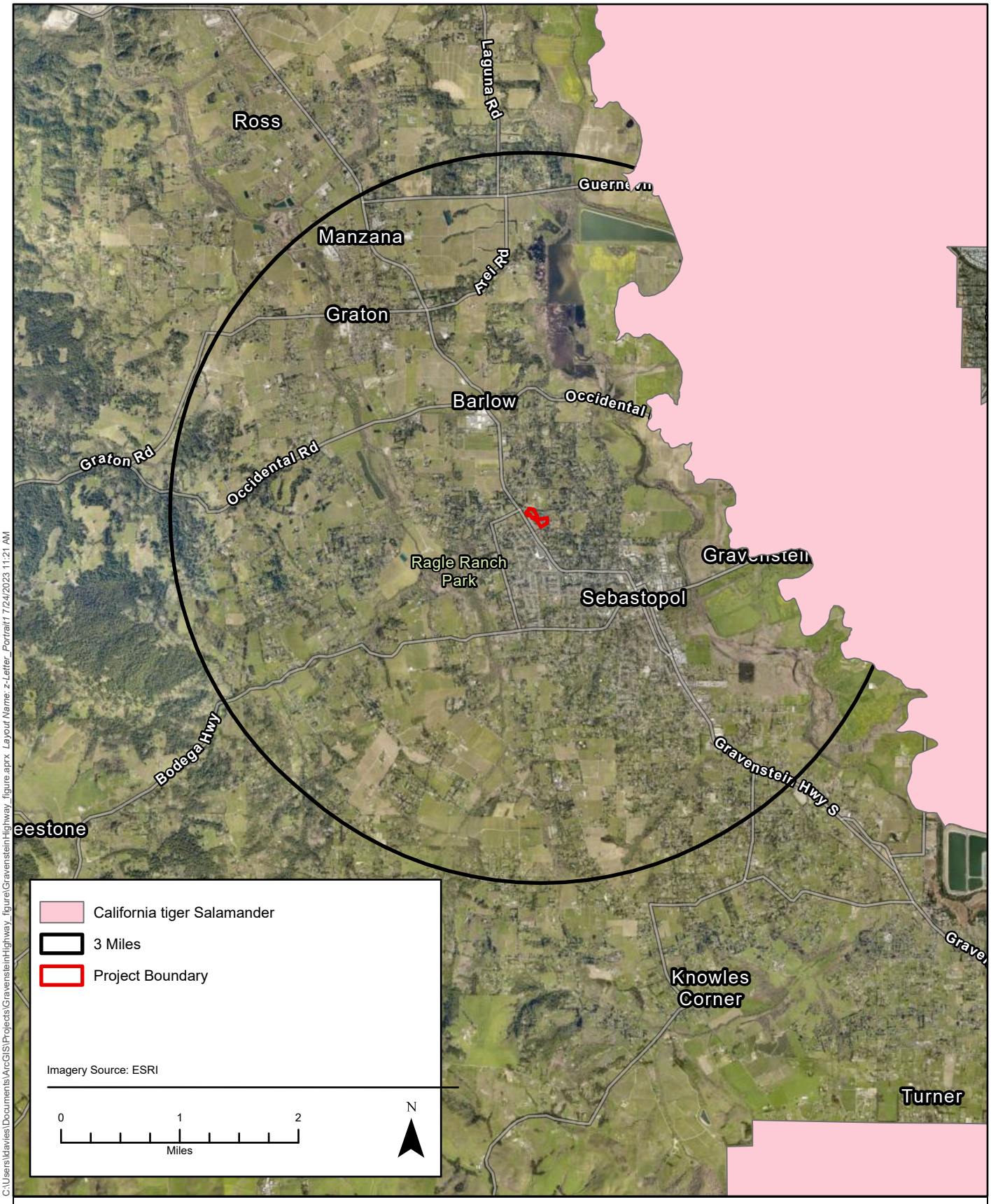
integral consulting inc.

The Canopy Project Figure 3.
CNDDB Records Map



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The Canopy Project Figure 4.
Designated Critical Habitat Map

Table 1: Plants Observed on Project Site

Scientific Name	Common Name
Acacia dealbata	silver wattle
Anthemis arvensis	Corn chamomile
Atriplex prostrata	Fat-hen
Avena barbata	Slender wild oat
Bromus diandrus	Rip-gut brome
Bromus hordeaceus	Soft chess
Carduus pycnocephalus	Italian thistle
Cichorium intybus	Chicory
Convolvulus arvensis	Orchard morning glory
Daucus pusillus	Wild carrot
Elymus caput-medusae	Medusa head
Eschscholzia californica	California poppy
Erodium botrys	Big heron bill
Geranium dissectum	Cutleaf geranium
Genista monspessulana	French Broom
Helminthotheca echioides	Bristly ox-tongue
Heterotheca grandiflora	Telegraph weed
Hirschfeldia incana	Mustard
Hordeum Murinum	Foxtail barley
Hypochaeris radicata	Hairy cats ear
Lactuca saligna	Willow lettuce
Malus domestica	Apple
Medicago polymorpha	California burclover
Navarretia leptalea	Bridges pincushionplant
Phalaris aquatica	Harding grass
Plantago lanceolata	Ribwort
Pinus radiata	Monterey pine
Plantago lanceolata	Narrow leaved plantain
Prunus persica	Peach
Pseudotsuga menziesii	Douglas fir

Quercus agrifolia	Coast live oak
Raphanus sativus	Radish
Rubus armeniacus	Himalayan blackberry
Rumex crispus	Curly dock
Salvia apiana	White sage
Senegalia greggii	Devil's claw
Sequoia sempervirens	Coast redwood
Sonchus asper	Spiny sowthistle
Solanum nigrum	Black nightshade
Taraxacum officinale	Dandelion
Toxicodendron diversilobum	Poison oak
Verbascum virgatum	Wand mullein

Appendix D

Tree Inventory Reports

HORTICULTURAL Associates

Consultants in Horticulture and Arboriculture
P.O Box 1261, Glen Ellen, CA 95442

October 25, 2022

Samantha Hauser
City Ventures
444 Spear Street, Suite 200
San Francisco, CA 94105

Re: Review of current Tree Preservation Plan; Gravenstein Highway, Sebastopol, California

Samantha,

I reviewed the latest set of project plans with regard to the preservation of existing trees at your Sebastopol project and I am providing the following observations and recommendations for your review:

1. The plan reviewed is attached. Trees highlighted in green are currently designated for preservation and trees highlighted in red are currently designated for removal.

2. I have been working with the design team to preserve as many trees as possible and the site plan has been modified several times toward this goal.

3. The larger and more visually significant trees are being preserved, including several Oaks located in interior areas of the site.

4. Most perimeter trees are being preserved and these will continue to function effectively as screening to the adjacent neighborhoods.

5. Grading details are still being worked out and trees designated for preservation are front and center in grading design. Minimal to no cut grading will be occurring in canopy driplines. Placement of minor fill within driplines will be necessary in some areas as part of pesticide residue mitigation measures. Details and specifications for this process will be determined as more information becomes available. The project arborist will be involved in preparation of these details.

6. Bike and walk paths in perimeter areas where trees are being preserved will be placed on grade and will meander around trees to the greatest extent possible. We are still working on these details.

~ Voice 707-935-3911 Fax 707-935-7103 ~

7. Design work completed to date has given the protection and preservation of trees a high priority. The plan currently under consideration acceptably protects the trees designation for preservation.

Please feel free to contact me if you have questions regarding this letter, or if further discussion would be helpful.

Regards,

John C. Meserve
ISA Certified Arborist, WE #0478A
ISA Qualified Tree Risk Assessor/TRAQ
ASCA Qualified Tree and Plant Appraiser/TPAQ

HORTICULTURAL
Associates

Consultants in Horticulture and Arboriculture

TREE PRESERVATION AND MITIGATION REPORT

Sebastopol A Project
Sebastopol, CA

Prepared For:

City Ventures
444 Spear Street, Suite 200
San Francisco, CA 94105

Prepared by:

John C. Meserve
International Society of Arboriculture
ISA Certified Arborist, WE #0478A
ISA Qualified Tree Risk Assessor

April 10, 2019

HORTICULTURAL Associates

Consultants in Horticulture and Arboriculture
P.O Box 1261, Glen Ellen, CA 95442

April 10, 2019

Samantha Hauser
Director of Development
City Ventures
444 Spear Street, Suite 200
San Francisco, CA 94105

Re: Partial *Tree Preservation and Mitigation Report*, Sebastopol A Project, Sebastopol, California

Samantha,

Attached you will find our partial *Tree Preservation and Mitigation Report* for the above noted site in Sebastopol. A total of 132 trees were evaluated, and this includes all protected trees over 10 inches in trunk diameter and non-protected trees between 6 and 9 inches in diameter.

The Sebastopol Tree Ordinance requires protected trees 10 inches and greater to be included in an Arborist Report. We have also included trees 6 inches to 9 inches to be thorough. Trees of this smaller size are not protected, and 42 of the 132 in this report are in this smaller size category.

There are a number of large Acacias at the site, and this species was also not included in our Inventory because it is included on the Sebastopol 'escaped exotic' list and does not require retention.

This site is a remnant apple orchard which originated in the early 1900's, according to CEQA documents prepared in the late 1990's. Apples are also not a protected species, and most are generally over-mature, declining, decayed, or dying back. No apples were included in this inventory.

Each tree is identified in the field with a numbered aluminum tag placed on the trunk at approximately eye level.

All trees in this report were evaluated and documented for species, size, health, and structural condition. The *Tree Inventory Chart* does not include information about expected impacts of future development, or recommendations for action, because no solid plan has been developed yet.

The *Tree Location Plan* shows the location and numbering sequence of all evaluated trees. Protected trees are shown with white numbers and smaller non-protected trees are shown in a lighter shade.

EXISTING SITE CONDITION SUMMARY

The project site consists of an abandoned apple orchard, bordered on one side by a walking path, three sides by residential development, one side by a City street, and one side by commercial development.

EXISTING TREE SUMMARY

Native species present include Coast Live Oak, Black Oak, Douglas Fir, and Valley Oak.

California native species that have been planted as ornamentals include Coast Redwood, White Alder, and Incense Cedar.

Non-native species other than Acacia and Apple include Honey Locust, Pine, Deodar Cedar, and Elm.

Some large off-site trees that overhang the site were also included in this inventory.

CONSTRUCTION IMPACT SUMMARY

No construction impact analysis is included in this study. When you have determined a final development plan we will provide an impact study for you then.

Please feel free to contact me if you have questions regarding this report, or if further discussion would be helpful.

Regards,

John C. Meserve
Consulting Arborist and Horticulturist
ISA Certified Arborist, WE #0478A
ISA Qualified Tree Risk Assessor

TREE INVENTORY CHART

TREE INVENTORY
Sebastopol A Project
Sebastopol, CA

April 10, 2019

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	`	Special Notes	Expected Impact	Recommendations
1	*Quercus agrifolia*	Coast Live Oak	7+9	18	12	4	3			
2	*Quercus agrifolia*	Coast Live Oak	8.5+multiple	20	20	4	3			
3	*Quercus agrifolia*	Coast Live Oak	10.5+13	25	20	4	3			
4	*Quercus agrifolia*	Coast Live Oak	20.5	35	20	4	3			
5	*Quercus agrifolia*	Coast Live Oak	7.5+5+4+4	15	9	4	3			
6	*Quercus agrifolia*	Coast Live Oak	11.5+10+7.5+8	20	18	4	3			
7	*Quercus agrifolia*	Coast Live Oak	6+multiple	15	14	4	3			
8	*Quercus agrifolia*	Coast Live Oak	8.5	15	12	3	3			
9	*Quercus lobata*	Valley Oak	13	40	20	4	3			
10	*Quercus kelloggi*	Black Oak	13+10	30	22	4	3			
11	*Quercus agrifolia*	Coast Live Oak	13+14.5	35	24	4	2	Already braced		
12	*Sequoia sempervirens*	Coast Redwood	14.5	35	14	4	3			
13	*Quercus agrifolia*	Coast Live Oak	16	25	18	4	3			
14	*Sequoia sempervirens*	Coast Redwood	12	25	10	4	3			

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	`	Special Notes	Expected Impact	Recommendations
15	*Sequoia sempervirens*	Coast Redwood	15	35	11	4	3			
16	*Sequoia sempervirens*	Coast Redwood	14.5	35	10	4	3			
17	*Sequoia sempervirens*	Coast Redwood	16	35	11	4	3			
18	*Quercus agrifolia*	Coast Live Oak	8	20	12	4	3			
19	*Sequoia sempervirens*	Coast Redwood	8	25	9	4	3			
20	*Sequoia sempervirens*	Coast Redwood	11.5	35	12	4	3			
21	*Pseudotsuga menziesii*	Douglas-fir	±24	60	22	3	3			
22	*Quercus agrifolia*	Coast Live Oak	9	12	9	3	3	Drought stressed in past, good new growth this season		
23	*Quercus agrifolia*	Coast Live Oak	11.5	16	12	3	3	Drought stressed in past, good new growth this season		
24	*Pseudotsuga menziesii*	Douglas-fir	8.5	22	10	3	3			
25	*Quercus agrifolia*	Coast Live Oak	10	15	11	3	3	Drought stressed in past, good new growth this season		
26	*Quercus kelloggi*	Black Oak	7+7	18	13	4	3			
27	*Quercus agrifolia*	Coast Live Oak	8+7.5	18	14	3	3			
28	*Pseudotsuga menziesii*	Douglas-fir	8	30	11	4-3	3			

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	`	Special Notes	Expected Impact	Recommendations
29	*Quercus agrifolia*	Coast Live Oak	11.5	18	14	3	3	Drought stressed in past, good new growth this season		
30	*Sequoia sempervirens*	Coast Redwood	15	35	11	4	3			
31	*Sequoia sempervirens*	Coast Redwood	11	30	10	4	3			
32	*Sequoia sempervirens*	Coast Redwood	14.5	35	12	4	3			
33	*Sequoia sempervirens*	Coast Redwood	16	38	13	4	3			
34	*Pseudotsuga menziesii*	Douglas-fir	7	22	9	3	3			
35	*Pseudotsuga menziesii*	Douglas-fir	9	20	9	3	3			
36	*Sequoia sempervirens*	Coast Redwood	17	3	11					
37	*Sequoia sempervirens*	Coast Redwood	15	4	11	4	3			
38	*Sequoia sempervirens*	Coast Redwood	15	35	11	4	3			
39	*Sequoia sempervirens*	Coast Redwood	14	35	10	4	3			
40	*Sequoia sempervirens*	Coast Redwood	16	40	12	4	3			
41	*Sequoia sempervirens*	Coast Redwood	13	35	10	4	3			
42	*Sequoia sempervirens*	Coast Redwood	15.5	35	11	4	3			

TREE INVENTORY
Sebastopol A Project
Sebastopol, CA

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	`	Special Notes	Expected Impact	Recommendations
43	*Sequoia sempervirens*	Coast Redwood	16	40	11	4	3			
44	*Quercus agrifolia*	Coast Live Oak	14+7.5	25	18	4	3			
45	*Sequoia sempervirens*	Coast Redwood	14	30	10	4	3			
46	*Sequoia sempervirens*	Coast Redwood	14	35	12	4	3			
47	*Quercus agrifolia*	Coast Live Oak	28	45	24	4	3	Co-dominant trunks		
48	*Quercus lobata*	Valley Oak	7+5+2.5	18	11	4	3			
49	*Quercus agrifolia*	Coast Live Oak	±6+8+8	25	16	4	3			
50	*Quercus agrifolia*	Coast Live Oak	7.5+6+6.5+6	20	11	4	3			
51	*Sequoia sempervirens*	Coast Redwood	12	35	11	4	3			
52	*Sequoia sempervirens*	Coast Redwood	13.5	38	12	4	3			
53	*Sequoia sempervirens*	Coast Redwood	15.5	35	12	4	3			
54	*Sequoia sempervirens*	Coast Redwood	14	35	12	4	3			
55	*Sequoia sempervirens*	Coast Redwood	12	30	10	4	3			
56	*Quercus agrifolia*	Coast Live Oak	11.5	20	14	3	3			

TREE INVENTORY
Sebastopol A Project
Sebastopol, CA

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	`	Special Notes	Expected Impact	Recommendations
57	*Sequoia sempervirens*	Coast Redwood	15	35	12	4	3			
58	*Sequoia sempervirens*	Coast Redwood	16	35	12	4	3			
59	*Sequoia sempervirens*	Coast Redwood	15.5	35	12	4	3			
60	*Sequoia sempervirens*	Coast Redwood	12.5	30	10	4	3			
61	*Sequoia sempervirens*	Coast Redwood	16.5	38	14	4	3			
62	*Quercus agrifolia*	Coast Live Oak	9+7.5	22	13	4	3			
63	*Pseudotsuga menziesii*	Douglas-fir	11	30	16	4	3			
64	*Pseudotsuga menziesii*	Douglas-fir	11.5	35	11	4	3			
65	*Quercus agrifolia*	Coast Live Oak	9	16	12	4	3			
66	*Quercus agrifolia*	Coast Live Oak	14.5	20	17	4	3			
67	*Quercus agrifolia*	Coast Live Oak	11	20	16	4	3			
68	*Sequoia sempervirens*	Coast Redwood	14.5	30	11	4	3			
69	*Sequoia sempervirens*	Coast Redwood	12.5	30	10	4	3			
70	*Sequoia sempervirens*	Coast Redwood	13	35	10	4	3			

TREE INVENTORY
Sebastopol A Project
Sebastopol, CA

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)		Special Notes	Expected Impact	Recommendations
71	*Sequoia sempervirens*	Coast Redwood	11.5	30	9	4	3			
72	*Sequoia sempervirens*	Coast Redwood	9	25	9	4	3			
73	*Sequoia sempervirens*	Coast Redwood	9	26	9	4	3			
74	*Sequoia sempervirens*	Coast Redwood	8	20	8	4	3			
75	*Sequoia sempervirens*	Coast Redwood	6+8.5	25	8	4	3			
76	*Quercus agrifolia*	Coast Live Oak	23	40	26	4	3			
77	*Quercus agrifolia*	Coast Live Oak	26	60	26	3	3			
78	*Quercus agrifolia*	Coast Live Oak	13+11+18.5+12.5+11.5	35	26	3	3			
79	*Sequoia sempervirens*	Coast Redwood	8.5	22	9	4	3			
80	*Quercus agrifolia*	Coast Live Oak	8+8.5	20	25	3	3			
81	*Quercus agrifolia*	Coast Live Oak	8+16.5+12+14+15	50	25	3	3	Co-dominant trunks		
82	*Quercus agrifolia*	Coast Live Oak	16	30	27	4	3			
83	*Quercus agrifolia*	Coast Live Oak	22+12+22.5	50	27	3	3	Co-dominant trunks, included bark, anthracnose infection		
84	*Pseudotsuga menziesii*	Douglas-fir	7	20	6	3	3			

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	`	Special Notes	Expected Impact	Recommendations
85	*Quercus agrifolia*	Coast Live Oak	15.5+14.5+15	40	25	3	3			
86	*Sequoia sempervirens*	Coast Redwood	15	35	12	4	3			
87	*Sequoia sempervirens*	Coast Redwood	11	30	10	4	3			
88	*Sequoia sempervirens*	Coast Redwood	13	35	12	4	3			
89	*Quercus agrifolia*	Coast Live Oak	7.5+10+6+6	25	16	3	3			
90	*Quercus agrifolia*	Coast Live Oak	±8	18	12	3	3			
91	*Quercus agrifolia*	Coast Live Oak	10.5+18	20	19	4	3			
92	*Quercus agrifolia*	Coast Live Oak	15+10+5+11	25	18	3	3			
93	*Pseudotsuga menziesii*	Douglas-fir	11.5	30	11	4	3			
94	*Pseudotsuga menziesii*	Douglas-fir	10.5	30	11	3	3			
95	*Quercus agrifolia*	Coast Live Oak	14+18	25	14	4	3			
96	*Quercus agrifolia*	Coast Live Oak	7	18	10	4	3			
97	*Quercus agrifolia*	Coast Live Oak	12	28	20	3	3			
98	*Quercus agrifolia*	Coast Live Oak	18.5	30	22	4	3			

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)		Special Notes	Expected Impact	Recommendations
99	*Quercus agrifolia*	Coast Live Oak	14.5+11	30	18	3	3			
100	*Quercus agrifolia*	Coast Live Oak	6+8.5	20	18	4	3			
101	*Quercus agrifolia*	Coast Live Oak	11+11+6	30	18	4	3			
102	*Quercus agrifolia*	Coast Live Oak	10+13.5+12+9+13	28	24	4	3			
103	*Quercus agrifolia*	Coast Live Oak	8+multiple	18	16	4	3			
104	*Quercus agrifolia*	Coast Live Oak	6+6+5+4+5	18	12	4	3			
105	*Quercus agrifolia*	Coast Live Oak	9+10+multiple	25	18	4	3			
106	*Quercus agrifolia*	Coast Live Oak	8.5	20	16	4	3			
107	*Quercus agrifolia*	Coast Live Oak	14+12.5	30	16	4	3			
108	*Quercus agrifolia*	Coast Live Oak	30	30	20	4	3			
109	*Quercus agrifolia*	Coast Live Oak	18+29	30	25	3	3	Co-dominant trunks, included bark, anthracnose infection		
110	*Pseudotsuga menziesii*	Douglas-fir	8	20	6	4	3			
111	*Gleditsia triacanthos*	Honey Locust	14	38	22	3	3	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		
112	*Pinus sp.*	Pine	18	60	18	2	3	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		

TREE INVENTORY
Sebastopol A Project
Sebastopol, CA

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	`	Special Notes	Expected Impact	Recommendations
113	*Pinus sp.*	Pine	16	60	18	3	2	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		
114	*Cedrus deodara*	Deodar Cedar	22	50	22	4	3	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		
115	*Cedrus deodara*	Deodar Cedar	26	60	26	4	3	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		
116	*Calocedrus decurrens*	Incense Cedar	9	18	7	4	3	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		
117	*Salix matsudana "Tortuosa"*	Curly willow	14+ mulitiple	30	20	2	2	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		
118	*Gleditsia triacanthos*	Honey Locust	8	18	18	3	3	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		
119	*Pinus radiata*	Monterey pine	30+ multiple	80	35	4	2	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		
120	*Ulmus americana*	American Elm	20	25	14	3	2	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		
121	*Sequoia sempervirens*	Coast Redwood	32	50	17	4	2	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		
122	*Sequoia sempervirens*	Coast Redwood	9	30	10	4	3	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		
123	*Cedrus deodara*	Deodar Cedar	9	30	12	4	3	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		
124	*Sequoia sempervirens*	Coast Redwood	33	60	18	4	3	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		
125	*Sequoia sempervirens*	Coast Redwood	36	60	18	4	3	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		
126	*Cedrus deodara*	Deodar cedar	14	45	15	3	3	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	`	Special Notes	Expected Impact	Recommendations
127	*Alnus rhombifolia*	Alder	10	18	8	2	2	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		
128	*Alnus rhombifolia*	Alder	7	18	5	2	1	Off site and overhanging, not tagged; trunk and root collar not visible; trunk diameter estimated		
129	*Sequoia sempervirens*	Coast Redwood	13	25	10	4	3			
130	*Pseudotsuga menziesii*	Douglas-fir	6	16	10	3	3			
131	*Pseudotsuga menziesii*	Douglas-fir	7	15	9	3	3			
132	*Pseudotsuga menziesii*	Douglas-fir	8	16	10	3	3			

KEY TO TREE INVENTORY CHART

KEY TO TREE INVENTORY CHART

Tree Number

Each tree has been identified in the field with an aluminum tag and reference number. Tags are attached to the trunk at approximately eye level. The *Tree Location Plan* illustrates the location of each numbered tree.

Species

Each tree has been identified by genus, species and common name. Many species have more than one common name.

Trunk

Each trunk has been measured or estimated, in inches, to document its diameter, at 4.5 feet above adjacent grade. Trunk diameter is a good indicator of age, and is commonly used to determine mitigation replacement requirements.

Height

Height is estimated in feet, using visual assessment.

Radius

Radius is estimated in feet, using visual assessment. Since many canopies are asymmetrical, it is not uncommon for a radius estimate to be an average of the canopy size.

Health

The following descriptions are used to rate the health of a tree. Trees with a rating of 4 or 5 are very good candidates for preservation and will tolerate more construction impacts than trees in poorer condition. Trees with a rating of 3 may or may not be good candidates for preservation, depending on the species and expected construction impacts. Trees with a rating of 1 or 2 are generally poor candidates for preservation.

(5) Excellent - health and vigor are exceptional, no pest, disease, or distress symptoms.

(4) Good - health and vigor are average, no significant or specific distress symptoms, no significant pest or disease.

(3) Fair - health and vigor are somewhat compromised, distress is visible, pest or disease may be present and affecting health, problems are generally correctable.

(2) Marginal - health and vigor are significantly compromised, distress is highly visible and present to the degree that survivability is in question.

(1) Poor - decline has progressed beyond the point of being able to return to a healthy condition again. Long-term survival is not expected. This designation includes dead trees.

Structure

The following descriptions are used to rate the structural integrity of a tree. Trees with a rating of 3 or 4 are generally stable, sound trees which do not require significant pruning, although cleaning, thinning, or raising the canopy might be desirable. Trees with a rating of 2 are generally poor candidates for preservation unless they are preserved well away from improvements or active use areas. Significant time and effort would be required to reconstruct the canopy and improve structural integrity. Trees with a rating of 1 are hazardous and should be removed.

(4) Good structure - minor structural problems may be present which do not require corrective action.

(3) Moderate structure - normal, typical structural issues which can be corrected with pruning.

(2) Marginal structure - serious structural problems are present which may or may not be correctable with pruning, cabling, bracing, etc.

(1) Poor structure - hazardous structural condition which cannot be effectively corrected with pruning or other measures, may require removal depending on location and the presence of targets.

TREE LOCATION PLAN

Protected trees with white numbers
Non protected trees with grey numbers

Sebastopol A Tree Location Map

Horticultural Associates

Date: 4/11/2019 **Scale: 1:1,500** **1 inch = 125 feet**

125 0 125 Feet

Legend

- Tree Locations
- Tree < 10 in dia.
- Parcels

TREE LOCATION PLAN

Illustrates all trees greater
than 6 inches in trunk diameter

Sebastopol A Tree Location Map

Horticultural Associates

Date: 4/8/2019 **Scale: 1:1,500** **1 inch = 125 feet**

125 0 125 Feet

Legend

Tree Locations

Parcels

HORTICULTURAL Associates

Consultants in Horticulture and Arboriculture
P.O Box 1261, Glen Ellen, CA 95442

January 17, 2023

Samantha Hauser
City Ventures
444 Speer Street
San Francisco, CA 94105

Re: North Gravenstein Highway, Sebastopol A Subdivision; additional tree removal documentation

Samantha,

After reviewing the latest set of plans for the above referenced project I found one additional protected tree that will require removal due to the required location of the new driveway apron along Gravenstein Highway, and this tree data is documented below:

Tree # 134
Sequoia sempervirens- Coast Redwood
Trunk Diameter 30", Dripline Radius 15', Height 50'

Health- Good (4)

Structure- Good (4)

Development Impact- Significant (3)

Recommendation- Removal required, significant development impacts (2)

I have included plans that show the location of this tree. Please contact me if you have questions or need additional information.

Regards,

John C. Meserve
ISA Certified Arborist, WE #0478A
ISA Qualified Tree Risk Assessor/TRAQ
ASCA Qualified Tree and Plant Appraiser/TPAQ

~ Voice 707-935-3911 Fax 707-935-7103 ~

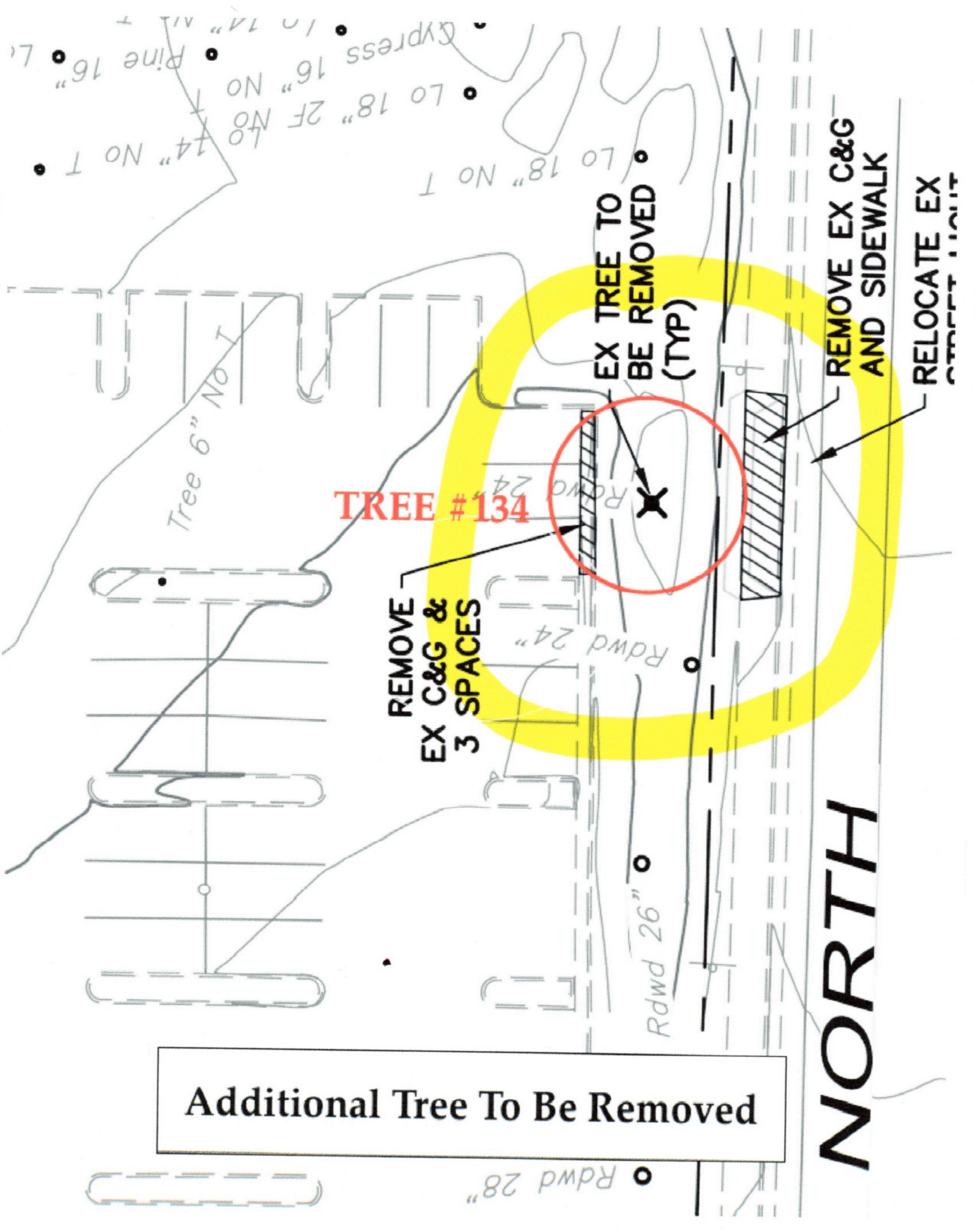
TREE LOCATION PLANS

Sebastopol A Tree Location Map

Horticultural Associates

Date: 4/11/2019 Scale: 1:1,600 1 inch = 125 feet

Location of additional tree that requires removal



Additional Tree To Be Removed

HORTICULTURAL Associates

Consultants in Horticulture and Arboriculture
P.O Box 1261, Glen Ellen, CA 95442

January 23, 2024

Samantha Hauser
Executive Vice President of Development
City Ventures
444 Speer Street, Suite 200
San Francisco, CA 94105

Re: Canopy project in Sebastopol; summary of existing tree impacts

Samantha,

At the request of Sebastopol City Planner John Jay I am providing this letter to summarize the impacts expected to trees by your proposed development. This summary is based on the Tree Inventory Chart we prepared in July of 2019 and I understand that no changes to the development plans have occurred since then that would affect trees. The following background and summary information is provided for your review:

A total of 133 trees were originally documented and evaluated, and one single Coast Redwood at the project entrance on Highway 116 was added later as an addendum after completion of the original report.

We inventoried protected trees that were 10 inches or greater in trunk diameter. We also inventoried trees 6 to 9 inches in diameter to be thorough, even though they are not protected by the Tree Ordinance.

There were a number of large Acacia at the site, and this species is not included in the inventory because it is listed on the Sebastopol 'escaped exotic' list and does not require preservation.

This site is a remnant apple orchard originating in the early 1900's. Apples are not a protected species and most are over-mature, decayed, declining, or dying back. No Apples were included in the Inventory.

~ Voice 707-935-3911 Fax 707-935-7103 ~

The following is a summary of the impacts expected:

(63) Protected trees that can be preserved

(29) Protected trees that must be removed

(28) Non protected trees that can be preserved

(14) Non protected trees that must be removed

(134) Total trees in the Inventory

Or:

(91) Protected and non-protected trees can be preserved

(43) Protected and non-protected trees that must be removed

(134) Total trees in the Inventory

Please feel free to contact me if you have questions regarding this summary, or if further evaluation is necessary.

Regards,

John C. Meserve
ISA Certified Arborist, WE #0478A
ISA Qualified Tree Risk Assessor/TRAQ
ASCA Qualified Tree and Plant Appraiser/TPAQ

HORTICULTURAL Associates

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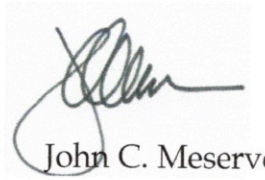
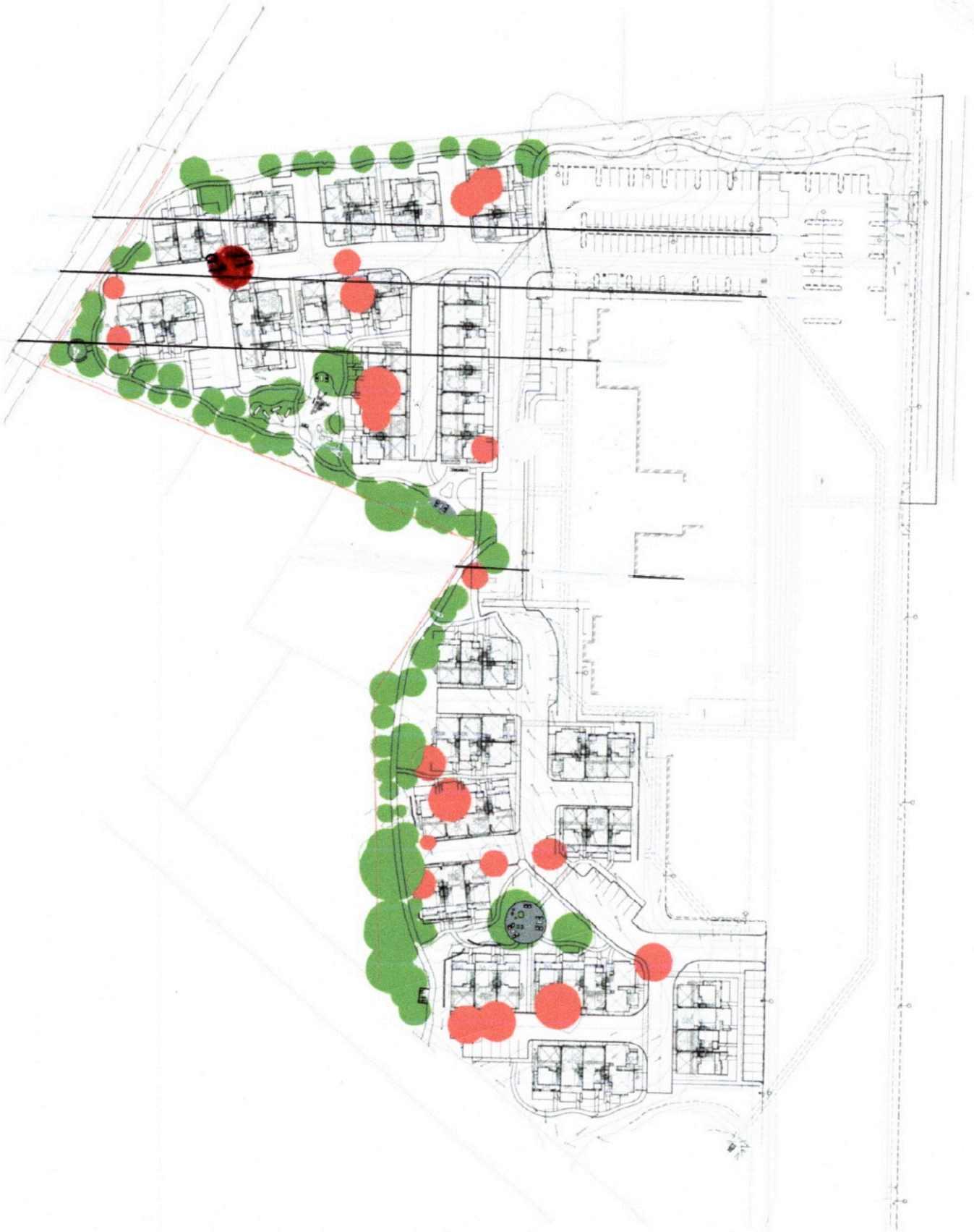
Regards,



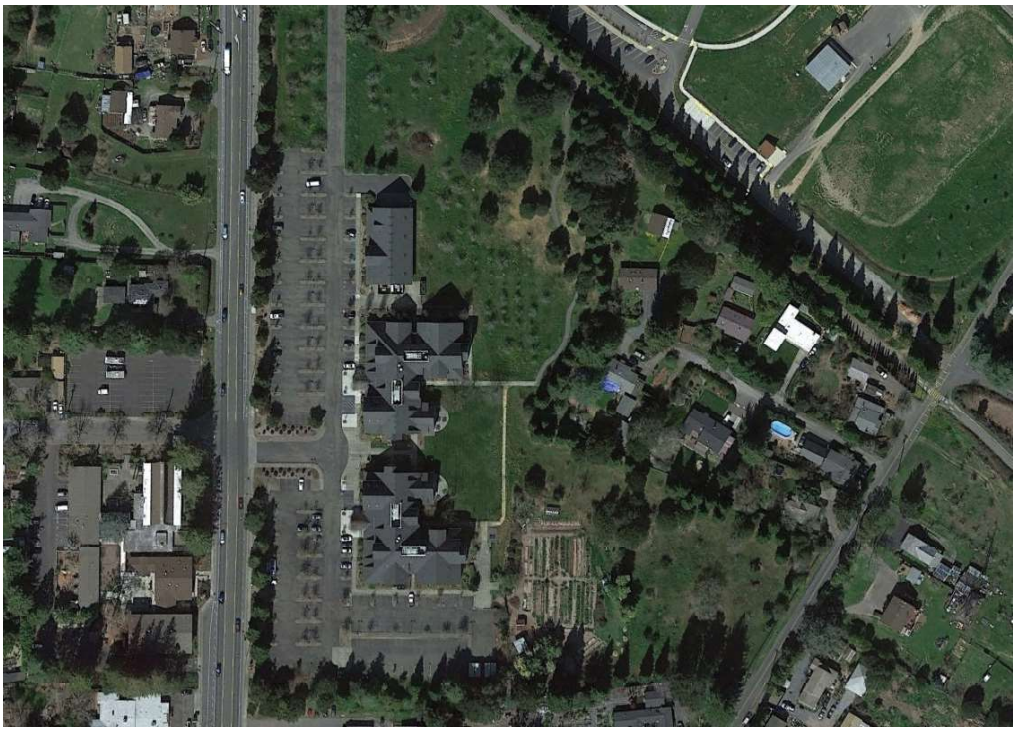
John C. Meserve
ISA Certified Arborist, WE #0478A
ISA Qualified Tree Risk Assessor/TRAQ
ASCA Qualified Tree and Plant Appraiser/TPAQ



Appendix G

Transportation Impact Study

Transportation Impact Study for The Canopy Project



Prepared for the City of Sebastopol

Submitted by
W-Trans

September 29, 2023

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Table of Contents

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Introduction

This report presents an analysis of the potential transportation, traffic, and mobility impacts that would be associated with a proposed residential development to be located at 1009-1011 Gravenstein Highway North in the City of Sebastopol. The traffic study was completed in accordance with the criteria established by the City of Sebastopol 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 transportation impacts of the proposed project, and any associated improvements that would be required to mitigate these impacts to an acceptable level under the California Environmental Quality Act (CEQA), the City's General Plan, or other policies. This report provides an analysis of those items that are identified as areas of environmental concern under the CEQA. Impacts associated with access for pedestrians, bicyclists, and to transit; the vehicle miles traveled (VMT) generated by the project; and safety concerns are addressed in the context of the CEQA criteria. While no longer a part of the CEQA review process, vehicular traffic service levels at key intersections were evaluated for consistency with General Plan policies 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 anticipated travel patterns specific to the proposed project, then analyzing the effect the new traffic would be expected to have on the study intersections and need for improvements to maintain acceptable operation.

The report is organized to provide background data that supports the various aspects of the analysis, followed by the assessment of CEQA issues and then evaluation of policy-related issues.

Project Profile

Project Description

The proposed residential project site is located on a vacant 6.1-acre parcel in northwest Sebastopol. It is adjacent to the O'Reilly Media Center to the west, which fronts on SR 116 (Gravenstein Highway North). Access would be provided via the intersection of SR 116/Mill Station Road as well as via the southernmost drive aisle of the existing office park parking lot to the south. The project would include 80 three-story townhome-style condominiums, with the potential for 16 ADA-accessible accessory dwelling units (ADUs). For the purposes of CEQA, full buildout of the site with 96 units was assumed. The proposed project site plan is shown in Figure 1.

Source: Weinstein Architects + Urban Designers LLC 3/13 seb080.ai 9/23

Transportation Impact Study for The Canopy Project

Figure 1– Site Plan

Transportation Setting

Study Area and Periods

The study area varies depending on the topic. For pedestrian trips it consists of all streets within a half-mile of the project site that would lie along primary routes of pedestrian travel, or those leading to nearby generators or attractors. For bicycle trips it consists of all streets within one mile of the project site that would lie along primary routes of bicycle travel. For the safety and traffic operational analyses, it consists of the project frontage and the following intersections:

1. SR 116 (Gravenstein Highway North)/Occidental Road
2. SR 116 (Gravenstein Highway North)/Mill Station Road
3. SR 116 (Gravenstein Highway North)/Hurlbut Avenue
4. SR 116 (Gravenstein Highway North-Healdsburg Avenue)/Covert Lane
5. SR 116 (Healdsburg Avenue)/Murphy Avenue
6. SR 116 (Healdsburg Avenue-North Main St)/North Main Street

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 an extended p.m. peak hour between 2:00 and 6:00 p.m. was analyzed to capture afternoon traffic from the adjacent Sebastopol Charter School as well as traffic typically reflecting the highest level of congestion during the homeward bound commute.

Study Intersections

SR 116 (Gravenstein Highway North)/Occidental Road is a four-legged signalized intersection located outside of the Sebastopol City limits. Crosswalks with pedestrian phasing are present on all but the south leg. Protected left-turn phasing is present on the northbound and southbound approaches and the eastbound and westbound approaches are split-phased or operate concurrently.

SR 116 (Gravenstein Highway North)/Mill Station Road is a four-legged signalized intersection with marked crosswalks and pedestrian phasing on all but the south leg. Protected left-turn phasing is present on the northbound and southbound approaches and the eastbound and westbound approaches are split-phased.

SR 116 (Gravenstein Highway North)/Hurlbut Avenue is a signalized four-legged intersection with marked zebra crosswalks on all four legs. Protected left-turn phasing is present on the northern and southern approaches and pedestrian phasing is present on all four legs. Class II bike lanes are available on the north and south legs of the intersection.

SR 116 (Gravenstein Highway North-Healdsburg Avenue)/Covert Lane is a tee intersection with stop controls on the Covert Lane approach. Covert Lane runs east-west, but curves to the north as it approaches SR 116. East of Covert Lane, SR 116 runs east-west, but curves to the north to the west of Covert Lane. In this study, SR 116 is considered to be the north and south legs and Covert Lane is the west leg. Class II bike lanes exist on both sides of the north leg of SR 116 and exist on the southwest side of SR 116 on the south leg. There are no marked crosswalks on any legs of the intersection.

SR 116 (Healdsburg Avenue)/Murphy Avenue is a three-way intersection with the stop control on the northbound Murphy Avenue approach. Marked crosswalks exist on the west and south legs of the intersection. Class II bike lanes exist on the east and west legs of the intersection, while there are sharrow markings on the south leg. Yield markings are on the east and west legs approaching the intersection and Rectangular Rapid Flashing Beacons (RRFB) are present on the west leg.

SR 116 (Healdsburg Avenue-North Main Street)/North Main Street is a signalized tee intersection with zebra crosswalks and pedestrian phasing on the north and east legs. Protected left-turn phasing exists on the eastern approach of the intersection. North Main Street curves to the west as it approaches Healdsburg Avenue and continues north. Class II bike lanes are present on the north side of the east leg, both sides of the west leg, and Class II bike lanes are present on both sides of the north leg.

The locations of the study intersections and the existing lane configurations and controls are shown in Figure 2.

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 January 1, 2018, through December 31, 2022.

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 *2022 Collision Data on California State Highways*, California Department of Transportation (Caltrans). These average rates statewide are for intersections in the same environment (urban, suburban, rural), with the same number of approaches, and the same controls. Four of the six study intersections had calculated collision rates at or below the statewide average collision rate for similar interactions. The intersections of SR 116/ Occidental Rodd and SR 116/Covert Lane were determined to have collision rates above the statewide average, so these intersections were further reviewed. The collision rate calculations are provided in Appendix A.

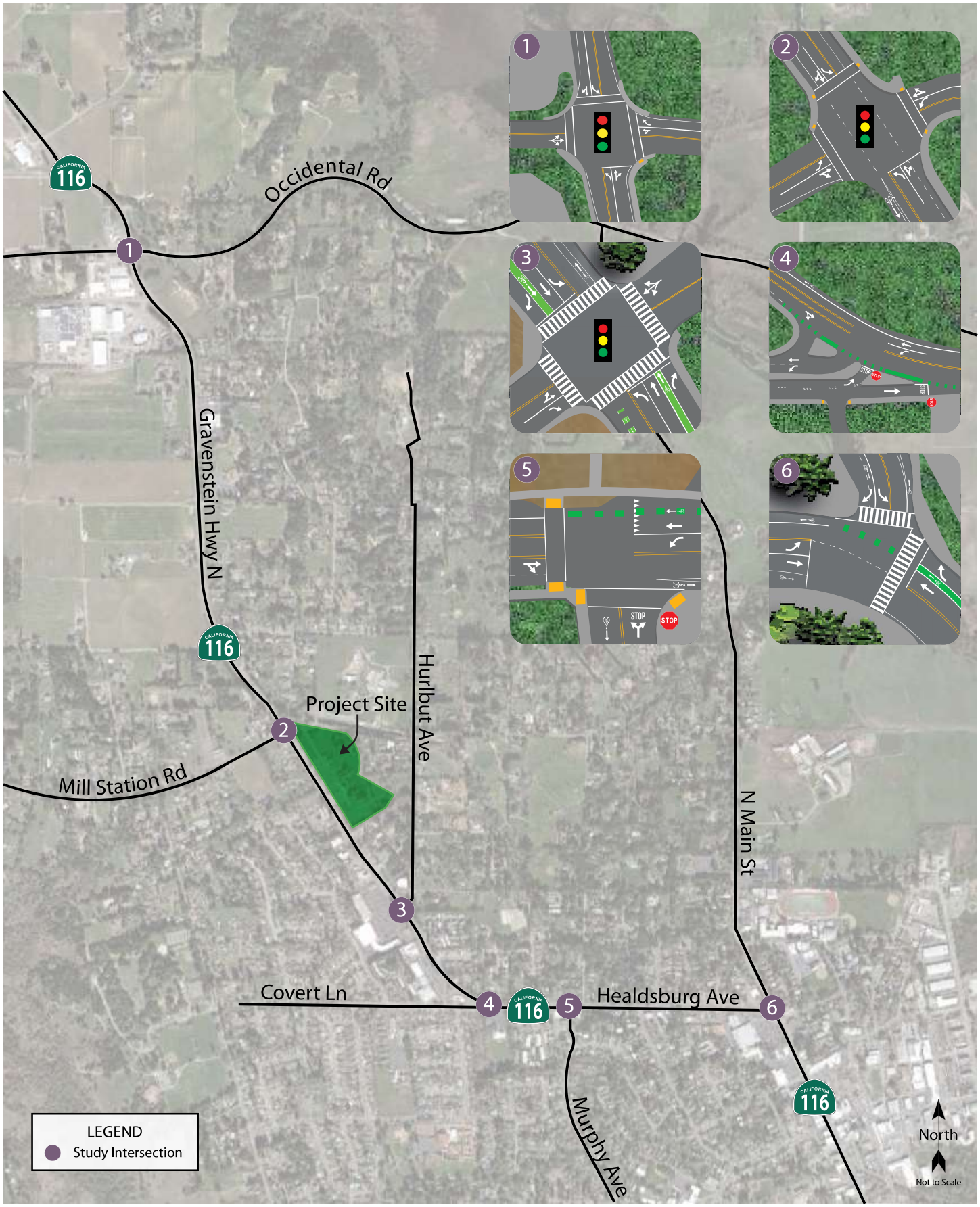
Table 1 – Collision Rates for the Study Intersections

Study Intersection	Number of Collisions (2018-2022)	Calculated Collision Rate (c/mve)	Statewide Average Collision Rate (c/mve)
1. SR 116/Occidental Rd	12	**0.29**	0.20
2. SR 116/Mill Station Rd	4	0.14	0.33
3. SR 116/Hurlbut Ave	5	0.18	0.33
4. SR 116/Covert Ln	7	**0.22**	0.13
5. SR 116/Murphy Ave	4	0.13	0.13
6. SR 116 (Healdsburg Ave-N Main St)/N Main St	6	0.12	0.28

Note: c/mve = collisions per million vehicles entering; **Bold** text = higher than the statewide average

Of the 12 collisions that occurred at the intersection of SR 116/Occidental Road, eight were rear ends and four were sideswipes. Unsafe speed was the major factor in six of these collisions, improper passing resulted in three collisions, following too closely, unsafe starting and backing, and driving under the influence were stated as the primary causes for one collision each. While the collision rate is marginally higher than the statewide average, the injury rate is much lower: 16.7 percent versus the statewide average of 47.5 percent. No remedial action is therefore recommended.

The intersection of SR 116/Covert Lane had a total of seven collisions reported with four broadsides, one rear-end, one hit object, and one unspecified. Right-of-way violations were the primary cause of four of these collisions and unsafe speeds, driving on the wrong side of road, and driving under the influence each contributed to one collision. While this intersection has an above average collision rate, no patterns of correctable behavior could be determined and therefore no remedial action is recommended. However, it should be noted that this intersection has been identified for the future installation of a roundabout or traffic signal. The City will be coordinating with Caltrans for future planning and identification of funds to complete this project.



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Transportation Impact Study for The Canopy Project

Figure 2 – Study Area and Existing Lane Configurations

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Circulation System

This section addresses the first transportation bullet point on the CEQA checklist, which relates to the potential for a project to conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

Pedestrian Facilities

Existing and Planned Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. Existing pedestrian facilities along the proposed project site frontage as well as within a one-quarter mile distance of the project site were reviewed.

A generally connected pedestrian network currently exists along SR 116 near the project site. However, there is no sidewalk on the west side of SR 116 north of its intersection with Danmar Drive. Sidewalks are present on the east side of SR 116 south of its intersection with Mill Station Road, and the West County-Joe Rodota Trail follows the east side of SR 116 north of Mill Station Road. As part of the project, pedestrian paths are planned to be built to connect the project site to the existing pedestrian network on the east side of SR 116. One pedestrian path would be located along the southeastern boundary of the project site and connect to the existing sidewalk on SR 116, and one would be located on the north side of the project site and connect to the West County-Joe Rodota Trail.

Caltrans has recently solicited bids for a project to install a new crosswalk with a HAWK (Pedestrian Hybrid Beacon) signal across the north leg of the intersection of SR 116/Danmar Drive. It is expected that this Caltrans-funded improvement will be installed before the end of 2023. It is recommended that a new pedestrian path be added through the center of the site to link the project and mixed commercial office park to the new HAWK crossing.

Pedestrian Safety

The collision history for the study area was reviewed to determine if any trends or patterns may indicate a potential safety issue for pedestrians. Collision records available from SWITRS reports were reviewed for the most current five-year period available, which was January 1, 2018, through December 31, 2022, at the time of the analysis. During the five-year study period there was one reported collision involving a pedestrian within a half mile of the project site. It occurred at the intersection of SR 116/Hurlbut Avenue, which is signalized and has high visibility crosswalks with pedestrian phasing. Based upon details contained in the SWITRS report, the collision was likely due to either driver or pedestrian inattention, and no remedial actions are recommended.

Finding – Pedestrian facilities serving the project site are adequate. The paths proposed and recommended as part of the project would provide adequate access to the existing pedestrian facilities. The project would not conflict with any existing plans or policies relative to pedestrian facilities.

Bicycle Facilities

Existing and Planned Bicycle Facilities

The *Highway Design Manual 7th Edition*, Caltrans, 2020, classifies bikeways into four 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** – signage only for shared use with motor vehicles within the same travel lane on a street or highway.
- **Class IV Bikeway** – also known as a separated bikeway, a Class IV Bikeway is for the exclusive use of bicycles and includes a separation between the bikeway and the motor vehicle traffic lane. The separation may

include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, striped buffers, or on-street parking.

In the project vicinity there are several existing Class I, II, and III bikeway facilities, including the Class I multi-use bicycle and pedestrian West County-Joe Rodota Trail, which runs between Occidental Road and North Main Street. There are existing bicycle lanes along SR 116 between the north city limit and North Main Street, along Covert Lane between Ragle Road and SR 116, and along High School Road-North Main Street between Occidental Road and SR 116. There are also several Class III bike routes in the project vicinity, most of which feature sharrow pavement markings.

According to the *Countywide Active Transportation Plan* (2014), bike lanes are planned along SR 116 between Occidental Road and the north city limit, on Bodega Avenue between Ragle Road and Dutton Avenue, and along Mill Station and Ragle roads between SR 116 and Covert Lane. Class I facilities are planned adjacent to Occidental Road and Bodega Avenue, and a Class III route is planned on Mill Station Road west of Ragle Road. Bicyclists ride in the roadway and/or on sidewalks along all other streets within the project study area. Table 2 summarizes the existing and planned bicycle facilities in the project vicinity, as contained in the *Countywide Active Transportation Plan*.

Table 2 – Bicycle Facility Summary

Status Facility	Class	Length (miles)	Begin Point	End Point
Existing				
West County/Rodota Trail	I	1.68	Occidental Rd	N Main St
Occidental Rd	II	1.83	Mill Station Rd	High School Rd
Covert Ln	II	0.50	Ragle Rd	SR 116
SR 116	II	0.52	North City Limit	Covert Ln
SR 116 (Healdsburg Ave)	II	0.64	Covert Ln	N Main St
High School Rd/N Main St	II	1.56	Occidental Rd	SR 116
Valentine Ave	III	0.60	Ragle Rd	Murphy Ave
Danmar Dr/Norlee St	III	0.48	SR 116	Covert Ln
Washington Ave	III	0.56	Willard Libby Park	Bodega Ave
Ragle Rd	III	0.52	Covert Ln	Bodega Ave
Pleasant Hill Ave	III	0.50	Covert Ln	Bodega Ave
Zimpher Dr	III	0.21	Covert Ln	Valentine Ave
Murphy Ave	III	0.38	SR 116	Valentine Ave
Planned				
West County/Rodota Trail	I	0.91	West County/Rodota Trail (west segment)	SR 116
Bodega Ave	I	0.29	Atascadero Creek	Ragle Rd
Mill Station Rd	II	0.26	Ragle Rd	SR 116
Bodega Ave	II	0.87	Ragle Rd	Dutton Ave-Jewell Ave
SR 116	II	0.95	Occidental Rd	North City Limit
Ragle Rd	II	0.41	Mill Station Rd	Covert Ln
Mill Station Rd	III	1.91	Occidental Rd	Ragle Rd

Source: *Countywide Active Transportation Plan*, Sonoma County Transportation Authority, 2014

The project as proposed would not result in the construction of any new bicycle facilities.

Bicyclist Safety

Collision records for the study area were reviewed to determine if there had been any bicyclist-involved crashes during the five-year study period between January 1, 2018, and December 31, 2022. There were two reported collisions involving bicyclists in the study area and both were likely caused by the cyclist violating the vehicle's right of way. No remedial action is therefore recommended.

Finding – Existing and planned bicycle facilities would provide adequate access for bicyclists traveling to and from the project. The project would not conflict with any policies or plans for bicycle facilities.

Transit Facilities

Existing Transit Facilities

Sonoma County Transit

Sonoma County Transit (SCT) provides fixed-route bus service in Sebastopol and surrounding areas. SCT Route 20, Route 24, and Route 26 all have stops within a half mile of the project site. Route 20 runs from the Coddingtown Mall in the City of Santa Rosa to Monte Rio in the Russian River Area. Route 24 runs from the Sebastopol Transit Hub to the intersection of SR 116/Mill Station Road, and Route 26 operates on school days only with one bus run in each direction per day, at 7:22 a.m. and 3:38 p.m. Existing transit routes and details regarding their operation are summarized in Table 3.

Table 3 – Transit Routes

Transit Agency Route	Distance to Stop (mi)[1]	Service			Connections
		Days of Operation	Time	Frequency	
Sonoma County Transit					
Route #20	< 0.1	Mon-Fri Sat-Sun	6:30 a.m. - 9:30 p.m. 6:30 a.m. - 9:30 p.m.	50 – 80 min 50 – 105 min	Monte Rio Coddingtown/Santa Rosa
Route #24	< 0.1	Mon-Fri Sat	7:45 a.m. - 6:30 p.m. 7:45 a.m. - 5:30 p.m.	45 – 55 min 45 – 55 min	Sebastopol SR 116/Mill Station Road
Route #26	< 0.1	School Days	7:22 a.m. 3:38 p.m.	1 run 1 run	Mirabel Park Sonoma State Univ.

Notes: [1] Defined as the shortest walking distance between the project site and the nearest bus stop
Source: sctransit.com/maps-schedules

Two bicycles can be carried on most SCT buses, and bike rack space is provided on a first-come, first-served basis. Additional bicycles are allowed on SCT buses at the discretion of the bus operator.

Dial-a-ride, also known as paratransit or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. SCT Paratransit is designed to serve the needs of individuals with disabilities within the City of Sebastopol and the greater Sonoma County area.

Impact on Transit Facilities

Given the size of the proposed project, there is unlikely to be substantial new demand for transit service generated by the development, though it is likely that some residents or visitors will occasionally choose to use transit. The existing pedestrian facilities are adequate to provide access to the project site from the transit stops and there are sufficient routes and headways to accommodate the nominal additional demand.

Finding – Existing public transit routes are adequate to accommodate the additional demand generated by the project, and existing bus stops accessible via continuous sidewalks. Transit facilities serving the project site are therefore considered to be adequate and the project would not conflict with any programs or policies regarding transit.

Significance Finding – The proposed project would have a less-than-significant impact relative to pedestrian, bicycle, and transit modes as it would be consistent with existing plans, policies, and programs for these modes.

Vehicle Miles Traveled (VMT)

The potential for the project to conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b) was evaluated based the project's anticipated Vehicle Miles Traveled (VMT). This is the second bullet point in the CEQA checklist.

Background

The Vehicle Miles Traveled (VMT) associated with a project is the primary basis for determining traffic impacts under CEQA. Because the City of Sebastopol has not yet adopted standards of significance for evaluating VMT, guidance provided by the California Governor's Office of Planning and Research (OPR) in the publication *Transportation Impacts (SB 743) CEQA Guidelines Update and Technical Advisory*, 2018, was used (referred to herein as the Technical Advisory). These criteria are consistent with those applied by Caltrans as outlined in the *Vehicle Miles Traveled-Focused Transportation Impact Study Guide*, California Department of Transportation, May 2020.

Significance Threshold

The OPR Technical Advisory provides VMT threshold guidance for several land use types. Residential uses are assessed using a home-based VMT per capita metric, with VMT significance thresholds set at a level of 15 percent below the citywide or regional average. The Technical Advisory indicates that it may be appropriate to apply a countywide, rather than regional, average if most people both live and work within the smaller geographic area. According to data contained in the *Sonoma County Travel Behavior Study*, SCTA, 2020, approximately 98 percent of Sebastopol's vehicle trips remain within Sonoma County. Use of a common model to produce both project-level and threshold values also allows for a clear "apples to apples" assessment. Accordingly, the applied significance threshold was based on the Sonoma County per-capita VMT average rather than the nine-County Bay Area regional average.

SCTA operates and maintains the regional travel demand model that produces baseline VMT estimates. The VMT thresholds and projections applied in this analysis reflect the SCTM19 model updated in December 2021, which remains the current version as of the August 2023 timeframe of this analysis. Based on output from the SCTA model, the existing average residential VMT per capita in the County of Sonoma is 16.60 miles. VMT significance thresholds are set at 15 percent below this level, or 14.11 miles. Accordingly, the project would have a potentially significant impact on VMT if its projected residential VMT per Capita exceeds 14.11 miles.

Project VMT Assessment

VMT per Capita

The SCTA model includes traffic analysis zones (TAZ) covering geographic areas throughout Sonoma County. The Canopy project site is located within TAZ 803, which has a baseline VMT per capita of 15.57 miles. Based on the model, for the project to achieve the applied threshold of 15 percent below the Countywide average, its projected VMT per capita would need to be reduced by at least 9.4 percent.

Consideration was given to whether adjustments to the baseline per-capita VMT estimates produced by the SCTA model are warranted to reflect project-specific details. The most common adjustments pertain to project density, provision of affordable housing, mix of uses, and off-site improvements to non-auto travel networks. The publication *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*, California Air Pollution Control Officers Association (CAPCOA), 2021, includes a methodology to determine the VMT reductions associated with increases in residential density. Per the CAPCOA methodology, a minimum density of 9.1 units per acre would need to be achieved before VMT reduction benefits could be realized. For the purposes of VMT analysis, only the 80 single-family attached dwelling units were evaluated and did not include the ADUs, which the project description identifies as optional. The residential

density of the proposed project at 80 units is 13.1 dwelling units per acre, and applying the CAPCOA density methodology results in a VMT reduction of 9.69 percent, or 1.51 VMT. Applying this percentage reduction yields an adjusted VMT value of 14.06, which is below the threshold of 14.11, and therefore does not yield a significant project impact for VMT. Table 4 shows a summary of the VMT analysis.

Table 4 – Vehicle Miles Traveled Analysis Summary

VMT Metric	Baseline VMT Rate (Countywide Avg)	Significance Threshold (15% Below Countywide Avg)	Project VMT per Capita	
			Project Site TAZ 803[1]	Meets Threshold?
Residential VMT per Capita (Countywide Baseline)	16.60	14.11	15.57	No
Applicable VMT Reduction	**Baseline Density (Countywide Avg)**	**Project Density**	**Calculated VMT Reduction**	**Adjusted VMT**
Higher Density Residential	9.1 du/acre	13.1 du/acre	9.69%	14.06

Notes: VMT Rate is measured in VMT per Capita, or the number of daily miles driven per resident; TAZ=Traffic Analysis Zone[1]; du/acre=dwelling units per acre

Significance Finding – Applying an allowable residential density reduction of 9.69 percent to the project VMT reduces the VMT impact of the project to a less-than-significant level. The project is expected to meet the applicable significance threshold for vehicle miles traveled.

Safety Issues

The potential for the project to impact safety was evaluated in terms of the adequacy of sight distance and need for turn lanes at the project access locations, as well as the adequacy of stacking space in left-turn lanes at the study intersections. This section addresses the third transportation bullet on the CEQA checklist which is whether or not the project would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

Site Access

Primary access to the site would be provided at two locations: by an existing private drive that links the existing office development adjacent to the project to Mill Station Road and via the southernmost drive aisle of the office development's parking lot. A new curb cut and driveway would be created at the southernmost point of this drive aisle to provide more direct access to SR 116.

Sight Distance

Sight distances along SR 116 at the proposed new project driveway at the southernmost parking lot drive aisle were evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. Though Caltrans does not indicate a recommended sight distance for driveways in urban areas, for safety reasons the stopping sight distance was evaluated using the approach travel speed as the basis for determining the recommended sight distance. Additionally, the stopping sight distance needed for a following driver to stop if there is a vehicle waiting to turn into a side street or driveway was evaluated based on the stopping sight distance criterion and approach speed on the major street. Based on a posted speed of 35 mph for SR 116, the minimum stopping sight distance needed is 250 feet.

Field measurements indicate that sight distance at the driveways on SR 116 is over 300 feet in each direction and exceeds the stopping sight distance needed for vehicles traveling five mph above the posted speed limit of 35 mph. The sight distance at the private driveway location on Mill Station Road was field measured at 100 feet in each direction and does not meet the stopping sight distance requirement of 200 feet in each direction for five mph over the *prima facie* speed limit of 25 mph. As landscaping and signage can impede sight lines, any landscaping or signage placed within the vision triangle at the driveway should be less than three feet or more than seven feet above the pavement surface to maintain a clear line of sight.

Significance Finding – Sufficient sight distance is anticipated to be available at the new driveway created by the project at the southernmost drive aisle of the existing office park parking lot. However, existing sight distance at the driveway intersection at Mill Station Road would need to be increased to 200 feet in each direction in order to be deemed sufficient.

Emergency Access

The final transportation bullet on the CEQA checklist requires an evaluation as to whether the project would result in inadequate emergency access or not.

Adequacy of Site Access

As noted above, the project site would be accessed by an existing private road that connects to Mill Station Road to the northwest of the project site and by the access easement via the southernmost drive aisle of the parking lot of the adjacent development as well as a new driveway on SR 116 at the end of the project access drive aisle to provide direct access from the project to the street. The project would include a small private internal street network with a minimum travel width of 24 feet. This network and the parking stalls located therein appear to be in accordance with City design standards. Site access and circulation is therefore expected to function acceptably for emergency response vehicles.

Additionally, the nominal increase in traffic volumes resulting from the project can reasonably be expected to result in similarly nominal changes to traffic delays in the area. Since emergency responders can claim the right-of-way through use of their lights and sirens, the addition of project-generated traffic would be expected to have little to no impact on emergency response times.

Significance Finding – The project would have a less-than-significant impact on emergency response.

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) *Sixth Edition*, Transportation Research Board, 2018. 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.

The Levels of Services for the intersections with side street stop controls, or those which are unsignalized and have one or two approaches stop controlled, were analyzed using the "Two-Way Stop-Controlled" intersection capacity method from the HCM. The methodology determines a level of service for each minor turning movement by estimating the average delay in seconds per vehicle. Results are presented for the stop-controlled approaches together with the weighted overall average delay for the intersection.

The study intersections that are currently or planned to be controlled by a traffic signal were evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether the signals are coordinated or not, 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 signal timing obtained from Caltrans. Adjustments were made to signal timing under Future conditions to account for changes in demand patterns that would be typically addressed by periodic retiming.

Intersections that are proposed to be controlled by modern roundabouts were evaluated using the Federal Highway Administration (FHWA) Roundabout Method, also contained within the Unsignalized Methodology of the HCM. This methodology determines intersection operation using a gap acceptance method along with basic geometric and volume data to calculate entering and circulating flows. This information is then translated to average vehicle delays, with LOS break points at the same delays as used in the two-way stop-controlled methodology.

The ranges of delay associated with the various levels of service are indicated in Table 5.

Table 5 – Intersection Level of Service Criteria			
LOS	**Two-Way Stop-Controlled**	**Roundabout**	**Signalized**
A	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.	Delay of 0 to 10 seconds.	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
B	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.	Delay of 10 to 15 seconds.	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
C	Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.	Delay of 15 to 25 seconds.	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
D	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.	Delay of 25 to 35 seconds.	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles must stop.
E	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.	Delay of 35 to 50 seconds.	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop, and drivers consider the delay excessive.
F	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.	Delay of more than 50 seconds.	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, 2018

Traffic Operation Standards

Caltrans

All of the study intersections are under the jurisdiction of Caltrans, but Caltrans does not have a standard of significance relative to operation as this is no longer a CEQA issue. The *Vehicle Miles Traveled-Focused Transportation Impact Study Guide* (TISG), published in May 2020, replaced the *Guide for the Preparation of Traffic Impact Studies*, 2002. As indicated in the TISG, the Department is transitioning away from requesting LOS or other vehicle operation analyses of land use projects and will instead focus on Vehicle Miles Traveled (VMT). Adequacy of operation was therefore evaluated using the County's standards for the study intersection in Sonoma County (SR 116/Occidental Road) and using the City of Sebastopol's standards for the remaining five study intersections that are within City limits.

County of Sonoma

The Level of Service standard for intersections in Sonoma County is Level of Service D according to the *Sonoma County General Plan 2020* Policy CT-4.2. Based on the most recent criteria published by the County of Sonoma in May 2016 and updated in June 2019, the project would have an adverse effect on operation at SR 116/Occidental Road if it results in any of the following conditions:

- Project traffic would cause an intersection currently operating at an acceptable level of service (LOS D or better) to operate below the standard (LOS E or F).
- If the intersection currently operates or is projected to operate below the County standard (at LOS E or F), project traffic causes the average delay to increase by five seconds or more. The delay will be determined by comparing intersection operation with and without the project's traffic for both the existing and projected

future conditions. This criterion applies to all controlled intersections except for driveways and minor side streets that have less than 30 vehicle trips per hour per approach or exclusive left turn movement.

City of Sebastopol

The following criteria referenced in the *Draft Environmental Impact Report* (DEIR) *for the 2016 Sebastopol General Plan Update*, May 2016, De Novo Planning Group, were applied in order to determine if the project would have an adverse effect on operation at the five study intersections within the City limits:

- Utilize a Level of Service objective of LOS D at intersections to evaluate conditions and impacts, with primary focus on access and safety.
- At signalized intersections, levels of service shall be determined for the overall intersection.
- At unsignalized intersections, level of service shall be determined for both controlled movements and for the overall intersection. Controlled movements operating at LOS E or F would be considered acceptable if:
  - The intersection is projected to operate at LOS D or better overall; and
  - The projected traffic volume on the controlled movement is relatively low (30 vehicles or less per hour on approaches with single lanes, 30 vehicles or less per hour on lanes serving left turns and through movements).
- For intersections already operating worse than LOS objectives, development projects should not contribute substantially to further decline in LOS (causing the LOS to decline by a letter grade from LOS E to LOS F) or by more than a five percent increase in delay for intersections currently operating at an unacceptable LOS.

While not explicitly stated in the DEIR, it was also considered an adverse effect on operations if project traffic would cause an intersection operating acceptably at LOS D or better to operate unacceptably at LOS E or F. It is also noted Policy CIR 1-5 of the *Sebastopol General Plan*, November 2016, De Novo Planning Group, states that "when analyzing impacts to the circulation network created by new development or roadway improvements, consider the needs of all users, including those with disabilities, ensuring that pedestrians, bicyclists, and transit riders are considered preeminent to automobile drivers." In other words, there should be careful review to ensure that automobile improvements do not negatively affect the experiences of pedestrians, bicyclists, and transit riders.

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. Existing traffic counts were obtained for the study intersections in late May 2023 while area schools were in session.

Under existing conditions, four of the six study intersections are operating acceptably while the intersection of SR 116/Occidental Road operates unacceptably at LOS F during both peak hours and SR 116/North Main Street operates unacceptably at LOS E during the p.m. peak hour. It is noted that the signal at SR 116/North Main Street includes an exclusive pedestrian phase which cannot be directly modeled using the HCM methodology, and thus the pedestrian phase was modeled as a northbound vehicle phase. The average vehicle delay and LOS for each scenario at SR 116 (Healdsburg Avenue-North Main Street)/North Main Street is contained in an additional spreadsheet in Appendix B in which the delay experienced by pedestrians was removed from the calculations.

The existing traffic volumes are shown in Figure 3. A summary of the intersection Level of Service calculations is presented in Table 6, and copies of the calculations are provided in Appendix B.

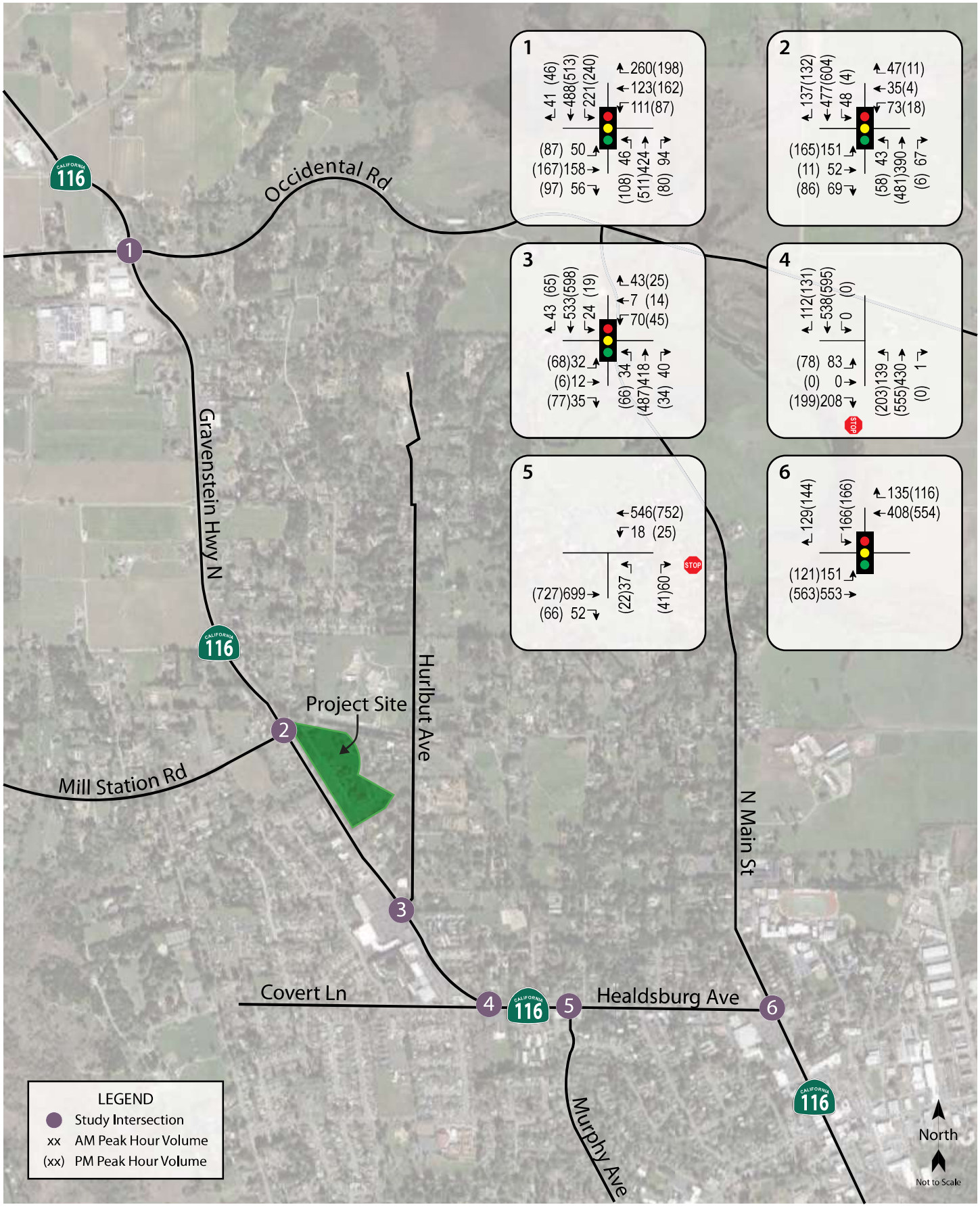

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Figure 3 – Existing Traffic Volumes

W-Trans

Table 6 – Existing Peak Hour Intersection Levels of Service				
Study Intersection *Approach*	**AM Peak**		**PM Peak**	
	Delay	**LOS**	**Delay**	**LOS**
1. SR 116/Occidental Rd	**109**	**F**	**123**	**F**
Add EBL/WBL Lanes with protected Phasing, WBR OL	**57.7**	**E**	**59.7**	**E**
Add EBL/WBL Lanes with protected Phasing, Add EBR Lane and WBR Overlap	48.2	D	46.7	D
With Roundabout	26.8	D	33.1	D
2. SR 116/Mill Station Rd	38.0	D	28.2	C
3. SR 116/Hurlbut Ave	20.9	C	23.9	C
4. SR 116/Covert Ln	5.5	A	4.9	A
Eastbound (Covert Ln) Approach	*21.8*	*C*	*22.0*	*C*
5. SR 116/Murphy Ave	1.7	A	0.9	A
Northbound (Murphy Ave) Approach	*23.1*	*C*	*20.3*	*C*
6. SR 116/N Main St	46.7	D	**56.8**	**E**

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; **Bold** text = deficient operation; Shaded cells = conditions with indicated modifications

The following capacity measures to decrease delay and improve operation of the intersection of SR 116/Occidental Road operating unacceptably were analyzed.

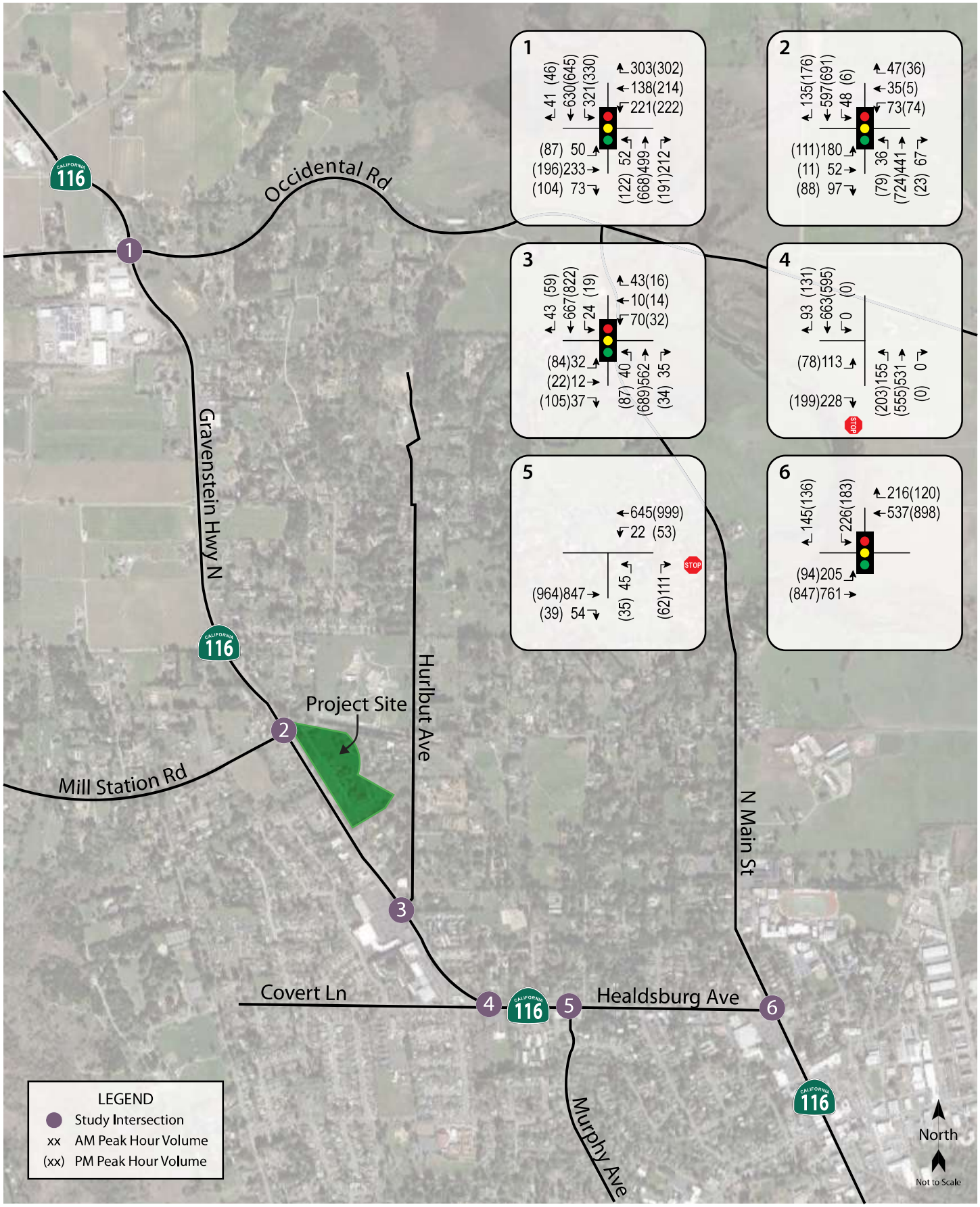
- Add 200-foot-long left-turn pockets on the eastbound and westbound approaches.
- Convert the existing split phasing to protected left-turn phasing on the eastbound and westbound approaches.
- Install a westbound right-turn overlap phase.

The intersection would continue operating unacceptably at LOS E with these modifications despite the reduction in delay. Adding a 200-foot-long eastbound right-turn lane to the above changes or installing a single-lane roundabout would both result in acceptable operation of LOS D.

Future Conditions

Future intersection turning movements for five of the six study intersections were obtained from the Circulation Element of the *Sebastopol General Plan*, while future turning movements at SR 116/Occidental Road were developed using the "Furness" method and segment volumes for the horizon year of 2040 from the SCTA traffic model. The Furness method is an iterative process that employs existing turn movement data, existing link volumes, and future link volumes to project likely future turning movement volumes at intersections.

Under anticipated Future volumes, four of the six intersections are expected to operate acceptably. The intersection of SR 116/Occidental Road is expected to operate unacceptably at LOS F during both peak hours and SR 116/North Main Street is expected to operate unacceptably at LOS E during the p.m. peak hour. Future volumes are shown in Figure 4 and operating conditions are summarized in Table 7, and copies of the calculations are provided in Appendix B.



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Transportation Impact Study for The Canopy Project

Figure 4 – Future Traffic Volumes

Table 7 – Future Peak Hour Intersection Levels of Service				
Study Intersection ***Approach***	**AM Peak**		**PM Peak**	
	Delay	**LOS**	**Delay**	**LOS**
1. SR 116/Occidental Rd	**235**	**F**	**225**	**F**
Add EBL/WBL Lanes, Protected LT Phasing, WBR Overlap	**158**	**F**	**130**	**F**
Add EBL/WBL Lanes, Protected LT Phasing, EBR Lane, and WBR OL	**134**	**F**	**109**	**F**
With Roundabout	**176**	**F**	**176**	**F**
2. SR 116/Mill Station Rd	36.0	D	33.9	D
3. SR 116/Hurlbut Ave	24.0	C	29.0	C
4. SR 116/Covert Ln	5.8	A	4.8	A
Eastbound (Covert Ln) Approach	*24.5*	*C*	*32.5*	D
With Roundabout	11.4	B	22.6	C
5. SR 116/Murphy Ave	2.8	A	1.8	A
Northbound (Murphy Ave) Approach	*29.8*	*D*	*34.1*	*D*
6. SR 116/N Main St	51.5	D	**62.4**	**E**

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;* **Bold** text = deficient operation; Shaded cells = conditions with indicated modifications

Adding 200-foot-long left-turn pockets on the east and west legs, protected left-turn phasing on the eastbound and westbound approaches, and a westbound right-turn overlap phase to SR 116/Occidental Road or converting the intersection to a roundabout would be expected to decrease delay at the intersection under Future conditions; however, the intersection would continue operating unacceptably at LOS F during both peak hours as it also would under each improvement scenario.

In accordance with Action CIR 1d of the General Plan and *City of Sebastopol SR 116 Safety Study*, 2021, W-Trans, the intersection of SR 116/Covert Lane was modeled with a roundabout under Future conditions as well as with its current configuration. With a roundabout, SR 116/Covert Lane is expected to operate acceptably at LOS B or C. It is noted that a roundabout project is not currently a part of the City or Caltrans' Capital Improvement Program (CIP); however, the City will be pursuing a roundabout concept and potential funding sources at this location in cooperation with Caltrans later in the coming year.

Project Conditions

Trip Generation

The anticipated vehicle trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 11th Edition, 2021. Since the site is currently undeveloped, no existing trips were analyzed. The trip generation potential of the project as planned was developed using the published standard rates for Single Family Attached Housing (Land Use #215) and Multifamily Housing (Low-Rise) (Land Use #220), as the description of these land uses most closely matches the proposed project.

The number of residential units analyzed is 96, which includes 80 condominiums and 16 potential ADUs. Based upon the application of these assumptions, the proposed project is expected to generate an average of 684 trips per day, including 44 a.m. peak hour trips and 54 trips during the p.m. peak hour on a typical weekday. These results are summarized in Table 8.

Table 8 – Trip Generation Summary											
Land Use	**Units**	**Daily**		**AM Peak Hour**				**PM Peak Hour**			
		Rate	**Trips**	**Rate**	**Trips**	**In**	**Out**	**Rate**	**Trips**	**In**	**Out**
Single Family (Attached)	80 du	7.20	576	0.48	38	10	28	0.57	46	27	19
Multifamily Housing	16 du	6.74	108	0.40	6	2	4	0.51	8	5	3
Total			**684**		**44**	**12**	**32**		**54**	**32**	**22**

Note: du = dwelling unit

Trip Distribution

The distribution pattern used to allocate new project trips to the street network was determined by reviewing existing turning movements at the study intersections as well as employment patterns for residents of the City of Sebastopol, as indicated by the 2010 Census. Since traffic conditions are generally most critical during the weekday p.m. peak hour, these distribution assumptions are primarily based on the expected trip routes during that time. The distribution assumptions shown in Table 9 were used.

Table 9 – Trip Distribution Assumptions				
Route	**Percent**	**Daily Trips**	**AM Trips**	**PM Trips**
Occidental Rd (To/From the East)	20%	137	9	11
Occidental Rd (To/From the West)	5%	34	2	3
SR 116 (To/From the North)	10%	68	4	5
SR 116 (To/From the South)	40%	275	18	22
Mill Station Rd (To/From the West)	5%	34	2	3
Covert Ln (To/From the West)	10%	68	4	5
N. Main St (To/From the North)	10%	68	4	5
TOTAL	**100%**	**684**	**44**	**54**

Existing plus Project Conditions

Upon the addition of project-generated traffic to the existing volumes, four of six study intersections are expected to continue operating acceptably while the intersection of SR 116/Occidental Road would continue operating unacceptably at LOS F during both peaks and SR 116/North Main Street would continue operating unacceptably at LOS E during the p.m. peak hour. Project traffic volumes are shown in Figure 5 and Existing plus Project volumes are shown in Figure 6. The analysis results are summarized in Table 10, and copies of the calculations are provided in Appendix B.

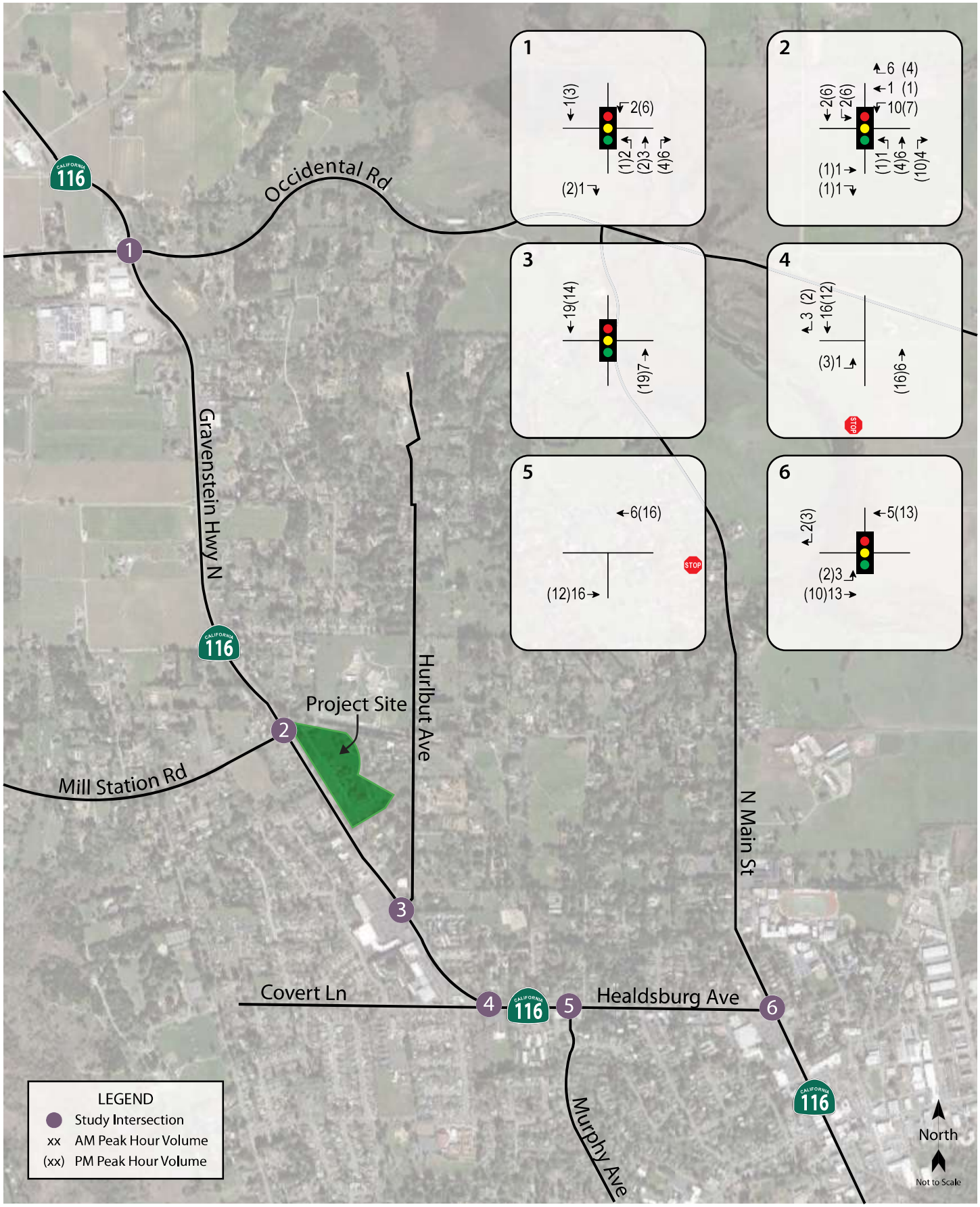

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Figure 5 – Project Traffic Volumes

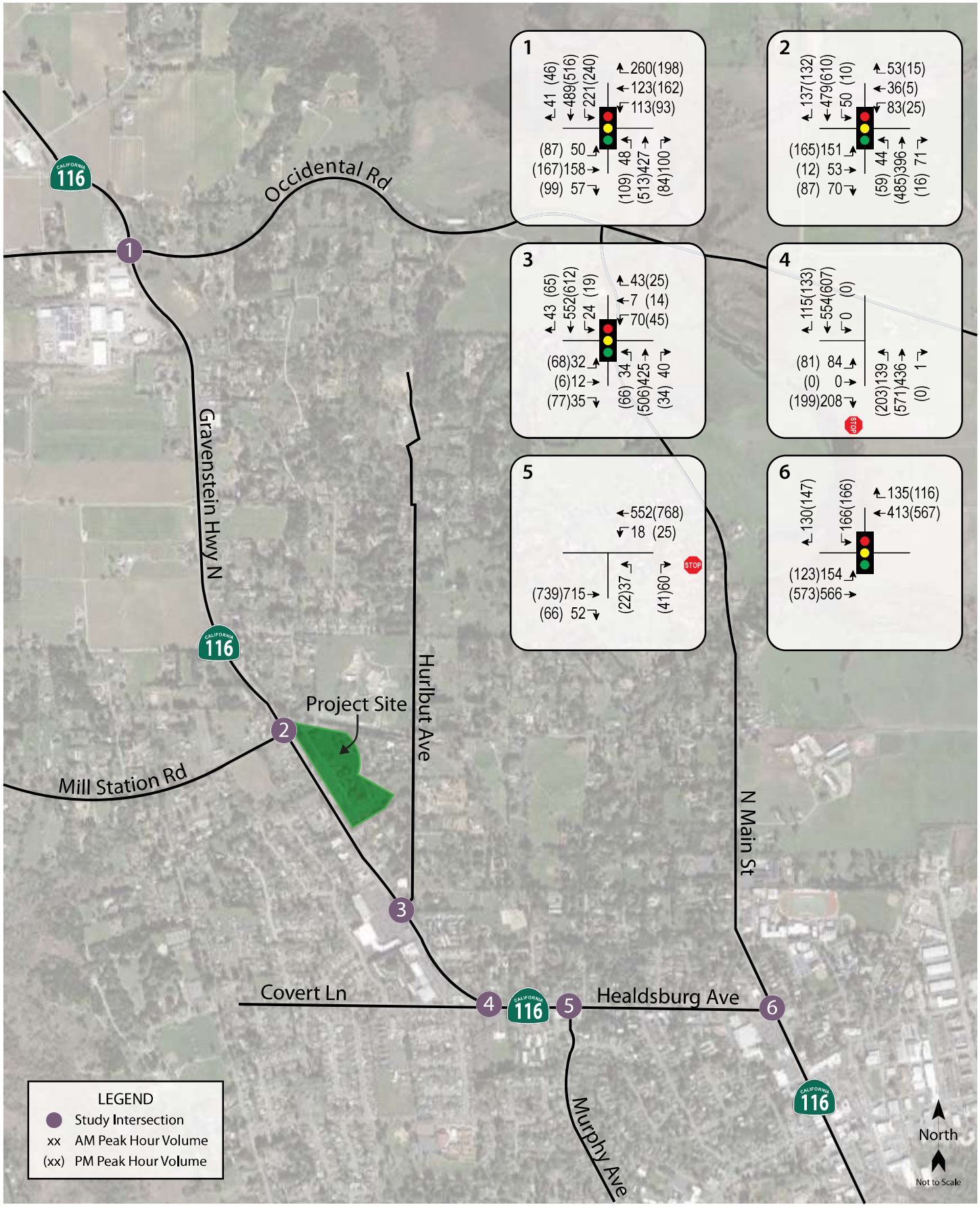

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Figure 6 – Existing plus Project Traffic Volumes

Table 10 – Existing and Existing plus Project Peak Hour Intersection Levels of Service

Study Intersection *Approach*	Existing Conditions				Existing plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. SR 116/Occidental Rd	**109**	**F**	**123**	**F**	**113**	**F**	**127**	**F**
Add EBL/WBL Lanes, Protected LT Phasing, and WBR Overlap	**57.7**	**E**	**59.7**	**E**	**59.9**	**E**	**61.3**	**E**
Add EBL/WBL Lanes, Protected LT Phasing, EBR Lane and WBR Overlap	48.2	D	46.7	D	49.8	D	47.6	D
With Roundabout	26.8	D	33.1	D	27.8	D	34.5	D
2. SR 116/Mill Station Rd	38.0	D	28.2	C	38.7	D	31.6	C
3. SR 116/Hurlbut Ave	20.9	C	23.9	C	21.7	C	24.7	C
4. SR 116/Covert Ln	5.5	A	4.9	A	5.6	A	5.1	A
Eastbound (Covert Ln) Approach	*21.8*	*C*	*22.0*	*C*	*22.6*	*C*	*22.8*	*C*
5. SR 116/Murphy Ave	1.7	A	0.9	A	1.7	A	0.9	A
Northbound (Murphy Ave) Approach	*23.1*	*C*	*20.3*	*C*	*23.6*	*C*	*20.7*	*C*
6. SR 116/N Main St	46.7	D	**56.8**	**E**	47.8	D	**61.0**	**E**
With Signal Timing Optimization	-		-		-		54.5	D

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;* **Bold** text = deficient operation; Shaded cells = conditions with indicated modifications

Adding 200-foot-long left-turn lanes on the eastbound and westbound approaches, protected left-turn phasing, and a westbound right-turn overlap phase to SR 116/Occidental Road would reduce delay substantially, but the intersection would continue operating unacceptably at LOS E with or without project trips. Adding a 200-foot-long eastbound right-turn lane with the above modifications or installing a single-lane roundabout would result in acceptable operation under Existing plus Project volumes. The project would add less than five seconds of delay at SR 116/Occidental Road and would not cause a deterioration in the service level; therefore, the project would not cause an adverse effect on existing operations per the County's standards.

The project would result in a greater than a five percent increase in average delay at SR 116/North Main Street, which would operate unacceptably at LOS E during the p.m. peak hour without or with the project. As a result, this is considered an adverse project impact under the City's standards. Optimizing the signal's cycle length and splits to accommodate project trips would result in an improved LOS D. Therefore, it is recommended that the project applicant contribute to the City's Traffic Impact Fee (TIF) that could be used to adjust the signal's timing since the intersection is located near downtown with no right-of-way available for capacity enhancements.

Finding – Four of the six study intersections would be expected to operate acceptably with the addition of project traffic to existing volumes while the intersections of SR 116/Occidental Road and SR 116/North Main Street would operate unacceptably with or without the project. The project would result in a greater than five percent increase in delay at SR 116/North Main Street during the p.m. peak hour, resulting in an adverse effect per the City's standards.

Recommendation – The project applicant should contribute to the City of Sebastopol TIF that could be used to re-time the signal at SR 116/North Main Street to optimize operation.

Future plus Project Conditions

Upon the addition of project-generated traffic to the anticipated future volumes, four of the study intersections are expected to operate acceptably. SR 116/Covert Lane would operate acceptably with or without a roundabout installed. Future plus Project intersection operations are summarized in Table 11, and volumes are shown in Figure 7. Copies of the calculations are provided in Appendix B.

Table 11 – Future and Future plus Project Intersection Levels of Service

Study Intersection	Future Conditions				Future plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. SR 116/Occidental Rd	**235**	**F**	**225**	**F**	**239**	**F**	**229**	**F**
Add EBL/WBL Lanes, Protected EBL/WBL Phasing, and WBR Overlap	**158**	**F**	**130**	**F**	**161**	**F**	**133**	**F**
Add EBL/WBL Lanes, Protected LT Phasing, EBR Lane and WBR Overlap	**134**	**F**	**109**	**F**	**137**	**F**	**111**	**F**
With Roundabout	**176**	**F**	**176**	**F**	**181**	**F**	**182**	**F**
2. SR 116/Mill Station Rd	36.0	D	33.9	D	36.8	D	35.1	D
3. SR 116/Hurlbut Ave	24.0	C	29.0	C	25.1	C	30.2	C
4. SR 116/Covert Ln	5.8	A	4.8	A	6.0	A	4.9	A
Eastbound (Covert Ln) Approach	*24.5*	*C*	*32.5*	D	*25.4*	*D*	*34.2*	*D*
With Roundabout	11.4	B	22.6	C	11.8	B	23.9	C
5. SR 116/Murphy Ave	2.8	A	1.8	A	2.9	A	1.8	A
Northbound (Murphy Ave) Approach	*29.8*	*D*	*34.1*	*D*	*30.8*	*D*	*35.1*	*E*
6. SR 116/N Main St	51.5	D	**62.4**	**E**	52.5	D	**64.9**	**E**

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; **Bold** = Unacceptable operation; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; Shaded cells = conditions with indicated modifications

The intersections of SR 116/Occidental Road and SR 116/North Main Street would continue operating unacceptably with the addition of project traffic; however, as the anticipated increases in overall delay would be less than five seconds for SR 116/Occidental Road and less than five percent for SR 116/North Main Street, the project's effects would be considered acceptable per the County's and City's standards, respectively.

The addition of left-turn lanes and protected left-turn phasing on the eastbound and westbound approaches to SR 116/Occidental Road as well as a westbound right-turn overlap phase would reduce delay while still resulting in LOS F. Installing a 200-foot-long eastbound right-turn lane along with the above changes would further reduce delay, while a single-lane roundabout at the intersection would be expected to have the least benefit in terms of reduced delay.

Finding – Four of the six study intersections would be expected to operate acceptably with the addition of project trips to future volumes while the intersections of SR 116/Occidental Road and SR 116/North Main Street would operate unacceptably under Future plus Project volumes or without project traffic added.

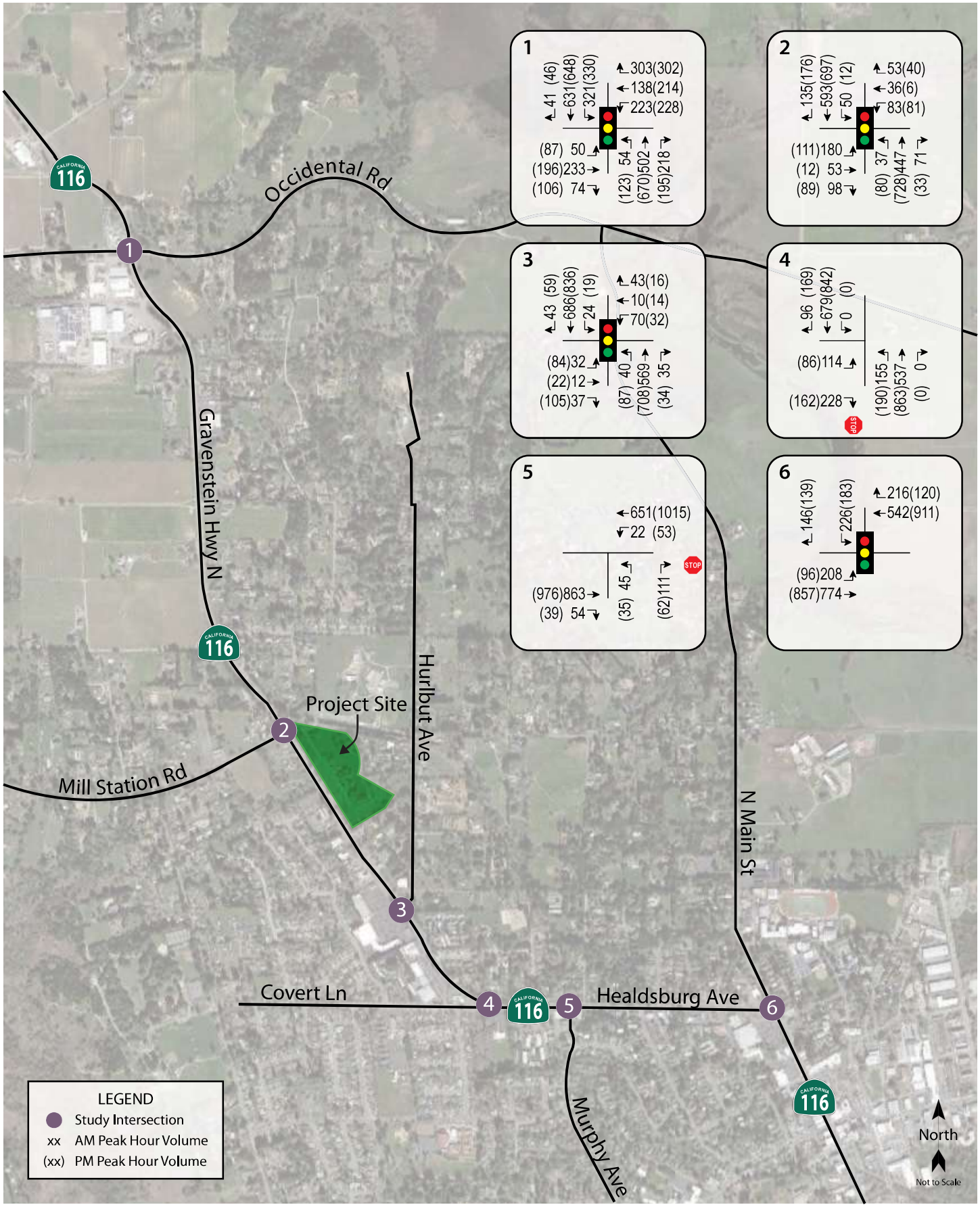

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Figure 7 – Future plus Project Traffic Volumes

Conclusions and Recommendations

Conclusions

- The proposed project is expected to generate an average of 684 trips per day, including 44 a.m. peak hour trips and 54 trips during the p.m. peak hour on a typical weekday.
- The existing and planned pedestrian, bicycle, and transit facilities provide adequate access to and from the project site and the project does not conflict with any policies, plans or programs for these modes.
- The project is expected to meet the applicable significance threshold for vehicle miles traveled.
- Sufficient sight distance is anticipated to be available at the new driveway created by the project. However, existing sight distance at the driveway intersection at Mill Station Road would need to be increased to 200 feet in each direction in order to be deemed sufficient.
- The proposed roadway network, including connectivity to existing streets, would provide adequate emergency circulation and access from a transportation perspective.
- The project would be subject to review and approval by the City's Fire Marshal; any requirements imposed by the Fire Marshal shall take precedence over the emergency access and circulation findings contained herein.
- Under existing conditions with and without the Project, four of the six study intersections are operating acceptably while the intersection of SR 116/Occidental Road operates unacceptably at LOS F during both peak hours and SR 116/North Main Street operates unacceptably at LOS E during the p.m. peak hour. The addition of project traffic would not result in an adverse impact at SR 116/Occidental Road, per the County's standards but would result in an adverse impact at SR 166/North Main Street per the City's standards.
- Four of the six study intersections would be expected to operate acceptably with the addition of project trips to future volumes while the intersections of SR 116/Occidental Road and SR 116/North Main Street would operate unacceptably under Future plus Project conditions. The addition of project traffic to future volumes would not result in an adverse impact at either intersection, per the County's and City's standards, respectively.
- The addition of left-turn lanes and protected left-turn phasing on the eastbound and westbound approaches at SR 116/Occidental Road, as well as a westbound right-turn overlap phase, would reduce delay while still resulting in LOS F operation. Installing a 200-foot-long eastbound right-turn lane along with the above changes would further reduce delay, while a single-lane roundabout at the intersection would be expected to cause the smallest reductions in delay.

Recommendations

- The project applicant should contribute to the City of Sebastopol TIF. Such monies could be used to re-time the signal at SR 116/North Main Street to minimize delay.

Study Participants and References

Study Participants

Principal in Charge	Steve Weinberger, PE, PTOE
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Graphics	Cameron Wong
Editing/Formatting	Jessica Bender
Quality Control	Dalene J. Whitlock, PE, PTOE

References

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Appendix A

Collision Rate Calculations

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Intersection Collision Rate Worksheet

The Canopy EIR

Intersection # 1: SR 116 (Gravenstein Highway North) & Occidental Road
Date of Count: Thursday, May 25, 2023

Number of Collisions: 12
Number of Injuries: 2
Number of Fatalities: 0
Average Daily Traffic (ADT): 23000
Start Date: January 1, 2018
End Date: December 31, 2022
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Stop & Yield Controls
Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions x 1 Million}}{\text{ADT x Days per Year x Number of Years}}$$

$$\text{Collision Rate} = \frac{12 \times 1{,}000{,}000}{23{,}000 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.29 c/mve**	**0.0%**	**16.7%**
Statewide Average*	**0.20 c/mve**	**1.1%**	**47.5%**

Notes
ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2019 Collision Data on California State Highways, Caltrans

Intersection # 2: SR 116 (Gravenstein Highway North) & Mill Station Road
Date of Count: Thursday, May 25, 2023

Number of Collisions: 4
Number of Injuries: 2
Number of Fatalities: 0
Average Daily Traffic (ADT): 15800
Start Date: January 1, 2018
End Date: December 31, 2022
Number of Years: 5

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

$$\text{Collision Rate} = \frac{\text{Number of Collisions x 1 Million}}{\text{ADT x Days per Year x Number of Years}}$$

$$\text{Collision Rate} = \frac{4 \times 1{,}000{,}000}{15{,}800 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.14 c/mve**	**0.0%**	**50.0%**
Statewide Average*	**0.33 c/mve**	**0.6%**	**47.7%**

Notes
ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2019 Collision Data on California State Highways, Caltrans

Intersection Collision Rate Worksheet

The Canopy EIR

Intersection # 3: SR 116 (Gravenstein Highway North) & Hurlbut Avenue
Date of Count: Thursday, May 25, 2023

Number of Collisions: 5
Number of Injuries: 3
Number of Fatalities: 0
Average Daily Traffic (ADT): 15000
Start Date: January 1, 2018
End Date: December 31, 2022
Number of Years: 5

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

$$\text{Collision Rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Number of Years}}$$

$$\text{Collision Rate} = \frac{5 \times 1{,}000{,}000}{15{,}000 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.18 c/mve**	**0.0%**	**60.0%**
Statewide Average*	**0.33 c/mve**	**0.6%**	**47.7%**

Notes
ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2019 Collision Data on California State Highways, Caltrans

Intersection # 4: SR 116 (Healdsburg Avenue) & Covert Lane
Date of Count: Thursday, May 25, 2023

Number of Collisions: 7
Number of Injuries: 5
Number of Fatalities: 0
Average Daily Traffic (ADT): 17600
Start Date: January 1, 2018
End Date: December 31, 2022
Number of Years: 5

Intersection Type: Tee
Control Type: Stop & Yield Controls
Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Number of Years}}$$

$$\text{Collision Rate} = \frac{7 \times 1{,}000{,}000}{17{,}600 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.22 c/mve**	**0.0%**	**71.4%**
Statewide Average*	**0.13 c/mve**	**1.3%**	**47.3%**

Notes
ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2019 Collision Data on California State Highways, Caltrans

Intersection Collision Rate Worksheet

The Canopy EIR

Intersection # 5: SR116 (Healdsburg Avenue) & Murphy Avenue
Date of Count: Thursday, May 25, 2023

Number of Collisions: 4
Number of Injuries: 2
Number of Fatalities: 0
Average Daily Traffic (ADT): 16300
Start Date: January 1, 2018
End Date: December 31, 2022
Number of Years: 5

Intersection Type: Tee
Control Type: Stop & Yield Controls
Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Number of Years}}$$

$$\text{Collision Rate} = \frac{4 \times 1{,}000{,}000}{16{,}300 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.13 c/mve**	**0.0%**	**50.0%**
Statewide Average*	**0.13 c/mve**	**1.3%**	**47.3%**

Notes
ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2019 Collision Data on California State Highways, Caltrans

Intersection # 6: SR 116 (Healdsburg Avenue) & North Main Street
Date of Count: Thursday, May 25, 2023

Number of Collisions: 6
Number of Injuries: 1
Number of Fatalities: 0
Average Daily Traffic (ADT): 16700
Start Date: January 1, 2015
End Date: December 31, 2022
Number of Years: 8

Intersection Type: Tee
Control Type: Signals
Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Number of Years}}$$

$$\text{Collision Rate} = \frac{6 \times 1{,}000{,}000}{16{,}700 \times 365 \times 8}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.12 c/mve**	**0.0%**	**16.7%**
Statewide Average*	**0.28 c/mve**	**0.9%**	**49.1%**

Notes
ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2019 Collision Data on California State Highways, Caltrans

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Appendix B

Intersection Level of Service Calculations

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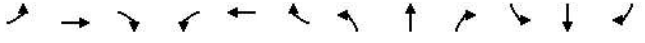
HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/22/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	158	56	111	123	260	46	424	94	221	488	41
Future Volume (veh/h)	50	158	56	111	123	260	46	424	94	221	488	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	58	184	55	129	143	0	53	493	100	257	567	45
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	62	198	59	139	154	254	102	403	82	238	587	47
Arrive On Green	0.20	0.20	0.20	0.18	0.18	0.00	0.06	0.30	0.30	0.15	0.38	0.38
Sat Flow, veh/h	313	994	297	775	859	1418	1594	1349	274	1594	1530	121
Grp Volume(v), veh/h	297	0	0	272	0	0	53	0	593	257	0	612
Grp Sat Flow(s),veh/h/ln	1604	0	0	1635	0	1418	1594	0	1623	1594	0	1652
Q Serve(g_s), s	24.4	0.0	0.0	22.0	0.0	0.0	4.3	0.0	40.0	20.0	0.0	48.6
Cycle Q Clear(g_c), s	24.4	0.0	0.0	22.0	0.0	0.0	4.3	0.0	40.0	20.0	0.0	48.6
Prop In Lane	0.20		0.19	0.47		1.00	1.00		0.17	1.00		0.07
Lane Grp Cap(c), veh/h	320	0	0	292	0	254	102	0	485	238	0	634
V/C Ratio(X)	0.93	0.00	0.00	0.93	0.00	0.00	0.52	0.00	1.22	1.08	0.00	0.97
Avail Cap(c_a), veh/h	335	0	0	293	0	254	190	0	485	238	0	634
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.7	0.0	0.0	54.2	0.0	0.0	60.7	0.0	47.0	57.0	0.0	40.4
Incr Delay (d2), s/veh	31.3	0.0	0.0	35.0	0.0	0.0	1.5	0.0	117.9	81.3	0.0	27.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.3	0.0	0.0	11.7	0.0	0.0	1.8	0.0	31.4	13.2	0.0	23.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.0	0.0	0.0	89.1	0.0	0.0	62.2	0.0	164.9	138.2	0.0	67.9
LnGrp LOS	F	A	A	F	A	A	E	A	F	F	A	E
Approach Vol, veh/h		297			272			646			869	
Approach Delay, s/veh		84.0			89.1			156.5			88.7	
Approach LOS		F			F			F			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.3	57.6		32.9	24.7	46.2		30.2				
Change Period (Y+Rc), s	* 4.7	6.2		6.2	* 4.7	6.2		6.2				
Max Green Setting (Gmax), s	* 16	40.0		28.0	* 20	40.0		24.0				
Max Q Clear Time (g_c+I1), s	6.3	50.6		26.4	22.0	42.0		24.0				
Green Ext Time (p_c), s	0.0	0.0		0.3	0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			109.1									
HCM 6th LOS			F									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Gravenstein Hwy N & Mill Station Rd

08/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	52	69	73	35	47	43	390	67	48	477	137
Future Volume (veh/h)	151	52	69	73	35	47	43	390	67	48	477	137
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	178	61	20	86	41	0	51	459	0	56	561	143
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	213	160	52	203	213	0	130	752	637	136	582	148
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.00	0.08	0.45	0.00	0.09	0.45	0.45
Sat Flow, veh/h	1594	1198	393	1594	1673	0	1594	1673	1418	1594	1286	328
Grp Volume(v), veh/h	178	0	81	86	41	0	51	459	0	56	0	704
Grp Sat Flow(s),veh/h/ln	1594	0	1591	1594	1673	0	1594	1673	1418	1594	0	1613
Q Serve(g_s), s	9.5	0.0	4.1	4.3	1.9	0.0	2.7	18.2	0.0	2.9	0.0	37.0
Cycle Q Clear(g_c), s	9.5	0.0	4.1	4.3	1.9	0.0	2.7	18.2	0.0	2.9	0.0	37.0
Prop In Lane	1.00		0.25	1.00		0.00	1.00		1.00	1.00		0.20
Lane Grp Cap(c), veh/h	213	0	213	203	213	0	130	752	637	136	0	731
V/C Ratio(X)	0.84	0.00	0.38	0.42	0.19	0.00	0.39	0.61	0.00	0.41	0.00	0.96
Avail Cap(c_a), veh/h	274	0	273	347	364	0	274	767	650	274	0	739
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.9	0.0	34.5	35.2	34.1	0.0	38.1	18.3	0.0	37.9	0.0	23.2
Incr Delay (d2), s/veh	13.1	0.0	0.4	0.5	0.2	0.0	0.7	1.7	0.0	0.7	0.0	24.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	1.5	1.7	0.8	0.0	1.0	6.5	0.0	1.1	0.0	17.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.0	0.0	35.0	35.7	34.3	0.0	38.8	19.9	0.0	38.6	0.0	47.6
LnGrp LOS	D	A	C	D	C	A	D	B	A	D	A	D
Approach Vol, veh/h		259			127			510			760	
Approach Delay, s/veh		45.3			35.2			21.8			46.9	
Approach LOS		D			D			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.8	45.4		14.8	11.1	45.0		16.4				
Change Period (Y+Rc), s	3.7	5.8		3.7	3.7	5.8		4.7				
Max Green Setting (Gmax), s	15.3	40.0		19.0	15.0	40.0		15.0				
Max Q Clear Time (g_c+I1), s	11.5	39.0		6.3	4.9	20.2		11.5				
Green Ext Time (p_c), s	0.0	0.6		0.2	0.0	3.6		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			38.0									
HCM 6th LOS			D									

HCM 6th Signalized Intersection Summary
3: Gravenstein Hwy N & Hurlbut Ave

08/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	12	35	70	7	43	34	418	40	24	533	43
Future Volume (veh/h)	32	12	35	70	7	43	34	418	40	24	533	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	36	14	0	80	8	12	39	475	0	27	606	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	282	91	253	304	32	31	102	726	615	77	700	593
Arrive On Green	0.18	0.18	0.00	0.18	0.18	0.18	0.06	0.43	0.00	0.05	0.42	0.00
Sat Flow, veh/h	1000	511	1418	1092	177	173	1594	1673	1418	1594	1673	1418
Grp Volume(v), veh/h	50	0	0	100	0	0	39	475	0	27	606	0
Grp Sat Flow(s),veh/h/ln	1511	0	1418	1443	0	0	1594	1673	1418	1594	1673	1418
Q Serve(g_s), s	0.0	0.0	0.0	2.0	0.0	0.0	1.4	13.4	0.0	1.0	19.6	0.0
Cycle Q Clear(g_c), s	1.5	0.0	0.0	3.5	0.0	0.0	1.4	13.4	0.0	1.0	19.6	0.0
Prop In Lane	0.72		1.00	0.80		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	373	0	253	366	0	0	102	726	615	77	700	593
V/C Ratio(X)	0.13	0.00	0.00	0.27	0.00	0.00	0.38	0.65	0.00	0.35	0.87	0.00
Avail Cap(c_a), veh/h	750	0	620	732	0	0	295	844	715	295	844	715
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.7	0.0	0.0	21.5	0.0	0.0	26.7	13.3	0.0	27.4	15.8	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.9	1.8	0.0	1.0	8.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	1.2	0.0	0.0	0.5	4.5	0.0	0.4	7.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.8	0.0	0.0	21.6	0.0	0.0	27.6	15.1	0.0	28.4	24.6	0.0
LnGrp LOS	C	A	A	C	A	A	C	B	A	C	C	A
Approach Vol, veh/h		50			100			514			633	
Approach Delay, s/veh		20.8			21.6			16.1			24.8	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.5	33.7		18.3	6.6	34.6		18.3
Change Period (Y+Rc), s	3.7	8.8		* 7.7	3.7	8.8		* 7.7
Max Green Setting (Gmax), s	3.8	30.0		* 26	11.0	30.0		* 26
Max Q Clear Time (g_c+I1), s	3.4	21.6		5.5	3.0	15.4		3.5
Green Ext Time (p_c), s	0.0	3.2		0.3	0.0	3.5		0.1

Intersection Summary	
HCM 6th Ctrl Delay	20.9
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
4: Healdsburg Ave/Gravenstein Hwy N & Covert Ln

08/22/2023

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	83	208	139	430	538	112
Future Vol, veh/h	83	208	139	430	538	112
Conflicting Peds, #/hr	4	4	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	Free
Storage Length	0	250	150	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	95	239	160	494	618	129

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1440	626	622	0	-	0
Stage 1	622	-	-	-	-	-
Stage 2	818	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	146	484	959	-	-	0
Stage 1	535	-	-	-	-	0
Stage 2	434	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	121	481	956	-	-	-
Mov Cap-2 Maneuver	256	-	-	-	-	-
Stage 1	445	-	-	-	-	-
Stage 2	433	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.8	2.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	956	-	256	481	-
HCM Lane V/C Ratio	0.167	-	0.373	0.497	-
HCM Control Delay (s)	9.5	-	27.2	19.7	-
HCM Lane LOS	A	-	D	C	-
HCM 95th %tile Q(veh)	0.6	-	1.6	2.7	-

HCM 6th TWSC
5: Murphy Ave & Healdsburg Ave 08/22/2023

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	699	52	18	546	37	60
Future Vol, veh/h	699	52	18	546	37	60
Conflicting Peds, #/hr	0	19	13	0	19	13
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	794	59	20	620	42	68

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	872	0	1522	856
Stage 1	-	-	-	-	843	-
Stage 2	-	-	-	-	679	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	773	-	130	357
Stage 1	-	-	-	-	422	-
Stage 2	-	-	-	-	504	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	761	-	123	348
Mov Cap-2 Maneuver	-	-	-	-	259	-
Stage 1	-	-	-	-	415	-
Stage 2	-	-	-	-	483	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	23.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	308	-	-	761	-
HCM Lane V/C Ratio	0.358	-	-	0.027	-
HCM Control Delay (s)	23.1	-	-	9.9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1.6	-	-	0.1	-

HCM 6th Signalized Intersection Summary
6: Healdsburg Ave & N Main St 08/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	553	0	0	408	135	0	189	0	166	0	129
Future Volume (veh/h)	151	553	0	0	408	135	0	189	0	166	0	129
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	0	0	1673	1673	0	1673	0	1673	0	1673
Adj Flow Rate, veh/h	170	621	0	0	458	0	0	212	0	187	0	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	0	0	2	2	0	2	0	2	0	2
Cap, veh/h	198	774	0	0	488	413	0	449	0	216	0	0
Arrive On Green	0.12	0.46	0.00	0.00	0.29	0.00	0.00	0.27	0.00	0.14	0.00	0.00
Sat Flow, veh/h	1594	1673	0	0	1673	1418	0	1673	0	1594	187	
Grp Volume(v), veh/h	170	621	0	0	458	0	0	212	0	187	58.4	
Grp Sat Flow(s),veh/h/ln	1594	1673	0	0	1673	1418	0	1673	0	1594	E	
Q Serve(g_s), s	10.5	31.9	0.0	0.0	26.8	0.0	0.0	10.7	0.0	11.5		
Cycle Q Clear(g_c), s	10.5	31.9	0.0	0.0	26.8	0.0	0.0	10.7	0.0	11.5		
Prop In Lane	1.00		0.00	0.00		1.00	0.00		0.00	1.00		
Lane Grp Cap(c), veh/h	198	774	0	0	488	413	0	449	0	216		
V/C Ratio(X)	0.86	0.80	0.00	0.00	0.94	0.00	0.00	0.47	0.00	0.87		
Avail Cap(c_a), veh/h	254	774	0	0	500	424	0	450	0	286		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	43.1	23.1	0.0	0.0	34.7	0.0	0.0	30.8	0.0	42.6		
Incr Delay (d2), s/veh	17.1	6.1	0.0	0.0	25.9	0.0	0.0	1.7	0.0	15.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.0	13.3	0.0	0.0	14.3	0.0	0.0	4.5	0.0	5.5		
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.3	29.2	0.0	0.0	60.6	0.0	0.0	32.5	0.0	58.4		
LnGrp LOS	E	C	A	A	E	A	A	C	A	E		
Approach Vol, veh/h		791			458			212				
Approach Delay, s/veh		35.9			60.6			32.5				
Approach LOS		D			E			C				

Timer - Assigned Phs		2			5	6	7	8				
Phs Duration (G+Y+Rc), s		52.2			17.2	35.1	18.3	29.9				
Change Period (Y+Rc), s		5.8			* 4.7	5.8	* 4.7	3.0				
Max Green Setting (Gmax), s		30.0			* 16	30.0	* 18	27.0				
Max Q Clear Time (g_c+I1), s		33.9			12.5	28.8	13.5	12.7				
Green Ext Time (p_c), s		0.0			0.1	0.5	0.1	1.8				

Intersection Summary	
HCM 6th Ctrl Delay	44.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Summary Sheet Combining HCM 6th Edition Vehicle Delays at SR 116(Healdsburg Ave-N Main St)/N Main St

AM Existing	EBL	EBT	WBT	WBR	NBT (ped)	SBL	SBR	Total	Total without ped delay
Adjusted Flow Rate (AFR)	170	621	458	0	212	187	0	1648	1436
HCM Lane Group Delay	60.3	29.2	60.6	0	32.5	58.4	0		
AFR * Lane Group Delay	10251	18133	27755	0	6890	10921	0	73950	67060
HCM Intersection Delay (s)								44.9	**46.7 LOS D**
PM Existing	EBL	EBT	WBT	WBR	NBT (ped)	SBL	SBR	Total	Total without ped delay
Adjusted Flow Rate (AFR)	125	580	571	11	112	171	0	1570	1458
HCM Lane Group Delay	46.3	25.2	94	22.3	27.7	49.6	0		
AFR * Lane Group Delay	5788	14616	53674	245	3102	8482	0	85907	82804
HCM Intersection Delay (s)								54.7	**56.8 LOS E**
AM Future	EBL	EBT	WBT	WBR	NBT (ped)	SBL	SBR	Total	Total without ped delay
Adjusted Flow Rate (AFR)	205	761	537	81	189	226	0	1999	1810
HCM Lane Group Delay	83.8	32.9	56	29	48.5	82.5	0		
AFR * Lane Group Delay	17179	25037	30072	2349	9167	18645	0	102448	93282
HCM Intersection Delay (s)								51.2	**51.5 LOS D**
PM Future	EBL	EBT	WBT	WBR	NBT (ped)	SBL	SBR	Total	Total without ped delay
Adjusted Flow Rate (AFR)	94	847	898	14	109	183	0	2145	2036
HCM Lane Group Delay	143.3	27.8	73.4	17.3	55.6	130.4	0		
AFR * Lane Group Delay	13470	23547	65913	242	6060	23863	0	133096	127035
HCM Intersection Delay (s)								62.0	**62.4 LOS E**
AM Existing plus Project	EBL	EBT	WBT	WBR	NBT (ped)	SBL	SBR	Total	Total without ped delay
Adjusted Flow Rate (AFR)	173	636	464	0	212	187	1	1673	1461
HCM Lane Group Delay	61.7	30.1	62.5	0	32.9	59.1	0		
AFR * Lane Group Delay	10674	19144	29000	0	6975	11052	0	76844	69869
HCM Intersection Delay (s)								45.9	**47.8 LOS D**
PM Existing plus Project	EBL	EBT	WBT	WBR	NBT (ped)	SBL	SBR	Total	Total without ped delay
Adjusted Flow Rate (AFR)	127	591	585	11	112	171	4	1601	1489
HCM Lane Group Delay	46.5	25.8	103.9	22.4	27.7	49.7	49.7		
AFR * Lane Group Delay	5906	15248	60782	246	3102	8499	199	93981	90879
HCM Intersection Delay (s)								58.7	**61.0 LOS E**
PM E+P with Retiming	EBL	EBT	WBT	WBR	NBT (ped)	SBL	SBR	Total	Total without ped delay
Adjusted Flow Rate (AFR)	127	591	585	11	112	171	0	1597	1485
HCM Lane Group Delay	83.5	23.2	69.5	21.1	29.6	91.7	0		
AFR * Lane Group Delay	10605	13711	40658	232	3315	15681	0	84201	80886
HCM Intersection Delay (s)								52.7	**54.5 LOS D**
AM Future plus Project	EBL	EBT	WBT	WBR	NBT (ped)	SBL	SBR	Total	Total without ped delay
Adjusted Flow Rate (AFR)	208	774	542	81	189	226	0	2020	1831
HCM Lane Group Delay	85.4	33.9	57.1	29.1	49.3	83.6	0		
AFR * Lane Group Delay	17763	26239	30948	2357	9318	18894	0	105518	96201
HCM Intersection Delay (s)								52.2	**52.5 LOS D**
PM Future plus Project	EBL	EBT	WBT	WBR	NBT (ped)	SBL	SBR	Total	Total without ped delay
Adjusted Flow Rate (AFR)	96	857	911	14	109	183	0	2170	2061
HCM Lane Group Delay	150	28.5	77.7	17.3	55.6	130.4	0		
AFR * Lane Group Delay	14400	24425	70785	242	6060	23863	0	139775	133715
HCM Intersection Delay (s)								64.4	**64.9 LOS E**

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/29/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	158	56	111	123	260	46	424	94	221	488	41
Future Volume (veh/h)	50	158	56	111	123	260	46	424	94	221	488	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	58	184	55	129	143	0	53	493	100	257	567	45
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	120	210	63	153	318	507	116	498	101	267	710	56
Arrive On Green	0.08	0.17	0.17	0.10	0.19	0.00	0.07	0.37	0.37	0.17	0.46	0.46
Sat Flow, veh/h	1594	1237	370	1594	1673	1418	1594	1350	274	1594	1530	121
Grp Volume(v), veh/h	58	0	239	129	143	0	53	0	593	257	0	612
Grp Sat Flow(s),veh/h/ln	1594	0	1607	1594	1673	1418	1594	0	1623	1594	0	1652
Q Serve(g_s), s	3.9	0.0	16.0	8.8	8.3	0.0	3.5	0.0	40.0	17.6	0.0	34.8
Cycle Q Clear(g_c), s	3.9	0.0	16.0	8.8	8.3	0.0	3.5	0.0	40.0	17.6	0.0	34.8
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.17	1.00		0.07
Lane Grp Cap(c), veh/h	120	0	272	153	318	507	116	0	599	267	0	766
V/C Ratio(X)	0.48	0.00	0.88	0.84	0.45	0.00	0.46	0.00	0.99	0.96	0.00	0.80
Avail Cap(c_a), veh/h	145	0	340	155	364	547	145	0	599	267	0	766
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.9	0.0	44.7	49.0	39.5	0.0	49.0	0.0	34.6	45.5	0.0	25.2
Incr Delay (d2), s/veh	1.1	0.0	20.4	30.8	1.4	0.0	1.0	0.0	34.1	44.0	0.0	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	7.6	4.7	3.5	0.0	1.4	0.0	20.4	10.0	0.0	13.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.0	0.0	65.0	79.8	41.0	0.0	50.1	0.0	68.6	89.5	0.0	31.4
LnGrp LOS	D	A	E	E	D	A	D	A	E	F	A	C
Approach Vol, veh/h		297			272			646			869	
Approach Delay, s/veh		62.1			59.4			67.1			48.6	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.7	57.4	15.3	24.9	23.2	46.9	13.0	27.2
Change Period (Y+Rc), s	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2
Max Green Setting (Gmax), s	* 10	49.2	* 11	23.3	* 19	40.7	* 10	24.0
Max Q Clear Time (g_c+I1), s	5.5	36.8	10.8	18.0	19.6	42.0	5.9	10.3
Green Ext Time (p_c), s	0.0	4.1	0.0	0.7	0.0	0.0	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	57.7
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/29/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	158	56	111	123	260	46	424	94	221	488	41
Future Volume (veh/h)	50	158	56	111	123	260	46	424	94	221	488	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	58	184	55	129	143	0	53	493	100	257	567	45
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	125	224	190	154	256	468	120	516	105	283	741	59
Arrive On Green	0.08	0.13	0.13	0.10	0.15	0.00	0.08	0.38	0.38	0.18	0.48	0.48
Sat Flow, veh/h	1594	1673	1418	1594	1673	1418	1594	1350	274	1594	1530	121
Grp Volume(v), veh/h	58	184	55	129	143	0	53	0	593	257	0	612
Grp Sat Flow(s),veh/h/ln	1594	1673	1418	1594	1673	1418	1594	0	1623	1594	0	1652
Q Serve(g_s), s	3.6	11.1	3.6	8.3	8.2	0.0	3.3	0.0	37.0	16.5	0.0	31.6
Cycle Q Clear(g_c), s	3.6	11.1	3.6	8.3	8.2	0.0	3.3	0.0	37.0	16.5	0.0	31.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.17	1.00		0.07
Lane Grp Cap(c), veh/h	125	224	190	154	256	468	120	0	621	283	0	800
V/C Ratio(X)	0.47	0.82	0.29	0.84	0.56	0.00	0.44	0.00	0.96	0.91	0.00	0.77
Avail Cap(c_a), veh/h	153	334	283	202	386	579	153	0	635	283	0	800
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.9	43.8	40.6	46.2	40.8	0.0	46.0	0.0	31.3	42.0	0.0	22.0
Incr Delay (d2), s/veh	1.0	12.0	1.2	16.3	2.7	0.0	0.9	0.0	25.1	30.4	0.0	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	5.1	1.3	3.9	3.5	0.0	1.3	0.0	17.7	8.6	0.0	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.9	55.8	41.8	62.5	43.6	0.0	47.0	0.0	56.4	72.4	0.0	26.7
LnGrp LOS	D	E	D	E	D	A	D	A	E	E	A	C
Approach Vol, veh/h		297			272			646			869	
Approach Delay, s/veh		51.5			52.5			55.6			40.2	
Approach LOS		D			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.5	56.6	14.8	20.2	23.2	46.0	12.8	22.1
Change Period (Y+Rc), s	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2
Max Green Setting (Gmax), s	* 10	49.2	* 13	20.8	* 19	40.7	* 10	24.0
Max Q Clear Time (g_c+I1), s	5.3	33.6	10.3	13.1	18.5	39.0	5.6	10.2
Green Ext Time (p_c), s	0.0	4.6	0.0	0.8	0.0	0.8	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	48.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Roundabout
1: Gravenstein Hwy N & Occidental Rd 08/29/2023

Intersection	
Intersection Delay, s/veh	26.8
Intersection LOS	D

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	307	574	655	872
Demand Flow Rate, veh/h	313	586	668	889
Vehicles Circulating, veh/h	972	616	509	332
Vehicles Exiting, veh/h	249	561	776	870
Ped Vol Crossing Leg, #/h	0	2	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	20.8	25.5	24.9	31.2
Approach LOS	C	D	C	D

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	313	586	668	889
Cap Entry Lane, veh/h	512	736	821	984
Entry HV Adj Factor	0.982	0.980	0.981	0.981
Flow Entry, veh/h	307	574	655	872
Cap Entry, veh/h	503	721	805	964
V/C Ratio	0.611	0.796	0.814	0.904
Control Delay, s/veh	20.8	25.5	24.9	31.2
LOS	C	D	C	D
95th %tile Queue, veh	4	8	9	13

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd 08/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	167	97	87	162	198	108	511	80	240	513	46
Future Volume (veh/h)	87	167	97	87	162	198	108	511	80	240	513	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	92	176	88	92	171	0	114	538	78	253	540	44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	84	162	81	100	185	246	135	423	61	237	551	45
Arrive On Green	0.21	0.21	0.21	0.17	0.17	0.00	0.08	0.30	0.30	0.15	0.36	0.36
Sat Flow, veh/h	406	777	388	575	1069	1418	1594	1424	206	1594	1527	124
Grp Volume(v), veh/h	356	0	0	263	0	0	114	0	616	253	0	584
Grp Sat Flow(s),veh/h/ln	1571	0	0	1645	0	1418	1594	0	1630	1594	0	1651
Q Serve(g_s), s	28.0	0.0	0.0	21.2	0.0	0.0	9.5	0.0	40.0	20.0	0.0	47.1
Cycle Q Clear(g_c), s	28.0	0.0	0.0	21.2	0.0	0.0	9.5	0.0	40.0	20.0	0.0	47.1
Prop In Lane	0.26		0.25	0.35		1.00	1.00		0.13	1.00		0.08
Lane Grp Cap(c), veh/h	327	0	0	285	0	246	135	0	484	237	0	596
V/C Ratio(X)	1.09	0.00	0.00	0.92	0.00	0.00	0.85	0.00	1.27	1.07	0.00	0.98
Avail Cap(c_a), veh/h	327	0	0	293	0	253	189	0	484	237	0	596
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.3	0.0	0.0	54.8	0.0	0.0	60.8	0.0	47.3	57.3	0.0	42.5
Incr Delay (d2), s/veh	75.9	0.0	0.0	33.0	0.0	0.0	16.0	0.0	137.8	77.9	0.0	31.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.5	0.0	0.0	11.3	0.0	0.0	4.4	0.0	34.2	13.0	0.0	23.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	129.2	0.0	0.0	87.8	0.0	0.0	76.8	0.0	185.1	135.2	0.0	74.2
LnGrp LOS	F	A	A	F	A	A	E	A	F	F	A	E
Approach Vol, veh/h		356			263			730			837	
Approach Delay, s/veh		129.2			87.8			168.2			92.6	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.1	54.8		34.2	24.7	46.2		29.5				
Change Period (Y+Rc), s	* 4.7	6.2		6.2	* 4.7	6.2		6.2				
Max Green Setting (Gmax), s	* 16	40.0		28.0	* 20	40.0		24.0				
Max Q Clear Time (g_c+I1), s	11.5	49.1		30.0	22.0	42.0		23.2				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	123.2
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Gravenstein Hwy N & Mill Station Rd

08/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	11	86	18	4	11	58	481	6	4	604	132
Future Volume (veh/h)	165	11	86	18	4	11	58	481	6	4	604	132
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	168	11	0	18	4	0	59	491	0	4	616	123
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	231	0	85	89	0	147	951	806	17	656	131
Arrive On Green	0.14	0.14	0.00	0.05	0.05	0.00	0.09	0.57	0.00	0.01	0.49	0.49
Sat Flow, veh/h	1594	1673	0	1594	1673	0	1594	1673	1418	1594	1349	269
Grp Volume(v), veh/h	168	11	0	18	4	0	59	491	0	4	0	739
Grp Sat Flow(s),veh/h/ln	1594	1673	0	1594	1673	0	1594	1673	1418	1594	0	1618
Q Serve(g_s), s	7.9	0.4	0.0	0.8	0.2	0.0	2.7	14.0	0.0	0.2	0.0	33.7
Cycle Q Clear(g_c), s	7.9	0.4	0.0	0.8	0.2	0.0	2.7	14.0	0.0	0.2	0.0	33.7
Prop In Lane	1.00		0.00	1.00		0.00	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	220	231	0	85	89	0	147	951	806	17	0	788
V/C Ratio(X)	0.76	0.05	0.00	0.21	0.04	0.00	0.40	0.52	0.00	0.24	0.00	0.94
Avail Cap(c_a), veh/h	306	322	0	388	407	0	306	951	806	306	0	829
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.4	29.2	0.0	35.4	35.0	0.0	33.4	10.3	0.0	38.3	0.0	18.9
Incr Delay (d2), s/veh	4.3	0.0	0.0	0.5	0.1	0.0	0.7	0.7	0.0	2.6	0.0	17.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.2	0.0	0.3	0.1	0.0	1.0	4.2	0.0	0.1	0.0	14.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.7	29.2	0.0	35.8	35.1	0.0	34.0	10.9	0.0	40.9	0.0	36.9
LnGrp LOS	D	C	A	D	D	A	C	B	A	D	A	D
Approach Vol, veh/h		179			22			550			743	
Approach Delay, s/veh		36.2			35.7			13.4			36.9	
Approach LOS		D			D			B			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.9	43.8		7.9	4.5	50.2		15.5				
Change Period (Y+Rc), s	3.7	5.8		3.7	3.7	5.8		4.7				
Max Green Setting (Gmax), s	5.3	40.0		19.0	15.0	40.0		15.0				
Max Q Clear Time (g_c+I1), s	4.7	35.7		2.8	2.2	16.0		9.9				
Green Ext Time (p_c), s	0.0	2.3		0.0	0.0	4.2		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	28.2
HCM 6th LOS	C

HCM 6th Signalized Intersection Summary
3: Gravenstein Hwy N & Hurlbut Ave

08/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	6	77	45	14	25	66	487	34	19	598	65
Future Volume (veh/h)	68	6	77	45	14	25	66	487	34	19	598	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		1.00	0.98		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	70	6	0	46	14	0	68	502	0	20	616	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	350	25	268	300	77	0	139	773	655	59	690	584
Arrive On Green	0.19	0.19	0.00	0.19	0.19	0.00	0.09	0.46	0.00	0.04	0.41	0.00
Sat Flow, veh/h	1290	134	1418	1070	409	0	1594	1673	1418	1594	1673	1418
Grp Volume(v), veh/h	76	0	0	60	0	0	68	502	0	20	616	0
Grp Sat Flow(s),veh/h/ln	1424	0	1418	1479	0	0	1594	1673	1418	1594	1673	1418
Q Serve(g_s), s	0.7	0.0	0.0	0.0	0.0	0.0	2.6	14.9	0.0	0.8	22.2	0.0
Cycle Q Clear(g_c), s	2.7	0.0	0.0	2.0	0.0	0.0	2.6	14.9	0.0	0.8	22.2	0.0
Prop In Lane	0.92		1.00	0.77		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	376	0	268	377	0	0	139	773	655	59	690	584
V/C Ratio(X)	0.20	0.00	0.00	0.16	0.00	0.00	0.49	0.65	0.00	0.34	0.89	0.00
Avail Cap(c_a), veh/h	672	0	569	684	0	0	271	775	657	271	775	657
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.4	0.0	0.0	22.1	0.0	0.0	28.2	13.4	0.0	30.4	17.7	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	1.0	2.2	0.0	1.2	12.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	0.7	0.0	0.0	1.0	5.2	0.0	0.3	9.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.5	0.0	0.0	22.2	0.0	0.0	29.2	15.6	0.0	31.6	30.1	0.0
LnGrp LOS	C	A	A	C	A	A	C	B	A	C	C	A
Approach Vol, veh/h		76			60			570			636	
Approach Delay, s/veh		22.5			22.2			17.2			30.2	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	35.5		19.9	6.1	38.7		19.9				
Change Period (Y+Rc), s	3.7	8.8		* 7.7	3.7	8.8		* 7.7				
Max Green Setting (Gmax), s	5.3	30.0		* 26	11.0	30.0		* 26				
Max Q Clear Time (g_c+I1), s	4.6	24.2		4.0	2.8	16.9		4.7				
Green Ext Time (p_c), s	0.0	2.5		0.1	0.0	3.5		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	23.9
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	78	199	203	555	595	131
Future Vol, veh/h	78	199	203	555	595	131
Conflicting Peds, #/hr	4	4	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	Free
Storage Length	0	250	150	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	81	207	211	578	620	136

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1628	628	624	0	-	0
Stage 1	624	-	-	-	-	-
Stage 2	1004	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	112	483	957	-	-	0
Stage 1	534	-	-	-	-	0
Stage 2	354	-	-	-	-	0
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	87	480	954	-	-	-
Mov Cap-2 Maneuver	213	-	-	-	-	-
Stage 1	415	-	-	-	-	-
Stage 2	353	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22	2.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	954	-	213	480	-
HCM Lane V/C Ratio	0.222	-	0.381	0.432	-
HCM Control Delay (s)	9.8	-	32	18.1	-
HCM Lane LOS	A	-	D	C	-
HCM 95th %tile Q(veh)	0.8	-	1.7	2.1	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	727	66	25	752	22	41
Future Vol, veh/h	727	66	25	752	22	41
Conflicting Peds, #/hr	0	27	19	0	27	19
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	749	68	26	775	23	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	844	0	1664	829
Stage 1	-	-	-	-	810	-
Stage 2	-	-	-	-	854	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	792	-	107	370
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	417	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	774	-	99	356
Mov Cap-2 Maneuver	-	-	-	-	232	-
Stage 1	-	-	-	-	428	-
Stage 2	-	-	-	-	394	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	20.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	300	-	-	774	-
HCM Lane V/C Ratio	0.216	-	-	0.033	-
HCM Control Delay (s)	20.3	-	-	9.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

HCM 6th Signalized Intersection Summary
6: Healdsburg Ave & N Main St

08/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	563	0	0	554	116	0	109	0	166	0	144
Future Volume (veh/h)	121	563	0	0	554	116	0	109	0	166	0	144
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	0	0	1673	1673	0	1673	0	1673	0	1673
Adj Flow Rate, veh/h	125	580	0	0	571	11	0	112	0	171	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	0	0	2	2	0	2	0	2	0	2
Cap, veh/h	152	772	0	0	530	439	0	452	0	201	0	0
Arrive On Green	0.10	0.46	0.00	0.00	0.32	0.32	0.00	0.27	0.00	0.13	0.00	0.00
Sat Flow, veh/h	1594	1673	0	0	1673	1387	0	1673	0	1594	171	
Grp Volume(v), veh/h	125	580	0	0	571	11	0	112	0	171	49.6	
Grp Sat Flow(s),veh/h/ln	1594	1673	0	0	1673	1387	0	1673	0	1594	D	
Q Serve(g_s), s	7.3	27.1	0.0	0.0	30.0	0.5	0.0	5.0	0.0	10.0		
Cycle Q Clear(g_c), s	7.3	27.1	0.0	0.0	30.0	0.5	0.0	5.0	0.0	10.0		
Prop In Lane	1.00		0.00	0.00		1.00	0.00		0.00	1.00		
Lane Grp Cap(c), veh/h	152	772	0	0	530	439	0	452	0	201		
V/C Ratio(X)	0.82	0.75	0.00	0.00	1.08	0.03	0.00	0.25	0.00	0.85		
Avail Cap(c_a), veh/h	269	772	0	0	530	439	0	477	0	303		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	42.1	21.0	0.0	0.0	32.4	22.3	0.0	27.1	0.0	40.5		
Incr Delay (d2), s/veh	4.2	4.1	0.0	0.0	61.7	0.0	0.0	0.6	0.0	9.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.0	10.9	0.0	0.0	21.0	0.2	0.0	2.0	0.0	4.4		
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	25.2	0.0	0.0	94.0	22.3	0.0	27.7	0.0	49.6		
LnGrp LOS	D	C	A	A	F	C	A	C	A	D		
Approach Vol, veh/h		705			582			112				
Approach Delay, s/veh		28.9			92.7			27.7				
Approach LOS		C			F			C				
Timer - Assigned Phs		2			5	6	7	8				
Phs Duration (G+Y+Rc), s		49.5			13.7	35.8	16.6	28.6				
Change Period (Y+Rc), s		5.8			* 4.7	5.8	* 4.7	3.0				
Max Green Setting (Gmax), s		30.0			* 16	30.0	* 18	27.0				
Max Q Clear Time (g_c+I1), s		29.1			9.3	32.0	12.0	7.0				
Green Ext Time (p_c), s		0.4			0.1	0.0	0.1	0.9				
Intersection Summary												
HCM 6th Ctrl Delay			54.7									
HCM 6th LOS			D									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/29/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	167	97	87	162	198	108	511	80	240	513	46
Future Volume (veh/h)	87	167	97	87	162	198	108	511	80	240	513	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	92	176	88	92	171	0	114	538	78	253	540	44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	125	192	96	125	309	501	136	556	81	270	724	59
Arrive On Green	0.08	0.18	0.18	0.08	0.18	0.00	0.09	0.39	0.39	0.17	0.47	0.47
Sat Flow, veh/h	1594	1042	521	1594	1673	1418	1594	1424	206	1594	1527	124
Grp Volume(v), veh/h	92	0	264	92	171	0	114	0	616	253	0	584
Grp Sat Flow(s),veh/h/ln	1594	0	1563	1594	1673	1418	1594	0	1630	1594	0	1651
Q Serve(g_s), s	6.9	0.0	20.3	6.9	11.4	0.0	8.6	0.0	45.3	19.2	0.0	35.2
Cycle Q Clear(g_c), s	6.9	0.0	20.3	6.9	11.4	0.0	8.6	0.0	45.3	19.2	0.0	35.2
Prop In Lane	1.00		0.33	1.00		1.00	1.00		0.13	1.00		0.08
Lane Grp Cap(c), veh/h	125	0	288	125	309	501	136	0	636	270	0	783
V/C Ratio(X)	0.74	0.00	0.92	0.74	0.55	0.00	0.84	0.00	0.97	0.94	0.00	0.75
Avail Cap(c_a), veh/h	134	0	307	134	328	518	171	0	642	270	0	783
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.2	0.0	49.0	55.2	45.3	0.0	55.2	0.0	36.6	50.2	0.0	26.2
Incr Delay (d2), s/veh	15.3	0.0	30.4	15.3	2.4	0.0	20.9	0.0	27.7	38.1	0.0	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	10.0	3.3	4.9	0.0	4.2	0.0	21.9	10.3	0.0	13.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.5	0.0	79.3	70.5	47.7	0.0	76.1	0.0	64.3	88.3	0.0	30.4
LnGrp LOS	E	A	E	E	D	A	E	A	E	F	A	C
Approach Vol, veh/h		356			263			730			837	
Approach Delay, s/veh		77.0			55.7			66.1			47.9	
Approach LOS		E			E			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.1	64.2	14.3	28.8	25.4	54.0	14.3	28.8				
Change Period (Y+Rc), s	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2				
Max Green Setting (Gmax), s	* 13	55.8	* 10	24.0	* 21	48.2	* 10	24.0				
Max Q Clear Time (g_c+I1), s	10.6	37.2	8.9	22.3	21.2	47.3	8.9	13.4				
Green Ext Time (p_c), s	0.0	4.8	0.0	0.3	0.0	0.4	0.0	0.8				
Intersection Summary												
HCM 6th Ctrl Delay			59.7									
HCM 6th LOS			E									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/29/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	167	97	87	162	198	108	511	80	240	513	46
Future Volume (veh/h)	87	167	97	87	162	198	108	511	80	240	513	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	92	176	88	92	171	0	114	538	78	253	540	44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	219	181	138	219	434	143	578	84	279	750	61
Arrive On Green	0.09	0.13	0.13	0.09	0.13	0.00	0.09	0.41	0.41	0.17	0.49	0.49
Sat Flow, veh/h	1594	1673	1378	1594	1673	1418	1594	1424	206	1594	1527	124
Grp Volume(v), veh/h	92	176	88	92	171	0	114	0	616	253	0	584
Grp Sat Flow(s),veh/h/ln	1594	1673	1378	1594	1673	1418	1594	0	1630	1594	0	1651
Q Serve(g_s), s	6.0	11.0	6.4	6.0	10.7	0.0	7.6	0.0	39.0	16.8	0.0	30.1
Cycle Q Clear(g_c), s	6.0	11.0	6.4	6.0	10.7	0.0	7.6	0.0	39.0	16.8	0.0	30.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		0.08
Lane Grp Cap(c), veh/h	138	219	181	138	219	434	143	0	662	279	0	811
V/C Ratio(X)	0.67	0.80	0.49	0.67	0.78	0.00	0.80	0.00	0.93	0.91	0.00	0.72
Avail Cap(c_a), veh/h	152	362	298	161	372	563	193	0	727	305	0	852
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.8	45.6	43.6	47.8	45.4	0.0	48.2	0.0	30.7	43.7	0.0	21.7
Incr Delay (d2), s/veh	6.8	9.3	2.9	5.3	8.3	0.0	11.0	0.0	18.2	26.6	0.0	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	5.0	2.3	2.6	4.8	0.0	3.3	0.0	17.5	8.4	0.0	11.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.7	54.9	46.5	53.2	53.7	0.0	59.2	0.0	48.9	70.3	0.0	24.8
LnGrp LOS	D	D	D	D	D	A	E	A	D	E	A	C
Approach Vol, veh/h		356			263			730			837	
Approach Delay, s/veh		52.8			53.5			50.5			38.6	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.4	59.3	14.1	20.4	23.6	50.0	14.1	20.4
Change Period (Y+Rc), s	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2
Max Green Setting (Gmax), s	* 13	55.8	* 11	23.4	* 21	48.2	* 10	24.0
Max Q Clear Time (g_c+I1), s	9.6	32.1	8.0	13.0	18.8	41.0	8.0	12.7
Green Ext Time (p_c), s	0.0	5.2	0.0	1.1	0.1	2.9	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	46.7
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Roundabout
1: Gravenstein Hwy N & Occidental Rd

08/29/2023

Intersection	
Intersection Delay, s/veh	33.1
Intersection LOS	D

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	370	471	736	841
Demand Flow Rate, veh/h	378	480	751	858
Vehicles Circulating, veh/h	903	759	532	384
Vehicles Exiting, veh/h	339	524	749	855
Ped Vol Crossing Leg, #/h	1	2	0	1
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	23.6	25.1	41.1	34.7
Approach LOS	C	D	E	D

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	378	480	751	858
Cap Entry Lane, veh/h	549	636	802	933
Entry HV Adj Factor	0.980	0.980	0.980	0.980
Flow Entry, veh/h	370	471	736	841
Cap Entry, veh/h	538	624	786	914
V/C Ratio	0.688	0.755	0.936	0.920
Control Delay, s/veh	23.6	25.1	41.1	34.7
LOS	C	D	E	D
95th %tile Queue, veh	5	7	14	14

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/25/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	233	73	221	138	303	52	499	212	321	630	41
Future Volume (veh/h)	50	233	73	221	138	303	52	499	212	321	630	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	58	271	75	257	160	50	60	580	238	373	733	45
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	35	164	45	199	124	282	98	389	160	237	675	41
Arrive On Green	0.15	0.15	0.15	0.20	0.20	0.20	0.06	0.35	0.35	0.15	0.43	0.43
Sat Flow, veh/h	231	1079	299	1001	623	1418	1594	1126	462	1594	1560	96
Grp Volume(v), veh/h	404	0	0	417	0	50	60	0	818	373	0	778
Grp Sat Flow(s),veh/h/ln	1608	0	0	1623	0	1418	1594	0	1589	1594	0	1656
Q Serve(g_s), s	22.8	0.0	0.0	29.8	0.0	4.4	5.5	0.0	51.8	22.3	0.0	64.9
Cycle Q Clear(g_c), s	22.8	0.0	0.0	29.8	0.0	4.4	5.5	0.0	51.8	22.3	0.0	64.9
Prop In Lane	0.14		0.19	0.62		1.00	1.00		0.29	1.00		0.06
Lane Grp Cap(c), veh/h	244	0	0	323	0	282	98	0	549	237	0	717
V/C Ratio(X)	1.65	0.00	0.00	1.29	0.00	0.18	0.62	0.00	1.49	1.57	0.00	1.09
Avail Cap(c_a), veh/h	244	0	0	323	0	282	106	0	549	237	0	717
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	63.6	0.0	0.0	60.1	0.0	49.9	68.7	0.0	49.1	63.8	0.0	42.5
Incr Delay (d2), s/veh	311.3	0.0	0.0	153.0	0.0	0.4	5.7	0.0	230.5	277.8	0.0	59.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	30.2	0.0	0.0	25.8	0.0	1.6	2.4	0.0	55.0	27.2	0.0	37.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	374.9	0.0	0.0	213.1	0.0	50.3	74.4	0.0	279.6	341.6	0.0	101.7
LnGrp LOS	F	A	A	F	A	D	E	A	F	F	A	F
Approach Vol, veh/h		404			467			878			1151	
Approach Delay, s/veh		374.9			195.7			265.6			179.4	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.9	71.1		29.0	27.0	58.0		36.0				
Change Period (Y+Rc), s	* 4.7	6.2		6.2	* 4.7	6.2		6.2				
Max Green Setting (Gmax), s	* 10	64.1		22.8	* 22	51.8		29.8				
Max Q Clear Time (g_c+I1), s	7.5	66.9		24.8	24.3	53.8		31.8				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	235.4
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Gravenstein Hwy N & Mill Station Rd

08/25/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	52	97	73	35	47	36	441	67	48	591	135
Future Volume (veh/h)	180	52	97	73	35	47	36	441	67	48	591	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	180	52	45	73	35	0	36	441	0	48	591	120
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	217	111	96	202	212	0	107	748	634	127	620	126
Arrive On Green	0.14	0.14	0.14	0.13	0.13	0.00	0.07	0.45	0.00	0.08	0.46	0.46
Sat Flow, veh/h	1594	817	707	1594	1673	0	1594	1673	1418	1594	1349	274
Grp Volume(v), veh/h	180	0	97	73	35	0	36	441	0	48	0	711
Grp Sat Flow(s),veh/h/ln	1594	0	1524	1594	1673	0	1594	1673	1418	1594	0	1623
Q Serve(g_s), s	9.3	0.0	5.0	3.6	1.6	0.0	1.8	16.8	0.0	2.4	0.0	35.8
Cycle Q Clear(g_c), s	9.3	0.0	5.0	3.6	1.6	0.0	1.8	16.8	0.0	2.4	0.0	35.8
Prop In Lane	1.00		0.46	1.00		0.00	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	217	0	207	202	212	0	107	748	634	127	0	745
V/C Ratio(X)	0.83	0.00	0.47	0.36	0.17	0.00	0.34	0.59	0.00	0.38	0.00	0.95
Avail Cap(c_a), veh/h	282	0	269	357	374	0	282	788	668	282	0	765
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.7	0.0	33.9	33.9	33.1	0.0	37.8	17.6	0.0	37.1	0.0	22.1
Incr Delay (d2), s/veh	11.9	0.0	0.6	0.4	0.1	0.0	0.7	1.3	0.0	0.7	0.0	21.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	1.8	1.4	0.6	0.0	0.7	6.0	0.0	0.9	0.0	16.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.7	0.0	34.5	34.3	33.2	0.0	38.5	19.0	0.0	37.8	0.0	44.0
LnGrp LOS	D	A	C	C	C	A	D	B	A	D	A	D
Approach Vol, veh/h		277			108			477			759	
Approach Delay, s/veh		43.0			34.0			20.4			43.6	
Approach LOS		D			C			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.4	44.8		14.5	10.5	43.7		16.2				
Change Period (Y+Rc), s	3.7	5.8		3.7	3.7	5.8		4.7				
Max Green Setting (Gmax), s	5.8	40.0		19.0	15.0	40.0		15.0				
Max Q Clear Time (g_c+I1), s	3.8	37.8		5.6	4.4	18.8		11.3				
Green Ext Time (p_c), s	0.0	1.2		0.1	0.0	3.5		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	36.0
HCM 6th LOS	D

HCM 6th Signalized Intersection Summary
3: Gravenstein Hwy N & Hurlbut Ave

08/25/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	12	37	70	10	43	40	562	35	24	667	43
Future Volume (veh/h)	32	12	37	70	10	43	40	562	35	24	667	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	32	12	2	70	10	10	40	562	-5	24	667	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	273	85	239	265	36	25	102	773	655	70	739	626
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.06	0.46	0.00	0.04	0.44	0.00
Sat Flow, veh/h	1020	502	1410	956	216	146	1594	1673	1418	1594	1673	1418
Grp Volume(v), veh/h	44	0	2	90	0	0	40	562	-5	24	667	0
Grp Sat Flow(s),veh/h/ln	1522	0	1410	1318	0	0	1594	1673	1418	1594	1673	1418
Q Serve(g_s), s	0.0	0.0	0.1	2.9	0.0	0.0	1.5	16.9	0.0	0.9	23.0	0.0
Cycle Q Clear(g_c), s	1.4	0.0	0.1	4.3	0.0	0.0	1.5	16.9	0.0	0.9	23.0	0.0
Prop In Lane	0.73		1.00	0.78		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	358	0	239	326	0	0	102	773	655	70	739	626
V/C Ratio(X)	0.12	0.00	0.01	0.28	0.00	0.00	0.39	0.73	-0.01	0.34	0.90	0.00
Avail Cap(c_a), veh/h	721	0	591	681	0	0	282	809	685	282	809	685
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.0	0.0	21.5	23.4	0.0	0.0	27.9	13.5	0.0	28.8	16.1	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.9	3.5	0.0	1.1	13.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	1.1	0.0	0.0	0.6	6.0	0.0	0.3	9.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.1	0.0	21.5	23.6	0.0	0.0	28.8	17.0	0.0	29.9	29.3	0.0
LnGrp LOS	C	A	C	C	A	A	C	B	A	C	C	A
Approach Vol, veh/h		46			90			597			691	
Approach Delay, s/veh		22.0			23.6			18.0			29.3	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.7	36.2		18.2	6.4	37.5		18.2
Change Period (Y+Rc), s	3.7	8.8		* 7.7	3.7	8.8		* 7.7
Max Green Setting (Gmax), s	4.0	30.0		* 26	11.0	30.0		* 26
Max Q Clear Time (g_c+I1), s	3.5	25.0		6.3	2.9	18.9		3.4
Green Ext Time (p_c), s	0.0	2.4		0.2	0.0	3.6		0.1

Intersection Summary	
HCM 6th Ctrl Delay	24.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
4: Healdsburg Ave/Gravenstein Hwy N & Covert Ln

09/14/2023

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	113	228	155	531	663	93
Future Vol, veh/h	113	228	155	531	663	93
Conflicting Peds, #/hr	4	4	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	Free
Storage Length	0	250	150	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	113	228	155	531	663	93

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1512	671	667	0	-	0
Stage 1	667	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	132	456	923	-	-	0
Stage 1	510	-	-	-	-	0
Stage 2	421	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 109	453	920	-	-	-
Mov Cap-2 Maneuver	242	-	-	-	-	-
Stage 1	423	-	-	-	-	-
Stage 2	420	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.5	2.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	920	-	242	453	-
HCM Lane V/C Ratio	0.168	-	0.467	0.503	-
HCM Control Delay (s)	9.7	-	32.3	20.7	-
HCM Lane LOS	A	-	D	C	-
HCM 95th %tile Q(veh)	0.6	-	2.3	2.8	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
5: Murphy Ave & Healdsburg Ave 08/25/2023

Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	847	54	22	645	45	111
Future Vol, veh/h	847	54	22	645	45	111
Conflicting Peds, #/hr	0	19	13	0	19	13
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	847	54	22	645	45	111

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	920	0	1601	906
Stage 1	-	-	-	-	893	-
Stage 2	-	-	-	-	708	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	742	-	117	334
Stage 1	-	-	-	-	400	-
Stage 2	-	-	-	-	488	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	730	-	110	325
Mov Cap-2 Maneuver	-	-	-	-	245	-
Stage 1	-	-	-	-	394	-
Stage 2	-	-	-	-	466	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	29.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	297	-	-	730	-
HCM Lane V/C Ratio	0.525	-	-	0.03	-
HCM Control Delay (s)	29.8	-	-	10.1	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	2.9	-	-	0.1	-

HCM 6th Signalized Intersection Summary
6: Healdsburg Ave & N Main St 08/25/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	761	0	0	537	216	0	189	0	226	0	145
Future Volume (veh/h)	205	761	0	0	537	216	0	189	0	226	0	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	0	0	1673	1673	0	1673	0	1673	0	1673
Adj Flow Rate, veh/h	205	761	0	0	537	81	0	189	0	226	0	16
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	0	0	2	2	0	2	0	2	0	2
Cap, veh/h	227	888	0	0	589	487	0	350	0	248	0	0
Arrive On Green	0.14	0.53	0.00	0.00	0.35	0.35	0.00	0.21	0.00	0.16	0.00	0.00
Sat Flow, veh/h	1594	1673	0	0	1673	1385	0	1673	0	1594	226	
Grp Volume(v), veh/h	205	761	0	0	537	81	0	189	0	226	82.5	
Grp Sat Flow(s),veh/h/ln	1594	1673	0	0	1673	1385	0	1673	0	1594	F	
Q Serve(g_s), s	16.3	50.5	0.0	0.0	39.5	5.2	0.0	13.0	0.0	18.0		
Cycle Q Clear(g_c), s	16.3	50.5	0.0	0.0	39.5	5.2	0.0	13.0	0.0	18.0		
Prop In Lane	1.00		0.00	0.00		1.00	0.00		0.00	1.00		
Lane Grp Cap(c), veh/h	227	888	0	0	589	487	0	350	0	248		
V/C Ratio(X)	0.90	0.86	0.00	0.00	0.91	0.17	0.00	0.54	0.00	0.91		
Avail Cap(c_a), veh/h	251	1001	0	0	677	560	0	350	0	275		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	54.4	26.1	0.0	0.0	39.9	28.8	0.0	45.5	0.0	53.6		
Incr Delay (d2), s/veh	29.3	6.8	0.0	0.0	16.1	0.2	0.0	3.0	0.0	28.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	8.4	21.1	0.0	0.0	18.9	1.8	0.0	5.8	0.0	9.3		
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	83.8	32.9	0.0	0.0	56.0	29.0	0.0	48.5	0.0	82.5		
LnGrp LOS	F	C	A	A	E	C	A	D	A	F		
Approach Vol, veh/h		966			618			189				
Approach Delay, s/veh		43.7			52.5			48.5				
Approach LOS		D			D			D				

Timer - Assigned Phs		2			5	6	7	8				
Phs Duration (G+Y+Rc), s		74.3			23.1	51.2	24.8	30.0				
Change Period (Y+Rc), s		5.8			* 4.7	5.8	* 4.7	3.0				
Max Green Setting (Gmax), s		77.2			* 20	52.2	* 22	27.0				
Max Q Clear Time (g_c+I1), s		52.5			18.3	41.5	20.0	15.0				
Green Ext Time (p_c), s		6.0			0.1	3.9	0.1	1.4				

Intersection Summary	
HCM 6th Ctrl Delay	51.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/29/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	233	73	221	138	303	52	499	212	321	630	41
Future Volume (veh/h)	50	233	73	221	138	303	52	499	212	321	630	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	58	271	75	257	160	50	60	580	238	373	733	45
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	99	207	57	212	393	590	100	418	172	289	764	47
Arrive On Green	0.06	0.16	0.16	0.13	0.23	0.23	0.06	0.37	0.37	0.18	0.49	0.49
Sat Flow, veh/h	1594	1262	349	1594	1673	1418	1594	1127	462	1594	1560	96
Grp Volume(v), veh/h	58	0	346	257	160	50	60	0	818	373	0	778
Grp Sat Flow(s),veh/h/ln	1594	0	1611	1594	1673	1418	1594	0	1589	1594	0	1656
Q Serve(g_s), s	5.1	0.0	23.8	19.3	11.7	3.1	5.3	0.0	53.8	26.3	0.0	65.6
Cycle Q Clear(g_c), s	5.1	0.0	23.8	19.3	11.7	3.1	5.3	0.0	53.8	26.3	0.0	65.6
Prop In Lane	1.00		0.22	1.00		1.00	1.00		0.29	1.00		0.06
Lane Grp Cap(c), veh/h	99	0	264	212	393	590	100	0	589	289	0	811
V/C Ratio(X)	0.58	0.00	1.31	1.21	0.41	0.08	0.60	0.00	1.39	1.29	0.00	0.96
Avail Cap(c_a), veh/h	146	0	264	212	393	590	131	0	589	289	0	811
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.2	0.0	60.6	62.8	46.9	25.6	66.2	0.0	45.6	59.3	0.0	35.6
Incr Delay (d2), s/veh	2.0	0.0	163.5	130.6	1.0	0.1	2.1	0.0	184.7	154.1	0.0	22.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	21.4	15.4	5.0	1.1	2.2	0.0	50.6	22.7	0.0	30.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.2	0.0	224.1	193.4	47.9	25.7	68.3	0.0	230.3	213.4	0.0	57.9
LnGrp LOS	E	A	F	F	D	C	E	A	F	F	A	E
Approach Vol, veh/h		404			467			878			1151	
Approach Delay, s/veh		201.7			125.6			219.3			108.3	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.8	77.2	24.0	30.0	31.0	60.0	13.7	40.3
Change Period (Y+Rc), s	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2
Max Green Setting (Gmax), s	* 12	68.2	* 19	23.8	* 26	53.8	* 13	29.8
Max Q Clear Time (g_c+I1), s	7.3	67.6	21.3	25.8	28.3	55.8	7.1	13.7
Green Ext Time (p_c), s	0.0	0.4	0.0	0.0	0.0	0.0	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	157.7
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/29/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	233	73	221	138	303	52	499	212	321	630	41
Future Volume (veh/h)	50	233	73	221	138	303	52	499	212	321	630	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	58	271	75	257	160	50	60	580	238	373	733	45
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	99	229	194	212	347	551	100	449	184	289	807	50
Arrive On Green	0.06	0.14	0.14	0.13	0.21	0.21	0.06	0.40	0.40	0.18	0.52	0.52
Sat Flow, veh/h	1594	1673	1418	1594	1673	1418	1594	1127	462	1594	1560	96
Grp Volume(v), veh/h	58	271	75	257	160	50	60	0	818	373	0	778
Grp Sat Flow(s),veh/h/ln	1594	1673	1418	1594	1673	1418	1594	0	1589	1594	0	1656
Q Serve(g_s), s	5.1	19.8	7.0	19.3	12.2	3.2	5.3	0.0	57.8	26.3	0.0	62.0
Cycle Q Clear(g_c), s	5.1	19.8	7.0	19.3	12.2	3.2	5.3	0.0	57.8	26.3	0.0	62.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		0.06
Lane Grp Cap(c), veh/h	99	229	194	212	347	551	100	0	633	289	0	857
V/C Ratio(X)	0.58	1.19	0.39	1.21	0.46	0.09	0.60	0.00	1.29	1.29	0.00	0.91
Avail Cap(c_a), veh/h	129	229	194	212	347	551	126	0	633	289	0	857
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.2	62.6	57.1	62.8	50.4	28.1	66.2	0.0	43.6	59.3	0.0	31.9
Incr Delay (d2), s/veh	2.0	119.0	1.8	130.6	1.4	0.1	2.1	0.0	142.8	154.1	0.0	13.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	15.7	2.6	15.4	5.2	1.1	2.2	0.0	46.9	22.7	0.0	26.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.2	181.6	58.9	193.4	51.7	28.2	68.3	0.0	186.4	213.4	0.0	45.5
LnGrp LOS	E	F	E	F	D	C	E	A	F	F	A	D
Approach Vol, veh/h		404			467			878			1151	
Approach Delay, s/veh		142.5			127.2			178.3			99.9	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.8	81.2	24.0	26.0	31.0	64.0	13.7	36.3
Change Period (Y+Rc), s	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2
Max Green Setting (Gmax), s	* 12	72.6	* 19	19.8	* 26	57.8	* 12	27.4
Max Q Clear Time (g_c+I1), s	7.3	64.0	21.3	21.8	28.3	59.8	7.1	14.2
Green Ext Time (p_c), s	0.0	4.2	0.0	0.0	0.0	0.0	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	134.0
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Roundabout
1: Gravenstein Hwy N & Occidental Rd 08/29/2023

Intersection				
Intersection Delay, s/veh	175.6			
Intersection LOS	F			

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	414	769	887	1154
Demand Flow Rate, veh/h	422	784	905	1177
Vehicles Circulating, veh/h	1390	712	715	486
Vehicles Exiting, veh/h	273	908	1097	1010
Ped Vol Crossing Leg, #/h	0	2	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	173.6	116.6	191.2	203.6
Approach LOS	F	F	F	F

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	422	784	905	1177
Cap Entry Lane, veh/h	334	668	665	841
Entry HV Adj Factor	0.980	0.981	0.981	0.981
Flow Entry, veh/h	414	769	887	1154
Cap Entry, veh/h	328	654	653	824
V/C Ratio	1.262	1.175	1.360	1.400
Control Delay, s/veh	173.6	116.6	191.2	203.6
LOS	F	F	F	F
95th %tile Queue, veh	19	26	38	50

HCM 6th Roundabout
4: Healdsburg Ave/Gravenstein Hwy N & Covert Ln 08/25/2023

Intersection			
Intersection Delay, s/veh	11.4		
Intersection LOS	B		

Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	341	686	756
Demand Flow Rate, veh/h	348	700	771
Vehicles Circulating, veh/h	676	115	158
Vehicles Exiting, veh/h	253	909	657
Ped Vol Crossing Leg, #/h	4	4	4
Ped Cap Adj	0.999	0.999	0.999
Approach Delay, s/veh	13.1	9.7	12.2
Approach LOS	B	A	B

Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	348	700	771
Cap Entry Lane, veh/h	692	1227	1174
Entry HV Adj Factor	0.980	0.981	0.980
Flow Entry, veh/h	341	686	756
Cap Entry, veh/h	678	1203	1151
V/C Ratio	0.503	0.571	0.657
Control Delay, s/veh	13.1	9.7	12.2
LOS	B	A	B
95th %tile Queue, veh	3	4	5

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/25/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	196	104	222	214	302	122	668	191	330	645	46
Future Volume (veh/h)	87	196	104	222	214	302	122	668	191	330	645	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	87	196	91	222	214	104	122	668	185	330	645	42
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	125	58	171	164	290	126	433	120	226	634	41
Arrive On Green	0.15	0.15	0.15	0.21	0.21	0.21	0.08	0.35	0.35	0.14	0.41	0.41
Sat Flow, veh/h	366	825	383	831	801	1415	1594	1254	347	1594	1554	101
Grp Volume(v), veh/h	374	0	0	436	0	104	122	0	853	330	0	687
Grp Sat Flow(s),veh/h/ln	1574	0	0	1632	0	1415	1594	0	1601	1594	0	1655
Q Serve(g_s), s	22.8	0.0	0.0	30.8	0.0	9.5	11.4	0.0	51.8	21.3	0.0	61.2
Cycle Q Clear(g_c), s	22.8	0.0	0.0	30.8	0.0	9.5	11.4	0.0	51.8	21.3	0.0	61.2
Prop In Lane	0.23		0.24	0.51		1.00	1.00		0.22	1.00		0.06
Lane Grp Cap(c), veh/h	239	0	0	335	0	290	126	0	553	226	0	675
V/C Ratio(X)	1.56	0.00	0.00	1.30	0.00	0.36	0.96	0.00	1.54	1.46	0.00	1.02
Avail Cap(c_a), veh/h	239	0	0	335	0	290	126	0	553	226	0	675
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	63.6	0.0	0.0	59.6	0.0	51.1	68.8	0.0	49.1	64.3	0.0	44.4
Incr Delay (d2), s/veh	273.0	0.0	0.0	155.7	0.0	1.1	68.5	0.0	253.2	228.9	0.0	39.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	27.0	0.0	0.0	27.0	0.0	3.4	7.0	0.0	58.9	22.9	0.0	31.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	336.6	0.0	0.0	215.3	0.0	52.2	137.4	0.0	302.3	293.3	0.0	83.5
LnGrp LOS	F	A	A	F	A	D	F	A	F	F	A	F
Approach Vol, veh/h		374			540			975			1017	
Approach Delay, s/veh		336.6			183.9			281.7			151.5	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.6	67.4		29.0	26.0	58.0		37.0				
Change Period (Y+Rc), s	* 4.7	6.2		6.2	* 4.7	6.2		6.2				
Max Green Setting (Gmax), s	* 12	61.2		22.8	* 21	51.8		30.8				
Max Q Clear Time (g_c+I1), s	13.4	63.2		24.8	23.3	53.8		32.8				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	225.0
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Gravenstein Hwy N & Mill Station Rd

08/25/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	11	88	74	5	36	79	724	23	6	691	176
Future Volume (veh/h)	111	11	88	74	5	36	79	724	23	6	691	176
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	111	11	2	74	5	25	79	724	17	6	691	164
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	137	25	155	23	116	134	1041	862	24	720	171
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.08	0.62	0.62	0.02	0.55	0.55
Sat Flow, veh/h	1594	1378	251	1594	238	1188	1594	1673	1386	1594	1301	309
Grp Volume(v), veh/h	111	0	13	74	0	30	79	724	17	6	0	855
Grp Sat Flow(s),veh/h/ln	1594	0	1628	1594	0	1426	1594	1673	1386	1594	0	1610
Q Serve(g_s), s	7.3	0.0	0.8	4.7	0.0	2.1	5.2	31.1	0.5	0.4	0.0	54.6
Cycle Q Clear(g_c), s	7.3	0.0	0.8	4.7	0.0	2.1	5.2	31.1	0.5	0.4	0.0	54.6
Prop In Lane	1.00		0.15	1.00		0.83	1.00		1.00	1.00		0.19
Lane Grp Cap(c), veh/h	158	0	162	155	0	139	134	1041	862	24	0	891
V/C Ratio(X)	0.70	0.00	0.08	0.48	0.00	0.22	0.59	0.70	0.02	0.25	0.00	0.96
Avail Cap(c_a), veh/h	164	0	167	281	0	251	151	1041	862	148	0	922
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.0	0.0	44.1	46.1	0.0	44.9	47.7	13.6	7.8	52.5	0.0	23.0
Incr Delay (d2), s/veh	10.0	0.0	0.1	0.8	0.0	0.3	2.4	2.2	0.0	1.9	0.0	20.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	0.3	1.9	0.0	0.8	2.1	10.5	0.1	0.2	0.0	23.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.1	0.0	44.2	47.0	0.0	45.2	50.0	15.8	7.8	54.5	0.0	43.3
LnGrp LOS	E	A	D	D	A	D	D	B	A	D	A	D
Approach Vol, veh/h		124			104			820			861	
Approach Delay, s/veh		55.7			46.4			19.0			43.4	
Approach LOS		E			D			B			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.8	65.5		14.2	5.3	73.0		15.4				
Change Period (Y+Rc), s	3.7	5.8		3.7	3.7	5.8		4.7				
Max Green Setting (Gmax), s	10.3	61.8		19.0	10.0	62.0		11.1				
Max Q Clear Time (g_c+I1), s	9.3	56.6		6.7	2.4	33.1		9.3				
Green Ext Time (p_c), s	0.0	3.2		0.1	0.0	7.6		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	33.9
HCM 6th LOS	C

HCM 6th Signalized Intersection Summary
3: Gravenstein Hwy N & Hurlbut Ave

08/25/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	22	105	32	14	16	87	689	34	19	822	59
Future Volume (veh/h)	84	22	105	32	14	16	87	689	34	19	822	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.97	0.98		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	84	22	28	32	14	-9	87	689	0	19	822	-6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	249	56	220	319	142	0	131	951	806	54	870	737
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.00	0.08	0.57	0.00	0.03	0.52	0.00
Sat Flow, veh/h	1088	350	1383	716	364	-211	1594	1673	1418	1594	1673	1418
Grp Volume(v), veh/h	106	0	28	0	0	0	87	689	0	19	822	-6
Grp Sat Flow(s),veh/h/ln	1438	0	1383	0	0	0	1594	1673	1418	1594	1673	1418
Q Serve(g_s), s	5.1	0.0	1.5	0.0	0.0	0.0	4.5	25.6	0.0	1.0	39.2	0.0
Cycle Q Clear(g_c), s	5.6	0.0	1.5	0.0	0.0	0.0	4.5	25.6	0.0	1.0	39.2	0.0
Prop In Lane	0.79		1.00	0.86		-0.24	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	305	0	220	0	0	0	131	951	806	54	870	737
V/C Ratio(X)	0.35	0.00	0.13	0.00	0.00	0.00	0.66	0.72	0.00	0.35	0.94	-0.01
Avail Cap(c_a), veh/h	517	0	425	0	0	0	151	951	806	151	906	768
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.2	0.0	30.5	0.0	0.0	0.0	37.7	13.4	0.0	39.9	19.2	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.1	0.0	0.0	0.0	5.8	3.0	0.0	1.4	17.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.5	0.0	0.0	0.0	1.9	9.0	0.0	0.4	17.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.5	0.0	30.6	0.0	0.0	0.0	43.5	16.4	0.0	41.4	37.1	0.0
LnGrp LOS	C	A	C	A	A	A	D	B	A	D	D	A
Approach Vol, veh/h		134			0			776			835	
Approach Delay, s/veh		32.1			0.0			19.5			37.5	
Approach LOS		C						B			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.7	52.8		21.2	6.6	56.9		21.2
Change Period (Y+Rc), s	3.7	8.8		* 7.7	3.7	8.8		* 7.7
Max Green Setting (Gmax), s	8.0	45.8		* 26	8.0	45.8		* 26
Max Q Clear Time (g_c+I1), s	10.5	41.2		0.0	3.0	27.6		7.6
Green Ext Time (p_c), s	0.0	2.8		0.0	0.0	6.2		0.4

Intersection Summary	
HCM 6th Ctrl Delay	29.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
4: Healdsburg Ave/Gravenstein Hwy N & Covert Ln

09/14/2023

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	83	162	190	847	830	167
Future Vol, veh/h	83	162	190	847	830	167
Conflicting Peds, #/hr	4	4	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	Free
Storage Length	0	250	150	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	83	162	190	847	830	167

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2065	838	834	0	-	0
Stage 1	834	-	-	-	-	-
Stage 2	1231	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 60	366	799	-	-	0
Stage 1	426	-	-	-	-	0
Stage 2	276	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 45	364	796	-	-	-
Mov Cap-2 Maneuver	156	-	-	-	-	-
Stage 1	323	-	-	-	-	-
Stage 2	275	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	32.5	2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	796	-	156	364	-
HCM Lane V/C Ratio	0.239	-	0.532	0.445	-
HCM Control Delay (s)	10.9	-	51.7	22.6	-
HCM Lane LOS	B	-	F	C	-
HCM 95th %tile Q(veh)	0.9	-	2.6	2.2	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
5: Murphy Ave & Healdsburg Ave 08/25/2023

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	964	39	53	999	35	62
Future Vol, veh/h	964	39	53	999	35	62
Conflicting Peds, #/hr	0	27	19	0	27	19
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	964	39	53	999	35	62

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1030	0	2143	1030
Stage 1	-	-	-	-	1011	-
Stage 2	-	-	-	-	1132	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	674	-	54	283
Stage 1	-	-	-	-	352	-
Stage 2	-	-	-	-	308	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	659	-	48	272
Mov Cap-2 Maneuver	-	-	-	-	162	-
Stage 1	-	-	-	-	344	-
Stage 2	-	-	-	-	277	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	34.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	218	-	-	659	-
HCM Lane V/C Ratio	0.445	-	-	0.08	-
HCM Control Delay (s)	34.1	-	-	10.9	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	2.1	-	-	0.3	-

HCM 6th Signalized Intersection Summary
6: Healdsburg Ave & N Main St 08/25/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	847	0	0	898	120	0	109	0	183	0	136
Future Volume (veh/h)	94	847	0	0	898	120	0	109	0	183	0	136
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	0	0	1673	1673	0	1673	0	1673	0	1673
Adj Flow Rate, veh/h	94	847	0	0	898	14	0	109	0	183	0	-8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	0	0	2	2	0	2	0	2	0	2
Cap, veh/h	99	1031	0	0	874	725	0	299	0	184	0	0
Arrive On Green	0.06	0.62	0.00	0.00	0.52	0.52	0.00	0.18	0.00	0.12	0.00	0.00
Sat Flow, veh/h	1594	1673	0	0	1673	1388	0	1673	0	1594	183	
Grp Volume(v), veh/h	94	847	0	0	898	14	0	109	0	183	130.4	
Grp Sat Flow(s),veh/h/ln	1594	1673	0	0	1673	1388	0	1673	0	1594	F	
Q Serve(g_s), s	8.8	58.9	0.0	0.0	78.2	0.7	0.0	8.6	0.0	17.2		
Cycle Q Clear(g_c), s	8.8	58.9	0.0	0.0	78.2	0.7	0.0	8.6	0.0	17.2		
Prop In Lane	1.00		0.00	0.00		1.00	0.00		0.00	1.00		
Lane Grp Cap(c), veh/h	99	1031	0	0	874	725	0	299	0	184		
V/C Ratio(X)	0.95	0.82	0.00	0.00	1.03	0.02	0.00	0.37	0.00	0.99		
Avail Cap(c_a), veh/h	99	1031	0	0	874	725	0	302	0	184		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	70.0	22.4	0.0	0.0	35.8	17.3	0.0	54.0	0.0	66.1		
Incr Delay (d2), s/veh	73.3	5.4	0.0	0.0	37.6	0.0	0.0	1.6	0.0	64.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.6	24.0	0.0	0.0	40.6	0.2	0.0	3.8	0.0	10.3		
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	143.3	27.8	0.0	0.0	73.4	17.3	0.0	55.6	0.0	130.4		
LnGrp LOS	F	C	A	A	F	B	A	E	A	F		
Approach Vol, veh/h		941			912			109				
Approach Delay, s/veh		39.3			72.5			55.6				
Approach LOS		D			E			E				

Timer - Assigned Phs		2			5	6	7	8				
Phs Duration (G+Y+Rc), s		98.0			14.0	84.0	22.0	29.7				
Change Period (Y+Rc), s		5.8			* 4.7	5.8	* 4.7	3.0				
Max Green Setting (Gmax), s		92.2			* 9.3	78.2	* 17	27.0				
Max Q Clear Time (g_c+I1), s		60.9			10.8	80.2	19.2	10.6				
Green Ext Time (p_c), s		7.6			0.0	0.0	0.0	0.8				

Intersection Summary		
HCM 6th Ctrl Delay	62.0	
HCM 6th LOS	E	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/29/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	196	104	222	214	302	122	668	191	330	645	46
Future Volume (veh/h)	87	196	104	222	214	302	122	668	191	330	645	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	87	196	91	222	214	104	122	668	185	330	645	42
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	154	71	190	328	515	141	526	146	267	774	50
Arrive On Green	0.07	0.14	0.14	0.12	0.20	0.20	0.09	0.42	0.42	0.17	0.50	0.50
Sat Flow, veh/h	1594	1070	497	1594	1673	1415	1594	1254	347	1594	1554	101
Grp Volume(v), veh/h	87	0	287	222	214	104	122	0	853	330	0	687
Grp Sat Flow(s),veh/h/ln	1594	0	1567	1594	1673	1415	1594	0	1601	1594	0	1655
Q Serve(g_s), s	7.8	0.0	20.8	17.3	17.1	7.3	11.0	0.0	60.8	24.3	0.0	51.6
Cycle Q Clear(g_c), s	7.8	0.0	20.8	17.3	17.1	7.3	11.0	0.0	60.8	24.3	0.0	51.6
Prop In Lane	1.00		0.32	1.00		1.00	1.00		0.22	1.00		0.06
Lane Grp Cap(c), veh/h	107	0	225	190	328	515	141	0	671	267	0	825
V/C Ratio(X)	0.82	0.00	1.28	1.17	0.65	0.20	0.86	0.00	1.27	1.24	0.00	0.83
Avail Cap(c_a), veh/h	137	0	225	190	328	515	148	0	671	267	0	825
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.8	0.0	62.1	63.8	53.8	31.7	65.2	0.0	42.1	60.3	0.0	31.2
Incr Delay (d2), s/veh	19.7	0.0	154.3	117.6	5.2	0.3	34.5	0.0	133.2	133.9	0.0	7.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	17.7	13.1	7.6	2.5	5.7	0.0	47.7	19.6	0.0	21.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.5	0.0	216.4	181.5	58.9	32.0	99.7	0.0	175.3	194.3	0.0	38.8
LnGrp LOS	F	A	F	F	E	C	F	A	F	F	A	D
Approach Vol, veh/h		374			540			975			1017	
Approach Delay, s/veh		186.1			104.1			165.9			89.3	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.6	78.4	22.0	27.0	29.0	67.0	14.4	34.6
Change Period (Y+Rc), s	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2
Max Green Setting (Gmax), s	* 14	71.6	* 17	20.8	* 24	60.8	* 13	25.6
Max Q Clear Time (g_c+I1), s	13.0	53.6	19.3	22.8	26.3	62.8	9.8	19.1
Green Ext Time (p_c), s	0.0	5.8	0.0	0.0	0.0	0.0	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	130.2
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/29/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	196	104	222	214	302	122	668	191	330	645	46
Future Volume (veh/h)	87	196	104	222	214	302	122	668	191	330	645	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	87	196	91	222	214	104	122	668	185	330	645	42
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	193	158	190	280	484	142	553	153	278	818	53
Arrive On Green	0.07	0.12	0.12	0.12	0.17	0.17	0.09	0.44	0.44	0.17	0.53	0.53
Sat Flow, veh/h	1594	1673	1376	1594	1673	1414	1594	1254	347	1594	1554	101
Grp Volume(v), veh/h	87	196	91	222	214	104	122	0	853	330	0	687
Grp Sat Flow(s),veh/h/ln	1594	1673	1376	1594	1673	1414	1594	0	1601	1594	0	1655
Q Serve(g_s), s	7.8	16.7	9.1	17.3	17.7	7.6	11.0	0.0	63.9	25.3	0.0	48.7
Cycle Q Clear(g_c), s	7.8	16.7	9.1	17.3	17.7	7.6	11.0	0.0	63.9	25.3	0.0	48.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.22	1.00		0.06
Lane Grp Cap(c), veh/h	107	193	158	190	280	484	142	0	706	278	0	871
V/C Ratio(X)	0.82	1.02	0.57	1.17	0.76	0.21	0.86	0.00	1.21	1.19	0.00	0.79
Avail Cap(c_a), veh/h	110	193	158	190	280	484	170	0	706	278	0	871
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.8	64.2	60.8	63.8	57.6	33.9	65.2	0.0	40.6	59.8	0.0	27.8
Incr Delay (d2), s/veh	33.0	69.3	6.1	117.6	12.4	0.3	26.5	0.0	106.9	114.3	0.0	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	10.6	3.4	13.1	8.4	2.6	5.4	0.0	44.9	18.8	0.0	19.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	99.8	133.4	66.9	181.5	70.0	34.2	91.6	0.0	147.5	174.1	0.0	33.0
LnGrp LOS	F	F	E	F	E	C	F	A	F	F	A	C
Approach Vol, veh/h		374			540			975			1017	
Approach Delay, s/veh		109.4			109.0			140.5			78.8	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.6	82.5	22.0	22.9	30.0	70.1	14.4	30.5
Change Period (Y+Rc), s	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2
Max Green Setting (Gmax), s	* 16	73.7	* 17	16.7	* 25	63.9	* 10	24.0
Max Q Clear Time (g_c+I1), s	13.0	50.7	19.3	18.7	27.3	65.9	9.8	19.7
Green Ext Time (p_c), s	0.0	6.4	0.0	0.0	0.0	0.0	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	109.0
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

TIS for the Canopy Residential Project
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HCM 6th Roundabout
1: Gravenstein Hwy N & Occidental Rd 08/29/2023

Intersection				
Intersection Delay, s/veh	176.1			
Intersection LOS	F			

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	387	738	981	1021
Demand Flow Rate, veh/h	395	752	1000	1042
Vehicles Circulating, veh/h	1221	894	626	568
Vehicles Exiting, veh/h	389	732	990	1078
Ped Vol Crossing Leg, #/h	1	2	0	1
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	77.3	194.1	194.4	183.0
Approach LOS	F	F	F	F

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	395	752	1000	1042
Cap Entry Lane, veh/h	397	554	729	773
Entry HV Adj Factor	0.980	0.981	0.981	0.980
Flow Entry, veh/h	387	738	981	1021
Cap Entry, veh/h	389	544	715	758
V/C Ratio	0.994	1.356	1.372	1.348
Control Delay, s/veh	77.3	194.1	194.4	183.0
LOS	F	F	F	F
95th %tile Queue, veh	12	33	42	42

HCM 6th Roundabout
4: Healdsburg Ave/Gravenstein Hwy N & Covert Ln 08/29/2023

Intersection			
Intersection Delay, s/veh	22.6		
Intersection LOS	C		

Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	245	1037	997
Demand Flow Rate, veh/h	250	1058	1017
Vehicles Circulating, veh/h	847	85	194
Vehicles Exiting, veh/h	364	1012	949
Ped Vol Crossing Leg, #/h	4	4	4
Ped Cap Adj	0.999	0.999	0.999
Approach Delay, s/veh	13.2	19.8	27.8
Approach LOS	B	C	D

Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	250	1058	1017
Cap Entry Lane, veh/h	582	1265	1132
Entry HV Adj Factor	0.980	0.980	0.981
Flow Entry, veh/h	245	1037	997
Cap Entry, veh/h	570	1240	1110
V/C Ratio	0.430	0.837	0.899
Control Delay, s/veh	13.2	19.8	27.8
LOS	B	C	D
95th %tile Queue, veh	2	11	14

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	158	57	113	123	260	48	427	100	221	489	41
Future Volume (veh/h)	50	158	57	113	123	260	48	427	100	221	489	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	58	184	56	131	143	0	56	497	107	257	569	45
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	62	198	60	140	153	254	104	398	86	238	585	46
Arrive On Green	0.20	0.20	0.20	0.18	0.18	0.00	0.07	0.30	0.30	0.15	0.38	0.38
Sat Flow, veh/h	312	990	301	781	853	1418	1594	1334	287	1594	1531	121
Grp Volume(v), veh/h	298	0	0	274	0	0	56	0	604	257	0	614
Grp Sat Flow(s),veh/h/ln	1604	0	0	1634	0	1418	1594	0	1621	1594	0	1652
Q Serve(g_s), s	24.5	0.0	0.0	22.2	0.0	0.0	4.6	0.0	40.0	20.0	0.0	49.0
Cycle Q Clear(g_c), s	24.5	0.0	0.0	22.2	0.0	0.0	4.6	0.0	40.0	20.0	0.0	49.0
Prop In Lane	0.19		0.19	0.48		1.00	1.00		0.18	1.00		0.07
Lane Grp Cap(c), veh/h	320	0	0	293	0	254	104	0	483	238	0	631
V/C Ratio(X)	0.93	0.00	0.00	0.94	0.00	0.00	0.54	0.00	1.25	1.08	0.00	0.97
Avail Cap(c_a), veh/h	335	0	0	293	0	254	190	0	483	238	0	631
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.7	0.0	0.0	54.3	0.0	0.0	60.7	0.0	47.0	57.0	0.0	40.7
Incr Delay (d2), s/veh	31.6	0.0	0.0	36.4	0.0	0.0	1.6	0.0	128.5	81.6	0.0	29.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.3	0.0	0.0	11.9	0.0	0.0	1.9	0.0	32.8	13.2	0.0	24.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.3	0.0	0.0	90.7	0.0	0.0	62.3	0.0	175.6	138.7	0.0	69.8
LnGrp LOS	F	A	A	F	A	A	E	A	F	F	A	E
Approach Vol, veh/h		298			274			660			871	
Approach Delay, s/veh		84.3			90.7			166.0			90.1	
Approach LOS		F			F			F			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.5	57.4		33.0	24.7	46.2		30.2				
Change Period (Y+Rc), s	* 4.7	6.2		6.2	* 4.7	6.2		6.2				
Max Green Setting (Gmax), s	* 16	40.0		28.0	* 20	40.0		24.0				
Max Q Clear Time (g_c+I1), s	6.6	51.0		26.5	22.0	42.0		24.2				
Green Ext Time (p_c), s	0.0	0.0		0.3	0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			113.2									
HCM 6th LOS			F									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Gravenstein Hwy N & Mill Station Rd

08/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	53	70	83	36	53	44	396	71	50	479	137
Future Volume (veh/h)	151	53	70	83	36	53	44	396	71	50	479	137
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	178	62	21	98	42	7	52	466	5	59	564	143
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	213	158	54	205	179	30	130	749	631	138	583	148
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.08	0.45	0.45	0.09	0.45	0.45
Sat Flow, veh/h	1594	1187	402	1594	1393	232	1594	1673	1409	1594	1287	326
Grp Volume(v), veh/h	178	0	83	98	0	49	52	466	5	59	0	707
Grp Sat Flow(s),veh/h/ln	1594	0	1589	1594	0	1625	1594	1673	1409	1594	0	1613
Q Serve(g_s), s	9.6	0.0	4.2	5.0	0.0	2.4	2.7	18.7	0.2	3.1	0.0	37.5
Cycle Q Clear(g_c), s	9.6	0.0	4.2	5.0	0.0	2.4	2.7	18.7	0.2	3.1	0.0	37.5
Prop In Lane	1.00		0.25	1.00		0.14	1.00		1.00	1.00		0.20
Lane Grp Cap(c), veh/h	213	0	212	205	0	209	130	749	631	138	0	730
V/C Ratio(X)	0.84	0.00	0.39	0.48	0.00	0.23	0.40	0.62	0.01	0.43	0.00	0.97
Avail Cap(c_a), veh/h	272	0	271	344	0	351	272	761	641	272	0	734
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.2	0.0	34.8	35.6	0.0	34.4	38.3	18.6	13.5	38.1	0.0	23.4
Incr Delay (d2), s/veh	13.4	0.0	0.4	0.6	0.0	0.2	0.7	1.8	0.0	0.8	0.0	25.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	1.6	2.0	0.0	1.0	1.0	6.8	0.1	1.2	0.0	17.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.5	0.0	35.3	36.2	0.0	34.6	39.0	20.4	13.5	38.8	0.0	48.9
LnGrp LOS	D	A	D	D	A	C	D	C	B	D	A	D
Approach Vol, veh/h		261			147			523			766	
Approach Delay, s/veh		45.7			35.7			22.2			48.2	
Approach LOS		D			D			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.9	45.6		15.0	11.3	45.2		16.4				
Change Period (Y+Rc), s	3.7	5.8		3.7	3.7	5.8		4.7				
Max Green Setting (Gmax), s	15.3	40.0		19.0	15.0	40.0		15.0				
Max Q Clear Time (g_c+I1), s	11.6	39.5		7.0	5.1	20.7		11.6				
Green Ext Time (p_c), s	0.0	0.3		0.2	0.0	3.6		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			38.7									
HCM 6th LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	12	35	70	7	43	34	425	40	24	552	43
Future Volume (veh/h)	32	12	35	70	7	43	34	425	40	24	552	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	36	14	0	80	8	12	39	483	0	27	627	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	279	90	250	300	31	30	101	739	627	77	714	605
Arrive On Green	0.18	0.18	0.00	0.18	0.18	0.18	0.06	0.44	0.00	0.05	0.43	0.00
Sat Flow, veh/h	1001	511	1418	1093	177	173	1594	1673	1418	1594	1673	1418
Grp Volume(v), veh/h	50	0	0	100	0	0	39	483	0	27	627	0
Grp Sat Flow(s),veh/h/ln	1512	0	1418	1443	0	0	1594	1673	1418	1594	1673	1418
Q Serve(g_s), s	0.0	0.0	0.0	2.0	0.0	0.0	1.4	13.7	0.0	1.0	20.8	0.0
Cycle Q Clear(g_c), s	1.6	0.0	0.0	3.6	0.0	0.0	1.4	13.7	0.0	1.0	20.8	0.0
Prop In Lane	0.72		1.00	0.80		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	369	0	250	361	0	0	101	739	627	77	714	605
V/C Ratio(X)	0.14	0.00	0.00	0.28	0.00	0.00	0.38	0.65	0.00	0.35	0.88	0.00
Avail Cap(c_a), veh/h	738	0	609	720	0	0	290	830	703	290	830	703
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	21.2	0.0	0.0	22.0	0.0	0.0	27.2	13.2	0.0	27.9	15.9	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.9	1.9	0.0	1.0	10.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	1.2	0.0	0.0	0.5	4.6	0.0	0.4	8.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.2	0.0	0.0	22.1	0.0	0.0	28.1	15.2	0.0	28.9	26.1	0.0
LnGrp LOS	C	A	A	C	A	A	C	B	A	C	C	A
Approach Vol, veh/h		50			100			522			654	
Approach Delay, s/veh		21.2			22.1			16.1			26.2	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.5	34.6		18.4	6.6	35.5		18.4
Change Period (Y+Rc), s	3.7	8.8		* 7.7	3.7	8.8		* 7.7
Max Green Setting (Gmax), s	3.8	30.0		* 26	11.0	30.0		* 26
Max Q Clear Time (g_c+I1), s	3.4	22.8		5.6	3.0	15.7		3.6
Green Ext Time (p_c), s	0.0	3.0		0.3	0.0	3.5		0.1

Intersection Summary	
HCM 6th Ctrl Delay	21.7
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	84	208	139	436	554	115
Future Vol, veh/h	84	208	139	436	554	115
Conflicting Peds, #/hr	4	4	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	Free
Storage Length	0	250	150	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	97	239	160	501	637	132

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1466	645	641	0	-	0
Stage 1	641	-	-	-	-	-
Stage 2	825	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	141	472	943	-	-	0
Stage 1	525	-	-	-	-	0
Stage 2	430	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	116	469	940	-	-	-
Mov Cap-2 Maneuver	250	-	-	-	-	-
Stage 1	435	-	-	-	-	-
Stage 2	429	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.6	2.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	940	-	250	469	-
HCM Lane V/C Ratio	0.17	-	0.386	0.51	-
HCM Control Delay (s)	9.6	-	28.2	20.4	-
HCM Lane LOS	A	-	D	C	-
HCM 95th %tile Q(veh)	0.6	-	1.7	2.8	-

HCM 6th TWSC
5: Murphy Ave & Healdsburg Ave 08/22/2023

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	715	52	18	552	37	60
Future Vol, veh/h	715	52	18	552	37	60
Conflicting Peds, #/hr	0	19	13	0	19	13
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	813	59	20	627	42	68

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	891	0	1548	875
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	686	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	761	-	126	349
Stage 1	-	-	-	-	414	-
Stage 2	-	-	-	-	500	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	749	-	119	340
Mov Cap-2 Maneuver	-	-	-	-	255	-
Stage 1	-	-	-	-	407	-
Stage 2	-	-	-	-	479	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	23.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	302	-	-	749	-
HCM Lane V/C Ratio	0.365	-	-	0.027	-
HCM Control Delay (s)	23.6	-	-	9.9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1.6	-	-	0.1	-

HCM 6th Signalized Intersection Summary
6: Healdsburg Ave & N Main St 08/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	154	566	0	0	413	135	0	189	0	166	0	130
Future Volume (veh/h)	154	566	0	0	413	135	0	189	0	166	0	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	0	0	1673	1673	0	1673	0	1673	0	1673
Adj Flow Rate, veh/h	173	636	0	0	464	0	0	212	0	187	0	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	0	0	2	2	0	2	0	2	0	2
Cap, veh/h	201	779	0	0	491	416	0	445	0	215	0	0
Arrive On Green	0.13	0.47	0.00	0.00	0.29	0.00	0.00	0.27	0.00	0.14	0.00	0.00
Sat Flow, veh/h	1594	1673	0	0	1673	1418	0	1673	0	1594	187	
Grp Volume(v), veh/h	173	636	0	0	464	0	0	212	0	187	59.1	
Grp Sat Flow(s),veh/h/ln	1594	1673	0	0	1673	1418	0	1673	0	1594	E	
Q Serve(g_s), s	10.8	33.2	0.0	0.0	27.4	0.0	0.0	10.8	0.0	11.6		
Cycle Q Clear(g_c), s	10.8	33.2	0.0	0.0	27.4	0.0	0.0	10.8	0.0	11.6		
Prop In Lane	1.00		0.00	0.00		1.00	0.00		0.00	1.00		
Lane Grp Cap(c), veh/h	201	779	0	0	491	416	0	445	0	215		
V/C Ratio(X)	0.86	0.82	0.00	0.00	0.95	0.00	0.00	0.48	0.00	0.87		
Avail Cap(c_a), veh/h	252	779	0	0	496	420	0	446	0	283		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	43.4	23.3	0.0	0.0	35.0	0.0	0.0	31.2	0.0	42.9		
Incr Delay (d2), s/veh	18.3	6.8	0.0	0.0	27.5	0.0	0.0	1.7	0.0	16.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.2	13.9	0.0	0.0	14.8	0.0	0.0	4.6	0.0	5.6		
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.7	30.1	0.0	0.0	62.5	0.0	0.0	32.9	0.0	59.1		
LnGrp LOS	E	C	A	A	E	A	A	C	A	E		
Approach Vol, veh/h		809			464			212				
Approach Delay, s/veh		36.8			62.5			32.9				
Approach LOS		D			E			C				

Timer - Assigned Phs		2			5	6	7	8				
Phs Duration (G+Y+Rc), s		52.9			17.4	35.5	18.4	29.9				
Change Period (Y+Rc), s		5.8			* 4.7	5.8	* 4.7	3.0				
Max Green Setting (Gmax), s		30.0			* 16	30.0	* 18	27.0				
Max Q Clear Time (g_c+I1), s		35.2			12.8	29.4	13.6	12.8				
Green Ext Time (p_c), s		0.0			0.1	0.2	0.1	1.8				

Intersection Summary	
HCM 6th Ctrl Delay	45.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/29/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	158	57	113	123	260	48	427	100	221	489	41
Future Volume (veh/h)	50	158	57	113	123	260	48	427	100	221	489	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	58	184	56	131	143	0	56	497	107	257	569	45
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	120	209	64	154	321	509	118	491	106	267	706	56
Arrive On Green	0.08	0.17	0.17	0.10	0.19	0.00	0.07	0.37	0.37	0.17	0.46	0.46
Sat Flow, veh/h	1594	1231	375	1594	1673	1418	1594	1334	287	1594	1531	121
Grp Volume(v), veh/h	58	0	240	131	143	0	56	0	604	257	0	614
Grp Sat Flow(s),veh/h/ln	1594	0	1606	1594	1673	1418	1594	0	1621	1594	0	1652
Q Serve(g_s), s	3.9	0.0	16.1	8.9	8.3	0.0	3.7	0.0	40.7	17.7	0.0	35.2
Cycle Q Clear(g_c), s	3.9	0.0	16.1	8.9	8.3	0.0	3.7	0.0	40.7	17.7	0.0	35.2
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.18	1.00		0.07
Lane Grp Cap(c), veh/h	120	0	273	154	321	509	118	0	597	267	0	762
V/C Ratio(X)	0.48	0.00	0.88	0.85	0.45	0.00	0.47	0.00	1.01	0.96	0.00	0.81
Avail Cap(c_a), veh/h	144	0	339	154	363	545	144	0	597	267	0	762
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.0	0.0	44.7	49.1	39.5	0.0	49.1	0.0	34.9	45.7	0.0	25.5
Incr Delay (d2), s/veh	1.1	0.0	20.6	32.1	1.4	0.0	1.1	0.0	39.8	44.6	0.0	6.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	7.7	4.9	3.5	0.0	1.5	0.0	21.6	10.0	0.0	14.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.2	0.0	65.4	81.2	40.9	0.0	50.2	0.0	74.7	90.2	0.0	32.1
LnGrp LOS	D	A	E	F	D	A	D	A	F	F	A	C
Approach Vol, veh/h		298			274			660			871	
Approach Delay, s/veh		62.4			60.1			72.6			49.3	
Approach LOS		E			E			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.9	57.2	15.4	25.0	23.2	46.9	13.0	27.4				
Change Period (Y+Rc), s	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2				
Max Green Setting (Gmax), s	* 10	49.2	* 11	23.3	* 19	40.7	* 10	24.0				
Max Q Clear Time (g_c+I1), s	5.7	37.2	10.9	18.1	19.7	42.7	5.9	10.3				
Green Ext Time (p_c), s	0.0	4.0	0.0	0.7	0.0	0.0	0.0	0.7				
Intersection Summary												
HCM 6th Ctrl Delay			59.9									
HCM 6th LOS			E									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/29/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	158	57	113	123	260	48	427	100	221	489	41
Future Volume (veh/h)	50	158	57	113	123	260	48	427	100	221	489	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	58	184	56	131	143	0	56	497	107	257	569	45
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	224	190	156	258	468	122	514	111	280	742	59
Arrive On Green	0.08	0.13	0.13	0.10	0.15	0.00	0.08	0.39	0.39	0.18	0.48	0.48
Sat Flow, veh/h	1594	1673	1418	1594	1673	1418	1594	1334	287	1594	1531	121
Grp Volume(v), veh/h	58	184	56	131	143	0	56	0	604	257	0	614
Grp Sat Flow(s),veh/h/ln	1594	1673	1418	1594	1673	1418	1594	0	1621	1594	0	1652
Q Serve(g_s), s	3.7	11.3	3.7	8.5	8.3	0.0	3.5	0.0	38.4	16.7	0.0	32.1
Cycle Q Clear(g_c), s	3.7	11.3	3.7	8.5	8.3	0.0	3.5	0.0	38.4	16.7	0.0	32.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.18	1.00		0.07
Lane Grp Cap(c), veh/h	124	224	190	156	258	468	122	0	625	280	0	800
V/C Ratio(X)	0.47	0.82	0.30	0.84	0.55	0.00	0.46	0.00	0.97	0.92	0.00	0.77
Avail Cap(c_a), veh/h	151	331	280	200	382	573	151	0	627	280	0	800
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.5	44.4	41.1	46.7	41.2	0.0	46.5	0.0	31.7	42.6	0.0	22.3
Incr Delay (d2), s/veh	1.0	12.4	1.2	17.7	2.6	0.0	1.0	0.0	27.9	32.4	0.0	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	5.2	1.3	4.1	3.5	0.0	1.4	0.0	18.7	8.8	0.0	12.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.5	56.8	42.3	64.3	43.8	0.0	47.5	0.0	59.6	75.0	0.0	27.1
LnGrp LOS	D	E	D	E	D	A	D	A	E	E	A	C
Approach Vol, veh/h		298			274			660			871	
Approach Delay, s/veh		52.2			53.6			58.5			41.2	
Approach LOS		D			D			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.8	57.2	15.0	20.3	23.2	46.8	12.9	22.4				
Change Period (Y+Rc), s	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2				
Max Green Setting (Gmax), s	* 10	49.2	* 13	20.8	* 19	40.7	* 10	24.0				
Max Q Clear Time (g_c+I1), s	5.5	34.1	10.5	13.3	18.7	40.4	5.7	10.3				
Green Ext Time (p_c), s	0.0	4.6	0.0	0.8	0.0	0.1	0.0	0.7				
Intersection Summary												
HCM 6th Ctrl Delay			49.8									
HCM 6th LOS			D									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

TIS for the Canopy Residential Project
AM Existing plus Project + Recommendations
Synchro 11 Report
Page 1

HCM 6th Roundabout
1: Gravenstein Hwy N & Occidental Rd 08/29/2023

Intersection	
Intersection Delay, s/veh	27.8
Intersection LOS	D

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	308	576	669	874
Demand Flow Rate, veh/h	314	588	682	891
Vehicles Circulating, veh/h	976	623	509	337
Vehicles Exiting, veh/h	252	568	781	874
Ped Vol Crossing Leg, #/h	0	2	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	21.1	26.4	26.4	32.3
Approach LOS	C	D	D	D

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	314	588	682	891
Cap Entry Lane, veh/h	510	731	821	979
Entry HV Adj Factor	0.982	0.980	0.981	0.981
Flow Entry, veh/h	308	576	669	874
Cap Entry, veh/h	501	716	805	959
V/C Ratio	0.616	0.805	0.831	0.911
Control Delay, s/veh	21.1	26.4	26.4	32.3
LOS	C	D	D	D
95th %tile Queue, veh	4	8	9	14

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd 08/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	167	99	93	162	198	109	513	84	240	516	46
Future Volume (veh/h)	87	167	99	93	162	198	109	513	84	240	516	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	92	176	90	98	171	0	115	540	82	253	543	44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	84	160	82	106	184	250	136	419	64	236	548	44
Arrive On Green	0.21	0.21	0.21	0.18	0.18	0.00	0.09	0.30	0.30	0.15	0.36	0.36
Sat Flow, veh/h	403	772	395	599	1045	1418	1594	1414	215	1594	1527	124
Grp Volume(v), veh/h	358	0	0	269	0	0	115	0	622	253	0	587
Grp Sat Flow(s),veh/h/ln	1570	0	0	1644	0	1418	1594	0	1628	1594	0	1651
Q Serve(g_s), s	28.0	0.0	0.0	21.8	0.0	0.0	9.6	0.0	40.0	20.0	0.0	47.8
Cycle Q Clear(g_c), s	28.0	0.0	0.0	21.8	0.0	0.0	9.6	0.0	40.0	20.0	0.0	47.8
Prop In Lane	0.26		0.25	0.36		1.00	1.00		0.13	1.00		0.07
Lane Grp Cap(c), veh/h	325	0	0	290	0	250	136	0	482	236	0	593
V/C Ratio(X)	1.10	0.00	0.00	0.93	0.00	0.00	0.85	0.00	1.29	1.07	0.00	0.99
Avail Cap(c_a), veh/h	325	0	0	292	0	252	189	0	482	236	0	593
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.6	0.0	0.0	54.8	0.0	0.0	60.9	0.0	47.6	57.6	0.0	43.1
Incr Delay (d2), s/veh	79.6	0.0	0.0	34.6	0.0	0.0	16.7	0.0	145.5	79.2	0.0	34.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.8	0.0	0.0	11.7	0.0	0.0	4.4	0.0	35.1	13.0	0.0	24.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	133.1	0.0	0.0	89.4	0.0	0.0	77.6	0.0	193.1	136.7	0.0	77.6
LnGrp LOS	F	A	A	F	A	A	E	A	F	F	A	E
Approach Vol, veh/h		358			269			737			840	
Approach Delay, s/veh		133.1			89.4			175.1			95.4	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.2	54.7		34.2	24.7	46.2		30.0				
Change Period (Y+Rc), s	* 4.7	6.2		6.2	* 4.7	6.2		6.2				
Max Green Setting (Gmax), s	* 16	40.0		28.0	* 20	40.0		24.0				
Max Q Clear Time (g_c+I1), s	11.6	49.8		30.0	22.0	42.0		23.8				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	127.4
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Gravenstein Hwy N & Mill Station Rd

08/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	12	87	25	5	15	59	485	16	10	610	132
Future Volume (veh/h)	165	12	87	25	5	15	59	485	16	10	610	132
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	168	12	1	26	5	4	60	495	10	10	622	123
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	212	203	17	118	63	50	145	917	759	40	651	129
Arrive On Green	0.13	0.13	0.13	0.07	0.07	0.07	0.09	0.55	0.55	0.02	0.48	0.48
Sat Flow, veh/h	1594	1524	127	1594	851	681	1594	1673	1386	1594	1351	267
Grp Volume(v), veh/h	168	0	13	26	0	9	60	495	10	10	0	745
Grp Sat Flow(s),veh/h/ln	1594	0	1651	1594	0	1532	1594	1673	1386	1594	0	1619
Q Serve(g_s), s	8.3	0.0	0.6	1.2	0.0	0.4	2.9	15.4	0.3	0.5	0.0	35.9
Cycle Q Clear(g_c), s	8.3	0.0	0.6	1.2	0.0	0.4	2.9	15.4	0.3	0.5	0.0	35.9
Prop In Lane	1.00		0.08	1.00		0.44	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	212	0	220	118	0	113	145	917	759	40	0	779
V/C Ratio(X)	0.79	0.00	0.06	0.22	0.00	0.08	0.41	0.54	0.01	0.25	0.00	0.96
Avail Cap(c_a), veh/h	294	0	305	373	0	358	294	917	759	294	0	797
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.1	0.0	30.8	35.4	0.0	35.1	34.9	11.8	8.4	38.9	0.0	20.2
Incr Delay (d2), s/veh	6.4	0.0	0.0	0.3	0.0	0.1	0.7	0.8	0.0	1.2	0.0	21.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	0.2	0.5	0.0	0.2	1.1	4.9	0.1	0.2	0.0	16.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.5	0.0	30.8	35.8	0.0	35.2	35.6	12.6	8.4	40.1	0.0	42.0
LnGrp LOS	D	A	C	D	A	D	D	B	A	D	A	D
Approach Vol, veh/h		181			35			565			755	
Approach Delay, s/veh		39.8			35.6			15.0			42.0	
Approach LOS		D			D			B			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.1	44.9		9.7	5.7	50.3		15.5
Change Period (Y+Rc), s	3.7	5.8		3.7	3.7	5.8		4.7
Max Green Setting (Gmax), s	5.0	40.0		19.0	15.0	40.0		15.0
Max Q Clear Time (g_c+I1), s	14.9	37.9		3.2	2.5	17.4		10.3
Green Ext Time (p_c), s	0.0	1.2		0.0	0.0	4.2		0.1

Intersection Summary	
HCM 6th Ctrl Delay	31.6
HCM 6th LOS	C

HCM 6th Signalized Intersection Summary
3: Gravenstein Hwy N & Hurlbut Ave

08/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	6	77	45	14	25	66	506	34	19	612	65
Future Volume (veh/h)	68	6	77	45	14	25	66	506	34	19	612	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		1.00	0.98		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	70	6	0	46	14	0	68	522	0	20	631	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	347	25	266	298	77	0	138	781	662	59	698	592
Arrive On Green	0.19	0.19	0.00	0.19	0.19	0.00	0.09	0.47	0.00	0.04	0.42	0.00
Sat Flow, veh/h	1290	134	1418	1070	409	0	1594	1673	1418	1594	1673	1418
Grp Volume(v), veh/h	76	0	0	60	0	0	68	522	0	20	631	0
Grp Sat Flow(s),veh/h/ln	1424	0	1418	1479	0	0	1594	1673	1418	1594	1673	1418
Q Serve(g_s), s	0.7	0.0	0.0	0.0	0.0	0.0	2.7	15.8	0.0	0.8	23.1	0.0
Cycle Q Clear(g_c), s	2.8	0.0	0.0	2.1	0.0	0.0	2.7	15.8	0.0	0.8	23.1	0.0
Prop In Lane	0.92		1.00	0.77		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	372	0	266	374	0	0	138	781	662	59	698	592
V/C Ratio(X)	0.20	0.00	0.00	0.16	0.00	0.00	0.49	0.67	0.00	0.34	0.90	0.00
Avail Cap(c_a), veh/h	665	0	563	677	0	0	268	781	662	268	767	650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.7	0.0	0.0	22.4	0.0	0.0	28.5	13.5	0.0	30.7	17.8	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	1.0	2.5	0.0	1.2	13.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	0.7	0.0	0.0	1.0	5.5	0.0	0.3	10.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.8	0.0	0.0	22.5	0.0	0.0	29.5	16.0	0.0	32.0	31.7	0.0
LnGrp LOS	C	A	A	C	A	A	C	B	A	C	C	A
Approach Vol, veh/h		76			60			590			651	
Approach Delay, s/veh		22.8			22.5			17.6			31.7	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.4	36.1		20.0	6.1	39.4		20.0
Change Period (Y+Rc), s	3.7	8.8		* 7.7	3.7	8.8		* 7.7
Max Green Setting (Gmax), s	11.3	30.0		* 26	11.0	30.0		* 26
Max Q Clear Time (g_c+I1), s	4.7	25.1		4.1	2.8	17.8		4.8
Green Ext Time (p_c), s	0.0	2.2		0.1	0.0	3.5		0.2

Intersection Summary	
HCM 6th Ctrl Delay	24.7
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	81	199	203	571	607	133
Future Vol, veh/h	81	199	203	571	607	133
Conflicting Peds, #/hr	4	4	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	Free
Storage Length	0	250	150	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	84	207	211	595	632	139

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1657	640	636	0	-	0
Stage 1	636	-	-	-	-	-
Stage 2	1021	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	108	475	947	-	-	0
Stage 1	527	-	-	-	-	0
Stage 2	348	-	-	-	-	0
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	~ 83	472	944	-	-	-
Mov Cap-2 Maneuver	209	-	-	-	-	-
Stage 1	408	-	-	-	-	-
Stage 2	347	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.8	2.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	944	-	209	472	-
HCM Lane V/C Ratio	0.224	-	0.404	0.439	-
HCM Control Delay (s)	9.9	-	33.4	18.5	-
HCM Lane LOS	A	-	D	C	-
HCM 95th %tile Q(veh)	0.9	-	1.8	2.2	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	739	66	25	768	22	41
Future Vol, veh/h	739	66	25	768	22	41
Conflicting Peds, #/hr	0	27	19	0	27	19
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	762	68	26	792	23	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	857	0	1694	842
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	871	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	783	-	102	364
Stage 1	-	-	-	-	431	-
Stage 2	-	-	-	-	410	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	765	-	94	350
Mov Cap-2 Maneuver	-	-	-	-	227	-
Stage 1	-	-	-	-	422	-
Stage 2	-	-	-	-	387	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	20.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	294	-	-	765	-
HCM Lane V/C Ratio	0.221	-	-	0.034	-
HCM Control Delay (s)	20.7	-	-	9.9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

HCM 6th Signalized Intersection Summary
6: Healdsburg Ave & N Main St

08/22/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	123	573	0	0	567	116	0	109	0	166	0	147
Future Volume (veh/h)	123	573	0	0	567	116	0	109	0	166	0	147
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	0	0	1673	1673	0	1673	0	1673	0	1673
Adj Flow Rate, veh/h	127	591	0	0	585	11	0	112	0	171	0	4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	0	0	2	2	0	2	0	2	0	2
Cap, veh/h	154	773	0	0	529	438	0	451	0	201	0	0
Arrive On Green	0.10	0.46	0.00	0.00	0.32	0.32	0.00	0.27	0.00	0.13	0.00	0.00
Sat Flow, veh/h	1594	1673	0	0	1673	1387	0	1673	0	1594	171	
Grp Volume(v), veh/h	127	591	0	0	585	11	0	112	0	171	49.7	
Grp Sat Flow(s),veh/h/ln	1594	1673	0	0	1673	1387	0	1673	0	1594	D	
Q Serve(g_s), s	7.4	27.9	0.0	0.0	30.0	0.5	0.0	5.0	0.0	10.0		
Cycle Q Clear(g_c), s	7.4	27.9	0.0	0.0	30.0	0.5	0.0	5.0	0.0	10.0		
Prop In Lane	1.00		0.00	0.00		1.00	0.00		0.00	1.00		
Lane Grp Cap(c), veh/h	154	773	0	0	529	438	0	451	0	201		
V/C Ratio(X)	0.82	0.76	0.00	0.00	1.11	0.03	0.00	0.25	0.00	0.85		
Avail Cap(c_a), veh/h	269	773	0	0	529	438	0	476	0	302		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	42.1	21.2	0.0	0.0	32.5	22.4	0.0	27.1	0.0	40.6		
Incr Delay (d2), s/veh	4.2	4.6	0.0	0.0	71.4	0.0	0.0	0.6	0.0	9.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.1	11.3	0.0	0.0	22.4	0.2	0.0	2.0	0.0	4.4		
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	25.8	0.0	0.0	103.9	22.4	0.0	27.7	0.0	49.7		
LnGrp LOS	D	C	A	A	F	C	A	C	A	D		
Approach Vol, veh/h		718			596			112				
Approach Delay, s/veh		29.4			102.4			27.7				
Approach LOS		C			F			C				
Timer - Assigned Phs		2			5	6	7	8				
Phs Duration (G+Y+Rc), s		49.7			13.9	35.8	16.7	28.6				
Change Period (Y+Rc), s		5.8			* 4.7	5.8	* 4.7	3.0				
Max Green Setting (Gmax), s		30.0			* 16	30.0	* 18	27.0				
Max Q Clear Time (g_c+I1), s		29.9			9.4	32.0	12.0	7.0				
Green Ext Time (p_c), s		0.1			0.1	0.0	0.1	0.9				
Intersection Summary												
HCM 6th Ctrl Delay			58.7									
HCM 6th LOS			E									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/29/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	167	99	93	162	198	109	513	84	240	516	46
Future Volume (veh/h)	87	167	99	93	162	198	109	513	84	240	516	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	92	176	90	98	171	0	115	540	82	253	543	44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	192	98	125	311	502	137	553	84	268	723	59
Arrive On Green	0.08	0.19	0.19	0.08	0.19	0.00	0.09	0.39	0.39	0.17	0.47	0.47
Sat Flow, veh/h	1594	1033	528	1594	1673	1418	1594	1414	215	1594	1527	124
Grp Volume(v), veh/h	92	0	266	98	171	0	115	0	622	253	0	587
Grp Sat Flow(s),veh/h/ln	1594	0	1562	1594	1673	1418	1594	0	1629	1594	0	1651
Q Serve(g_s), s	7.0	0.0	20.6	7.4	11.4	0.0	8.8	0.0	46.3	19.3	0.0	35.8
Cycle Q Clear(g_c), s	7.0	0.0	20.6	7.4	11.4	0.0	8.8	0.0	46.3	19.3	0.0	35.8
Prop In Lane	1.00		0.34	1.00		1.00	1.00		0.13	1.00		0.07
Lane Grp Cap(c), veh/h	124	0	290	125	311	502	137	0	637	268	0	782
V/C Ratio(X)	0.74	0.00	0.92	0.78	0.55	0.00	0.84	0.00	0.98	0.94	0.00	0.75
Avail Cap(c_a), veh/h	133	0	304	133	326	515	169	0	637	268	0	782
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.6	0.0	49.3	55.8	45.4	0.0	55.5	0.0	36.9	50.7	0.0	26.5
Incr Delay (d2), s/veh	15.9	0.0	31.2	22.0	2.4	0.0	21.8	0.0	29.7	39.7	0.0	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	10.2	3.7	4.9	0.0	4.3	0.0	22.6	10.4	0.0	14.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.5	0.0	80.5	77.8	47.8	0.0	77.2	0.0	66.6	90.4	0.0	30.9
LnGrp LOS	E	A	F	E	D	A	E	A	E	F	A	C
Approach Vol, veh/h		358			269			737			840	
Approach Delay, s/veh		78.2			58.7			68.3			48.8	
Approach LOS		E			E			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.3	64.5	14.4	29.0	25.4	54.4	14.3	29.1				
Change Period (Y+Rc), s	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2				
Max Green Setting (Gmax), s	* 13	55.8	* 10	24.0	* 21	48.2	* 10	24.0				
Max Q Clear Time (g_c+I1), s	10.8	37.8	9.4	22.6	21.3	48.3	9.0	13.4				
Green Ext Time (p_c), s	0.0	4.7	0.0	0.2	0.0	0.0	0.0	0.8				
Intersection Summary												
HCM 6th Ctrl Delay			61.3									
HCM 6th LOS			E									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/29/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	167	99	93	162	198	109	513	84	240	516	46
Future Volume (veh/h)	87	167	99	93	162	198	109	513	84	240	516	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	92	176	90	98	171	0	115	540	82	253	543	44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	137	219	180	139	220	434	142	577	88	278	754	61
Arrive On Green	0.09	0.13	0.13	0.09	0.13	0.00	0.09	0.41	0.41	0.17	0.49	0.49
Sat Flow, veh/h	1594	1673	1378	1594	1673	1418	1594	1414	215	1594	1527	124
Grp Volume(v), veh/h	92	176	90	98	171	0	115	0	622	253	0	587
Grp Sat Flow(s),veh/h/ln	1594	1673	1378	1594	1673	1418	1594	0	1629	1594	0	1651
Q Serve(g_s), s	6.1	11.1	6.6	6.5	10.8	0.0	7.7	0.0	39.9	17.0	0.0	30.5
Cycle Q Clear(g_c), s	6.1	11.1	6.6	6.5	10.8	0.0	7.7	0.0	39.9	17.0	0.0	30.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		0.07
Lane Grp Cap(c), veh/h	137	219	180	139	220	434	142	0	664	278	0	815
V/C Ratio(X)	0.67	0.80	0.50	0.71	0.78	0.00	0.81	0.00	0.94	0.91	0.00	0.72
Avail Cap(c_a), veh/h	150	359	295	159	368	560	191	0	719	302	0	844
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.4	46.1	44.1	48.5	45.8	0.0	48.8	0.0	30.9	44.2	0.0	21.7
Incr Delay (d2), s/veh	7.3	9.4	3.0	8.6	8.1	0.0	12.7	0.0	19.3	27.2	0.0	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	5.0	2.4	2.9	4.9	0.0	3.5	0.0	18.0	8.5	0.0	11.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.7	55.5	47.1	57.1	53.9	0.0	61.6	0.0	50.3	71.4	0.0	24.9
LnGrp LOS	E	E	D	E	D	A	E	A	D	E	A	C
Approach Vol, veh/h		358			269			737			840	
Approach Delay, s/veh		53.4			55.1			52.0			38.9	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.4	60.1	14.2	20.5	23.8	50.7	14.1	20.6
Change Period (Y+Rc), s	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2
Max Green Setting (Gmax), s	* 13	55.8	* 11	23.4	* 21	48.2	* 10	24.0
Max Q Clear Time (g_c+I1), s	9.7	32.5	8.5	13.1	19.0	41.9	8.1	12.8
Green Ext Time (p_c), s	0.0	5.2	0.0	1.1	0.1	2.6	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	47.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Roundabout
1: Gravenstein Hwy N & Occidental Rd

08/29/2023

Intersection	
Intersection Delay, s/veh	34.5
Intersection LOS	D

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	372	477	743	844
Demand Flow Rate, veh/h	380	486	758	861
Vehicles Circulating, veh/h	912	762	532	391
Vehicles Exiting, veh/h	340	528	760	857
Ped Vol Crossing Leg, #/h	1	2	0	1
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	24.4	26.0	42.8	36.5
Approach LOS	C	D	E	E

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	380	486	758	861
Cap Entry Lane, veh/h	544	634	802	926
Entry HV Adj Factor	0.980	0.981	0.980	0.980
Flow Entry, veh/h	372	477	743	844
Cap Entry, veh/h	534	622	786	908
V/C Ratio	0.698	0.766	0.945	0.930
Control Delay, s/veh	24.4	26.0	42.8	36.5
LOS	C	D	E	E
95th %tile Queue, veh	5	7	14	14

HCM 6th Signalized Intersection Summary
6: Healdsburg Ave & N Main St

08/23/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	123	573	0	0	567	116	0	109	0	166	0	147
Future Volume (veh/h)	123	573	0	0	567	116	0	109	0	166	0	147
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	0	0	1673	1673	0	1673	0	1673	0	1673
Adj Flow Rate, veh/h	127	591	0	0	585	11	0	112	0	171	0	4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	0	0	2	2	0	2	0	2	0	2
Cap, veh/h	145	817	0	0	585	485	0	436	0	182	0	0
Arrive On Green	0.09	0.49	0.00	0.00	0.35	0.35	0.00	0.26	0.00	0.11	0.00	0.00
Sat Flow, veh/h	1594	1673	0	0	1673	1387	0	1673	0	1594	171	
Grp Volume(v), veh/h	127	591	0	0	585	11	0	112	0	171	91.7	
Grp Sat Flow(s),veh/h/ln	1594	1673	0	0	1673	1387	0	1673	0	1594	F	
Q Serve(g_s), s	7.8	27.6	0.0	0.0	34.5	0.5	0.0	5.2	0.0	10.5		
Cycle Q Clear(g_c), s	7.8	27.6	0.0	0.0	34.5	0.5	0.0	5.2	0.0	10.5		
Prop In Lane	1.00		0.00	0.00		1.00	0.00		0.00	1.00		
Lane Grp Cap(c), veh/h	145	817	0	0	585	485	0	436	0	182		
V/C Ratio(X)	0.87	0.72	0.00	0.00	1.00	0.02	0.00	0.26	0.00	0.94		
Avail Cap(c_a), veh/h	145	817	0	0	585	485	0	458	0	182		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	44.3	20.0	0.0	0.0	32.1	21.1	0.0	28.9	0.0	43.4		
Incr Delay (d2), s/veh	39.2	3.2	0.0	0.0	37.4	0.0	0.0	0.7	0.0	48.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.6	10.9	0.0	0.0	19.7	0.2	0.0	2.2	0.0	6.6		
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	83.5	23.2	0.0	0.0	69.5	21.1	0.0	29.6	0.0	91.7		
LnGrp LOS	F	C	A	A	F	C	A	C	A	F		
Approach Vol, veh/h		718			596			112				
Approach Delay, s/veh		33.9			68.6			29.6				
Approach LOS		C			E			C				
Timer - Assigned Phs		2			5	6	7	8				
Phs Duration (G+Y+Rc), s		54.0			13.7	40.3	16.0	28.7				
Change Period (Y+Rc), s		5.8			* 4.7	5.8	* 4.7	3.0				
Max Green Setting (Gmax), s		48.2			* 9	34.5	* 11	27.0				
Max Q Clear Time (g_c+I1), s		29.6			9.8	36.5	12.5	7.2				
Green Ext Time (p_c), s		3.8			0.0	0.0	0.0	0.9				
Intersection Summary												
HCM 6th Ctrl Delay			52.7									
HCM 6th LOS			D									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/25/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	233	74	223	138	303	54	502	218	321	631	41
Future Volume (veh/h)	50	233	74	223	138	303	54	502	218	321	631	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	58	271	76	259	160	50	63	584	244	373	734	45
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	35	164	46	199	123	282	99	387	162	237	674	41
Arrive On Green	0.15	0.15	0.15	0.20	0.20	0.20	0.06	0.35	0.35	0.15	0.43	0.43
Sat Flow, veh/h	230	1076	302	1003	620	1418	1594	1120	468	1594	1561	96
Grp Volume(v), veh/h	405	0	0	419	0	50	63	0	828	373	0	779
Grp Sat Flow(s),veh/h/ln	1608	0	0	1623	0	1418	1594	0	1588	1594	0	1656
Q Serve(g_s), s	22.8	0.0	0.0	29.8	0.0	4.4	5.8	0.0	51.8	22.3	0.0	64.8
Cycle Q Clear(g_c), s	22.8	0.0	0.0	29.8	0.0	4.4	5.8	0.0	51.8	22.3	0.0	64.8
Prop In Lane	0.14		0.19	0.62		1.00	1.00		0.29	1.00		0.06
Lane Grp Cap(c), veh/h	244	0	0	322	0	282	99	0	548	237	0	716
V/C Ratio(X)	1.66	0.00	0.00	1.30	0.00	0.18	0.64	0.00	1.51	1.57	0.00	1.09
Avail Cap(c_a), veh/h	244	0	0	322	0	282	106	0	548	237	0	716
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	63.6	0.0	0.0	60.1	0.0	49.9	68.7	0.0	49.1	63.8	0.0	42.6
Incr Delay (d2), s/veh	313.3	0.0	0.0	155.6	0.0	0.4	7.8	0.0	238.9	277.8	0.0	60.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	30.4	0.0	0.0	26.0	0.0	1.6	2.5	0.0	56.2	27.2	0.0	37.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	376.9	0.0	0.0	215.7	0.0	50.3	76.5	0.0	288.0	341.6	0.0	102.8
LnGrp LOS	F	A	A	F	A	D	E	A	F	F	A	F
Approach Vol, veh/h		405			469			891			1152	
Approach Delay, s/veh		376.9			198.1			273.1			180.1	
Approach LOS		F			F			F			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.0	71.0		29.0	27.0	58.0		36.0				
Change Period (Y+Rc), s	* 4.7	6.2		6.2	* 4.7	6.2		6.2				
Max Green Setting (Gmax), s	* 10	64.1		22.8	* 22	51.8		29.8				
Max Q Clear Time (g_c+I1), s	7.8	66.8		24.8	24.3	53.8		31.8				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			238.7									
HCM 6th LOS			F									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Gravenstein Hwy N & Mill Station Rd

08/25/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	53	98	83	36	53	37	447	71	50	593	135
Future Volume (veh/h)	180	53	98	83	36	53	37	447	71	50	593	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	180	53	46	83	36	6	37	447	4	50	593	120
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	216	111	96	205	179	30	109	745	628	129	619	125
Arrive On Green	0.14	0.14	0.14	0.13	0.13	0.13	0.07	0.45	0.45	0.08	0.46	0.46
Sat Flow, veh/h	1594	816	708	1594	1393	232	1594	1673	1409	1594	1350	273
Grp Volume(v), veh/h	180	0	99	83	0	42	37	447	4	50	0	713
Grp Sat Flow(s),veh/h/ln	1594	0	1524	1594	0	1625	1594	1673	1409	1594	0	1623
Q Serve(g_s), s	9.4	0.0	5.1	4.1	0.0	2.0	1.9	17.3	0.1	2.6	0.0	36.4
Cycle Q Clear(g_c), s	9.4	0.0	5.1	4.1	0.0	2.0	1.9	17.3	0.1	2.6	0.0	36.4
Prop In Lane	1.00		0.46	1.00		0.14	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	216	0	207	205	0	209	109	745	628	129	0	744
V/C Ratio(X)	0.83	0.00	0.48	0.40	0.00	0.20	0.34	0.60	0.01	0.39	0.00	0.96
Avail Cap(c_a), veh/h	279	0	267	353	0	360	279	781	657	279	0	758
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.1	0.0	34.2	34.3	0.0	33.4	38.1	18.0	13.2	37.3	0.0	22.4
Incr Delay (d2), s/veh	12.4	0.0	0.6	0.5	0.0	0.2	0.7	1.5	0.0	0.7	0.0	23.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	1.9	1.6	0.0	0.8	0.7	6.2	0.0	1.0	0.0	16.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.4	0.0	34.9	34.8	0.0	33.6	38.8	19.4	13.2	38.0	0.0	45.4
LnGrp LOS	D	A	C	C	A	C	D	B	B	D	A	D
Approach Vol, veh/h		279			125			488			763	
Approach Delay, s/veh		43.6			34.4			20.9			44.9	
Approach LOS		D			C			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.6	45.1		14.7	10.7	44.0		16.3
Change Period (Y+Rc), s	3.7	5.8		3.7	3.7	5.8		4.7
Max Green Setting (Gmax), s	5.0	40.0		19.0	15.0	40.0		15.0
Max Q Clear Time (g_c+I1), s	3.9	38.4		6.1	4.6	19.3		11.4
Green Ext Time (p_c), s	0.0	0.9		0.2	0.0	3.5		0.2

Intersection Summary	
HCM 6th Ctrl Delay	36.8
HCM 6th LOS	D

HCM 6th Signalized Intersection Summary
3: Gravenstein Hwy N & Hurlbut Ave

08/25/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	12	37	70	10	43	40	569	35	24	686	43
Future Volume (veh/h)	32	12	37	70	10	43	40	569	35	24	686	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	32	12	2	70	10	10	40	569	-5	24	686	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	270	84	236	262	36	24	102	783	663	69	749	634
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.06	0.47	0.00	0.04	0.45	0.00
Sat Flow, veh/h	1021	502	1410	954	215	146	1594	1673	1418	1594	1673	1418
Grp Volume(v), veh/h	44	0	2	90	0	0	40	569	-5	24	686	0
Grp Sat Flow(s),veh/h/ln	1523	0	1410	1315	0	0	1594	1673	1418	1594	1673	1418
Q Serve(g_s), s	0.0	0.0	0.1	2.9	0.0	0.0	1.5	17.2	0.0	0.9	24.1	0.0
Cycle Q Clear(g_c), s	1.4	0.0	0.1	4.4	0.0	0.0	1.5	17.2	0.0	0.9	24.1	0.0
Prop In Lane	0.73		1.00	0.78		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	354	0	236	322	0	0	102	783	663	69	749	634
V/C Ratio(X)	0.12	0.00	0.01	0.28	0.00	0.00	0.39	0.73	-0.01	0.35	0.92	0.00
Avail Cap(c_a), veh/h	712	0	583	671	0	0	279	798	676	279	798	676
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.4	0.0	21.8	23.8	0.0	0.0	28.3	13.5	0.0	29.2	16.3	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.9	3.6	0.0	1.1	15.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	1.2	0.0	0.0	0.6	6.1	0.0	0.4	10.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.4	0.0	21.8	24.0	0.0	0.0	29.2	17.1	0.0	30.3	31.4	0.0
LnGrp LOS	C	A	C	C	A	A	C	B	A	C	C	A
Approach Vol, veh/h		46			90			604			710	
Approach Delay, s/veh		22.4			24.0			18.0			31.4	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.7	36.9		18.2	6.4	38.2		18.2
Change Period (Y+Rc), s	3.7	8.8		* 7.7	3.7	8.8		* 7.7
Max Green Setting (Gmax), s	4.0	30.0		* 26	11.0	30.0		* 26
Max Q Clear Time (g_c+I1), s	3.5	26.1		6.4	2.9	19.2		3.4
Green Ext Time (p_c), s	0.0	2.0		0.2	0.0	3.6		0.1

Intersection Summary	
HCM 6th Ctrl Delay	25.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
4: Healdsburg Ave/Gravenstein Hwy N & Covert Ln 09/14/2023

Intersection						
Int Delay, s/veh	6					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	114	228	155	537	679	96
Future Vol, veh/h	114	228	155	537	679	96
Conflicting Peds, #/hr	4	4	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	Free
Storage Length	0	250	150	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	114	228	155	537	679	96

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1534	687	683	0	-	0
Stage 1	683	-	-	-	-	-
Stage 2	851	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	128	447	910	-	-	0
Stage 1	502	-	-	-	-	0
Stage 2	419	-	-	-	-	0
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	~ 105	444	907	-	-	-
Mov Cap-2 Maneuver	238	-	-	-	-	-
Stage 1	415	-	-	-	-	-
Stage 2	418	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.4	2.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	907	-	238	444	-
HCM Lane V/C Ratio	0.171	-	0.479	0.514	-
HCM Control Delay (s)	9.8	-	33.3	21.4	-
HCM Lane LOS	A	-	D	C	-
HCM 95th %tile Q(veh)	0.6	-	2.4	2.9	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
5: Murphy Ave & Healdsburg Ave 08/25/2023

Intersection						
Int Delay, s/veh	2.9					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	863	54	22	651	45	111
Future Vol, veh/h	863	54	22	651	45	111
Conflicting Peds, #/hr	0	19	13	0	19	13
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	863	54	22	651	45	111

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	936	0	1623	922
Stage 1	-	-	-	-	909	-
Stage 2	-	-	-	-	714	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	732	-	113	327
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	485	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	720	-	106	318
Mov Cap-2 Maneuver	-	-	-	-	240	-
Stage 1	-	-	-	-	387	-
Stage 2	-	-	-	-	463	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	30.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	291	-	-	720	-
HCM Lane V/C Ratio	0.536	-	-	0.031	-
HCM Control Delay (s)	30.8	-	-	10.2	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	3	-	-	0.1	-

HCM 6th Signalized Intersection Summary
6: Healdsburg Ave & N Main St

08/25/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	208	774	0	0	542	216	0	189	0	226	0	146
Future Volume (veh/h)	208	774	0	0	542	216	0	189	0	226	0	146
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	0	0	1673	1673	0	1673	0	1673	0	1673
Adj Flow Rate, veh/h	208	774	0	0	542	81	0	189	0	226	0	17
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	0	0	2	2	0	2	0	2	0	2
Cap, veh/h	230	893	0	0	592	490	0	347	0	248	0	0
Arrive On Green	0.14	0.53	0.00	0.00	0.35	0.35	0.00	0.21	0.00	0.16	0.00	0.00
Sat Flow, veh/h	1594	1673	0	0	1673	1385	0	1673	0	1594	226	
Grp Volume(v), veh/h	208	774	0	0	542	81	0	189	0	226	83.6	
Grp Sat Flow(s),veh/h/ln	1594	1673	0	0	1673	1385	0	1673	0	1594	F	
Q Serve(g_s), s	16.7	52.2	0.0	0.0	40.3	5.2	0.0	13.1	0.0	18.2		
Cycle Q Clear(g_c), s	16.7	52.2	0.0	0.0	40.3	5.2	0.0	13.1	0.0	18.2		
Prop In Lane	1.00		0.00	0.00		1.00	0.00		0.00	1.00		
Lane Grp Cap(c), veh/h	230	893	0	0	592	490	0	347	0	248		
V/C Ratio(X)	0.91	0.87	0.00	0.00	0.92	0.17	0.00	0.55	0.00	0.91		
Avail Cap(c_a), veh/h	248	992	0	0	671	555	0	347	0	273		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	54.9	26.3	0.0	0.0	40.2	28.9	0.0	46.2	0.0	54.1		
Incr Delay (d2), s/veh	30.6	7.6	0.0	0.0	16.9	0.2	0.0	3.1	0.0	29.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	8.7	22.0	0.0	0.0	19.4	1.8	0.0	5.8	0.0	9.4		
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	85.4	33.9	0.0	0.0	57.1	29.1	0.0	49.3	0.0	83.6		
LnGrp LOS	F	C	A	A	E	C	A	D	A	F		
Approach Vol, veh/h		982			623			189				
Approach Delay, s/veh		44.8			53.5			49.3				
Approach LOS		D			D			D				
Timer - Assigned Phs		2			5	6	7	8				
Phs Duration (G+Y+Rc), s		75.3			23.5	51.8	24.9	30.0				
Change Period (Y+Rc), s		5.8			* 4.7	5.8	* 4.7	3.0				
Max Green Setting (Gmax), s		77.2			* 20	52.2	* 22	27.0				
Max Q Clear Time (g_c+I1), s		54.2			18.7	42.3	20.2	15.1				
Green Ext Time (p_c), s		6.0			0.1	3.7	0.1	1.3				
Intersection Summary												
HCM 6th Ctrl Delay			52.3									
HCM 6th LOS			D									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/29/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	233	74	223	138	303	54	502	218	321	631	41
Future Volume (veh/h)	50	233	74	223	138	303	54	502	218	321	631	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	58	271	76	259	160	50	63	584	244	373	734	45
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	99	206	58	212	393	590	101	416	174	289	763	47
Arrive On Green	0.06	0.16	0.16	0.13	0.23	0.23	0.06	0.37	0.37	0.18	0.49	0.49
Sat Flow, veh/h	1594	1257	353	1594	1673	1418	1594	1120	468	1594	1561	96
Grp Volume(v), veh/h	58	0	347	259	160	50	63	0	828	373	0	779
Grp Sat Flow(s),veh/h/ln	1594	0	1610	1594	1673	1418	1594	0	1588	1594	0	1656
Q Serve(g_s), s	5.1	0.0	23.8	19.3	11.7	3.1	5.6	0.0	53.8	26.3	0.0	65.8
Cycle Q Clear(g_c), s	5.1	0.0	23.8	19.3	11.7	3.1	5.6	0.0	53.8	26.3	0.0	65.8
Prop In Lane	1.00		0.22	1.00		1.00	1.00		0.29	1.00		0.06
Lane Grp Cap(c), veh/h	99	0	264	212	393	590	101	0	589	289	0	810
V/C Ratio(X)	0.58	0.00	1.31	1.22	0.41	0.08	0.62	0.00	1.41	1.29	0.00	0.96
Avail Cap(c_a), veh/h	146	0	264	212	393	590	131	0	589	289	0	810
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.2	0.0	60.6	62.8	46.9	25.6	66.2	0.0	45.6	59.3	0.0	35.8
Incr Delay (d2), s/veh	2.0	0.0	165.2	134.2	1.0	0.1	2.3	0.0	192.5	154.1	0.0	22.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	21.6	15.6	5.0	1.1	2.3	0.0	51.9	22.7	0.0	30.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.2	0.0	225.8	197.0	47.9	25.7	68.5	0.0	238.1	213.4	0.0	58.6
LnGrp LOS	E	A	F	F	D	C	E	A	F	F	A	E
Approach Vol, veh/h		405			469			891			1152	
Approach Delay, s/veh		203.3			127.9			226.1			108.7	
Approach LOS		F			F			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.9	77.1	24.0	30.0	31.0	60.0	13.7	40.3				
Change Period (Y+Rc), s	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2				
Max Green Setting (Gmax), s	* 12	68.2	* 19	23.8	* 26	53.8	* 13	29.8				
Max Q Clear Time (g_c+I1), s	7.6	67.8	21.3	25.8	28.3	55.8	7.1	13.7				
Green Ext Time (p_c), s	0.0	0.2	0.0	0.0	0.0	0.0	0.0	1.2				
Intersection Summary												
HCM 6th Ctrl Delay			160.8									
HCM 6th LOS			F									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd 08/29/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	233	74	223	138	303	54	502	218	321	631	41
Future Volume (veh/h)	50	233	74	223	138	303	54	502	218	321	631	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	58	271	76	259	160	50	63	584	244	373	734	45
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	99	229	194	212	347	551	101	446	187	289	806	49
Arrive On Green	0.06	0.14	0.14	0.13	0.21	0.21	0.06	0.40	0.40	0.18	0.52	0.52
Sat Flow, veh/h	1594	1673	1418	1594	1673	1418	1594	1120	468	1594	1561	96
Grp Volume(v), veh/h	58	271	76	259	160	50	63	0	828	373	0	779
Grp Sat Flow(s),veh/h/ln	1594	1673	1418	1594	1673	1418	1594	0	1588	1594	0	1656
Q Serve(g_s), s	5.1	19.8	7.1	19.3	12.2	3.2	5.6	0.0	57.8	26.3	0.0	62.3
Cycle Q Clear(g_c), s	5.1	19.8	7.1	19.3	12.2	3.2	5.6	0.0	57.8	26.3	0.0	62.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		0.06
Lane Grp Cap(c), veh/h	99	229	194	212	347	551	101	0	633	289	0	855
V/C Ratio(X)	0.58	1.19	0.39	1.22	0.46	0.09	0.62	0.00	1.31	1.29	0.00	0.91
Avail Cap(c_a), veh/h	129	229	194	212	347	551	126	0	633	289	0	855
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.2	62.6	57.1	62.8	50.4	28.1	66.2	0.0	43.6	59.3	0.0	32.0
Incr Delay (d2), s/veh	2.0	119.0	1.8	134.2	1.4	0.1	2.3	0.0	149.8	154.1	0.0	14.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	15.7	2.6	15.6	5.2	1.1	2.3	0.0	48.1	22.7	0.0	26.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.2	181.6	58.9	197.0	51.7	28.2	68.5	0.0	193.4	213.4	0.0	46.0
LnGrp LOS	E	F	E	F	D	C	E	A	F	F	A	D
Approach Vol, veh/h		405			469			891			1152	
Approach Delay, s/veh		142.3			129.4			184.6			100.2	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.9	81.1	24.0	26.0	31.0	64.0	13.7	36.3
Change Period (Y+Rc), s	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2
Max Green Setting (Gmax), s	* 12	72.6	* 19	19.8	* 26	57.8	* 12	27.4
Max Q Clear Time (g_c+I1), s	7.6	64.3	21.3	21.8	28.3	59.8	7.1	14.2
Green Ext Time (p_c), s	0.0	4.1	0.0	0.0	0.0	0.0	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	136.5
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Roundabout
1: Gravenstein Hwy N & Occidental Rd 08/29/2023

Intersection	
Intersection Delay, s/veh	180.7
Intersection LOS	F

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	415	771	900	1155
Demand Flow Rate, veh/h	423	786	918	1178
Vehicles Circulating, veh/h	1393	719	715	491
Vehicles Exiting, veh/h	276	914	1101	1014
Ped Vol Crossing Leg, #/h	0	2	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	176.4	121.1	199.4	207.3
Approach LOS	F	F	F	F

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	423	786	918	1178
Cap Entry Lane, veh/h	333	663	665	836
Entry HV Adj Factor	0.980	0.981	0.981	0.981
Flow Entry, veh/h	415	771	900	1155
Cap Entry, veh/h	327	650	653	820
V/C Ratio	1.269	1.186	1.379	1.409
Control Delay, s/veh	176.4	121.1	199.4	207.3
LOS	F	F	F	F
95th %tile Queue, veh	19	26	40	50

HCM 6th Roundabout
4: Healdsburg Ave/Gravenstein Hwy N & Covert Ln 08/25/2023

Intersection	
Intersection Delay, s/veh	11.8
Intersection LOS	B

Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	342	692	775
Demand Flow Rate, veh/h	349	706	791
Vehicles Circulating, veh/h	693	116	158
Vehicles Exiting, veh/h	256	926	664
Ped Vol Crossing Leg, #/h	4	4	4
Ped Cap Adj	0.999	0.999	0.999
Approach Delay, s/veh	13.5	9.9	12.7
Approach LOS	B	A	B

Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	349	706	791
Cap Entry Lane, veh/h	681	1226	1174
Entry HV Adj Factor	0.980	0.981	0.980
Flow Entry, veh/h	342	692	775
Cap Entry, veh/h	667	1201	1151
V/C Ratio	0.513	0.576	0.674
Control Delay, s/veh	13.5	9.9	12.7
LOS	B	A	B
95th %tile Queue, veh	3	4	6

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd 08/25/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	196	106	228	214	302	123	670	195	330	648	46
Future Volume (veh/h)	87	196	106	228	214	302	123	670	195	330	648	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	87	196	93	228	214	104	123	670	189	330	648	42
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	55	125	59	173	162	290	126	431	122	226	634	41
Arrive On Green	0.15	0.15	0.15	0.21	0.21	0.21	0.08	0.35	0.35	0.14	0.41	0.41
Sat Flow, veh/h	364	820	389	842	790	1415	1594	1248	352	1594	1554	101
Grp Volume(v), veh/h	376	0	0	442	0	104	123	0	859	330	0	690
Grp Sat Flow(s),veh/h/ln	1572	0	0	1631	0	1415	1594	0	1600	1594	0	1655
Q Serve(g_s), s	22.8	0.0	0.0	30.8	0.0	9.5	11.5	0.0	51.8	21.3	0.0	61.2
Cycle Q Clear(g_c), s	22.8	0.0	0.0	30.8	0.0	9.5	11.5	0.0	51.8	21.3	0.0	61.2
Prop In Lane	0.23		0.25	0.52		1.00	1.00		0.22	1.00		0.06
Lane Grp Cap(c), veh/h	239	0	0	335	0	290	126	0	553	226	0	675
V/C Ratio(X)	1.57	0.00	0.00	1.32	0.00	0.36	0.97	0.00	1.55	1.46	0.00	1.02
Avail Cap(c_a), veh/h	239	0	0	335	0	290	126	0	553	226	0	675
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	63.6	0.0	0.0	59.6	0.0	51.1	68.9	0.0	49.1	64.3	0.0	44.4
Incr Delay (d2), s/veh	277.2	0.0	0.0	163.3	0.0	1.1	71.1	0.0	258.4	228.9	0.0	40.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	27.3	0.0	0.0	27.7	0.0	3.4	7.1	0.0	59.7	22.9	0.0	31.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	340.8	0.0	0.0	222.9	0.0	52.2	139.9	0.0	307.5	293.3	0.0	84.6
LnGrp LOS	F	A	A	F	A	D	F	A	F	F	A	F
Approach Vol, veh/h		376			546			982			1020	
Approach Delay, s/veh		340.8			190.4			286.5			152.1	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.6	67.4		29.0	26.0	58.0		37.0				
Change Period (Y+Rc), s	* 4.7	6.2		6.2	* 4.7	6.2		6.2				
Max Green Setting (Gmax), s	* 12	61.2		22.8	* 21	51.8		30.8				
Max Q Clear Time (g_c+I1), s	13.5	63.2		24.8	23.3	53.8		32.8				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	228.7
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Gravenstein Hwy N & Mill Station Rd

08/25/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	12	89	81	6	40	80	728	33	12	697	176
Future Volume (veh/h)	111	12	89	81	6	40	80	728	33	12	697	176
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	111	12	3	81	6	29	80	728	27	12	697	164
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	128	32	156	24	116	134	1021	846	45	723	170
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.08	0.61	0.61	0.03	0.55	0.55
Sat Flow, veh/h	1594	1292	323	1594	245	1182	1594	1673	1386	1594	1304	307
Grp Volume(v), veh/h	111	0	15	81	0	35	80	728	27	12	0	861
Grp Sat Flow(s),veh/h/ln	1594	0	1615	1594	0	1427	1594	1673	1386	1594	0	1611
Q Serve(g_s), s	7.3	0.0	0.9	5.2	0.0	2.5	5.3	32.6	0.8	0.8	0.0	55.6
Cycle Q Clear(g_c), s	7.3	0.0	0.9	5.2	0.0	2.5	5.3	32.6	0.8	0.8	0.0	55.6
Prop In Lane	1.00		0.20	1.00		0.83	1.00		1.00	1.00		0.19
Lane Grp Cap(c), veh/h	158	0	160	156	0	140	134	1021	846	45	0	893
V/C Ratio(X)	0.70	0.00	0.09	0.52	0.00	0.25	0.60	0.71	0.03	0.27	0.00	0.96
Avail Cap(c_a), veh/h	163	0	165	279	0	249	150	1021	846	147	0	916
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.4	0.0	44.5	46.6	0.0	45.3	48.0	14.6	8.4	51.7	0.0	23.2
Incr Delay (d2), s/veh	10.4	0.0	0.1	1.0	0.0	0.3	2.9	2.6	0.0	1.2	0.0	21.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	0.4	2.1	0.0	0.9	2.1	11.3	0.2	0.3	0.0	23.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.8	0.0	44.6	47.5	0.0	45.6	50.9	17.2	8.4	52.9	0.0	44.6
LnGrp LOS	E	A	D	D	A	D	D	B	A	D	A	D
Approach Vol, veh/h		126			116			835			873	
Approach Delay, s/veh		56.3			47.0			20.1			44.7	
Approach LOS		E			D			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.8	66.0		14.4	6.7	72.1		15.5
Change Period (Y+Rc), s	3.7	5.8		3.7	3.7	5.8		4.7
Max Green Setting (Gmax), s	10.3	61.8		19.0	10.0	62.0		11.1
Max Q Clear Time (g_c+I1), s	11.3	57.6		7.2	2.8	34.6		9.3
Green Ext Time (p_c), s	0.0	2.6		0.2	0.0	7.6		0.0

Intersection Summary	
HCM 6th Ctrl Delay	35.1
HCM 6th LOS	D

HCM 6th Signalized Intersection Summary
3: Gravenstein Hwy N & Hurlbut Ave

08/25/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	22	105	32	14	16	87	708	34	19	836	59
Future Volume (veh/h)	84	22	105	32	14	16	87	708	34	19	836	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.97	0.98		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	84	22	28	32	14	-9	87	708	0	19	836	-6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	248	55	218	319	142	0	130	956	810	54	876	742
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.00	0.08	0.57	0.00	0.03	0.52	0.00
Sat Flow, veh/h	1088	350	1382	712	362	-210	1594	1673	1418	1594	1673	1418
Grp Volume(v), veh/h	106	0	28	0	0	0	87	708	0	19	836	-6
Grp Sat Flow(s),veh/h/ln	1438	0	1382	0	0	0	1594	1673	1418	1594	1673	1418
Q Serve(g_s), s	5.1	0.0	1.5	0.0	0.0	0.0	4.5	26.8	0.0	1.0	40.6	0.0
Cycle Q Clear(g_c), s	5.7	0.0	1.5	0.0	0.0	0.0	4.5	26.8	0.0	1.0	40.6	0.0
Prop In Lane	0.79		1.00	0.86		-0.24	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	303	0	218	0	0	0	130	956	810	54	876	742
V/C Ratio(X)	0.35	0.00	0.13	0.00	0.00	0.00	0.67	0.74	0.00	0.35	0.95	-0.01
Avail Cap(c_a), veh/h	513	0	421	0	0	0	149	956	810	149	899	762
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.6	0.0	30.9	0.0	0.0	0.0	38.0	13.6	0.0	40.3	19.4	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.1	0.0	0.0	0.0	6.1	3.4	0.0	1.4	19.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.5	0.0	0.0	0.0	1.9	9.5	0.0	0.4	18.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.8	0.0	31.0	0.0	0.0	0.0	44.2	16.9	0.0	41.7	39.2	0.0
LnGrp LOS	C	A	C	A	A	A	D	B	A	D	D	A
Approach Vol, veh/h		134			0			795			849	
Approach Delay, s/veh		32.4			0.0			19.9			39.5	
Approach LOS		C						B			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.7	53.4		21.2	6.6	57.5		21.2
Change Period (Y+Rc), s	3.7	8.8		* 7.7	3.7	8.8		* 7.7
Max Green Setting (Gmax), s	8.3	45.8		* 26	8.0	45.8		* 26
Max Q Clear Time (g_c+I1), s	10.5	42.6		0.0	3.0	28.8		7.7
Green Ext Time (p_c), s	0.0	2.0		0.0	0.0	6.1		0.4

Intersection Summary	
HCM 6th Ctrl Delay	30.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
4: Healdsburg Ave/Gravenstein Hwy N & Covert Ln 09/14/2023

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	86	162	190	863	842	169
Future Vol, veh/h	86	162	190	863	842	169
Conflicting Peds, #/hr	4	4	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	Free
Storage Length	0	250	150	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	86	162	190	863	842	169

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2093	850	846	0	-	0
Stage 1	846	-	-	-	-	-
Stage 2	1247	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 58	360	791	-	-	0
Stage 1	421	-	-	-	-	0
Stage 2	271	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 44	358	788	-	-	-
Mov Cap-2 Maneuver	153	-	-	-	-	-
Stage 1	319	-	-	-	-	-
Stage 2	270	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	34.2	2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	788	-	153	358	-
HCM Lane V/C Ratio	0.241	-	0.562	0.453	-
HCM Control Delay (s)	11	-	55.1	23.1	-
HCM Lane LOS	B	-	F	C	-
HCM 95th %tile Q(veh)	0.9	-	2.9	2.3	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
5: Murphy Ave & Healdsburg Ave 08/25/2023

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	976	39	53	1015	35	62
Future Vol, veh/h	976	39	53	1015	35	62
Conflicting Peds, #/hr	0	27	19	0	27	19
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	976	39	53	1015	35	62

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1042	0	2171	1042
Stage 1	-	-	-	-	1023	-
Stage 2	-	-	-	-	1148	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	667	-	51	279
Stage 1	-	-	-	-	347	-
Stage 2	-	-	-	-	302	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	652	-	45	268
Mov Cap-2 Maneuver	-	-	-	-	158	-
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	271	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	35.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	214	-	-	652	-
HCM Lane V/C Ratio	0.453	-	-	0.081	-
HCM Control Delay (s)	35.1	-	-	11	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	2.2	-	-	0.3	-

HCM 6th Signalized Intersection Summary
6: Healdsburg Ave & N Main St

08/25/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	857	0	0	911	120	0	109	0	183	0	139
Future Volume (veh/h)	96	857	0	0	911	120	0	109	0	183	0	139
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	0	0	1673	1673	0	1673	0	1673	0	1673
Adj Flow Rate, veh/h	96	857	0	0	911	14	0	109	0	183	0	-5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	0	0	2	2	0	2	0	2	0	2
Cap, veh/h	99	1031	0	0	874	725	0	299	0	184	0	0
Arrive On Green	0.06	0.62	0.00	0.00	0.52	0.52	0.00	0.18	0.00	0.12	0.00	0.00
Sat Flow, veh/h	1594	1673	0	0	1673	1388	0	1673	0	1594	183	
Grp Volume(v), veh/h	96	857	0	0	911	14	0	109	0	183	130.4	
Grp Sat Flow(s),veh/h/ln	1594	1673	0	0	1673	1388	0	1673	0	1594	F	
Q Serve(g_s), s	9.0	60.4	0.0	0.0	78.2	0.7	0.0	8.6	0.0	17.2		
Cycle Q Clear(g_c), s	9.0	60.4	0.0	0.0	78.2	0.7	0.0	8.6	0.0	17.2		
Prop In Lane	1.00		0.00	0.00		1.00	0.00		0.00	1.00		
Lane Grp Cap(c), veh/h	99	1031	0	0	874	725	0	299	0	184		
V/C Ratio(X)	0.97	0.83	0.00	0.00	1.04	0.02	0.00	0.37	0.00	0.99		
Avail Cap(c_a), veh/h	99	1031	0	0	874	725	0	302	0	184		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	70.1	22.6	0.0	0.0	35.8	17.3	0.0	54.0	0.0	66.1		
Incr Delay (d2), s/veh	80.0	5.9	0.0	0.0	42.0	0.0	0.0	1.6	0.0	64.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.9	24.7	0.0	0.0	41.7	0.2	0.0	3.8	0.0	10.3		
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	150.0	28.5	0.0	0.0	77.7	17.3	0.0	55.6	0.0	130.4		
LnGrp LOS	F	C	A	A	F	B	A	E	A	F		
Approach Vol, veh/h		953			925			109				
Approach Delay, s/veh		40.8			76.8			55.6				
Approach LOS		D			E			E				
Timer - Assigned Phs		2			5	6	7	8				
Phs Duration (G+Y+Rc), s		98.0			14.0	84.0	22.0	29.7				
Change Period (Y+Rc), s		5.8			* 4.7	5.8	* 4.7	3.0				
Max Green Setting (Gmax), s		92.2			* 9.3	78.2	* 17	27.0				
Max Q Clear Time (g_c+I1), s		62.4			11.0	80.2	19.2	10.6				
Green Ext Time (p_c), s		7.6			0.0	0.0	0.0	0.8				
Intersection Summary												
HCM 6th Ctrl Delay			64.4									
HCM 6th LOS			E									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd

08/29/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	196	106	228	214	302	123	670	195	330	648	46
Future Volume (veh/h)	87	196	106	228	214	302	123	670	195	330	648	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	87	196	93	228	214	104	123	670	189	330	648	42
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	152	72	190	328	515	142	523	148	267	773	50
Arrive On Green	0.07	0.14	0.14	0.12	0.20	0.20	0.09	0.42	0.42	0.17	0.50	0.50
Sat Flow, veh/h	1594	1062	504	1594	1673	1415	1594	1248	352	1594	1554	101
Grp Volume(v), veh/h	87	0	289	228	214	104	123	0	859	330	0	690
Grp Sat Flow(s),veh/h/ln	1594	0	1566	1594	1673	1415	1594	0	1600	1594	0	1655
Q Serve(g_s), s	7.8	0.0	20.8	17.3	17.1	7.3	11.0	0.0	60.8	24.3	0.0	52.1
Cycle Q Clear(g_c), s	7.8	0.0	20.8	17.3	17.1	7.3	11.0	0.0	60.8	24.3	0.0	52.1
Prop In Lane	1.00		0.32	1.00		1.00	1.00		0.22	1.00		0.06
Lane Grp Cap(c), veh/h	107	0	225	190	328	515	142	0	671	267	0	824
V/C Ratio(X)	0.82	0.00	1.29	1.20	0.65	0.20	0.86	0.00	1.28	1.24	0.00	0.84
Avail Cap(c_a), veh/h	137	0	225	190	328	515	148	0	671	267	0	824
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.8	0.0	62.1	63.8	53.8	31.7	65.1	0.0	42.1	60.3	0.0	31.4
Incr Delay (d2), s/veh	19.7	0.0	158.3	129.1	5.2	0.3	35.0	0.0	137.3	133.9	0.0	7.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	17.9	13.8	7.6	2.5	5.8	0.0	48.5	19.6	0.0	21.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.5	0.0	220.4	193.0	58.9	32.0	100.1	0.0	179.4	194.3	0.0	39.3
LnGrp LOS	F	A	F	F	E	C	F	A	F	F	A	D
Approach Vol, veh/h		376			546			982			1020	
Approach Delay, s/veh		189.4			109.8			169.5			89.4	
Approach LOS		F			F			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.7	78.3	22.0	27.0	29.0	67.0	14.4	34.6				
Change Period (Y+Rc), s	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2				
Max Green Setting (Gmax), s	* 14	71.6	* 17	20.8	* 24	60.8	* 13	25.6				
Max Q Clear Time (g_c+I1), s	13.0	54.1	19.3	22.8	26.3	62.8	9.8	19.1				
Green Ext Time (p_c), s	0.0	5.7	0.0	0.0	0.0	0.0	0.0	1.1				
Intersection Summary												
HCM 6th Ctrl Delay			133.0									
HCM 6th LOS			F									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: Gravenstein Hwy N & Occidental Rd 08/29/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	196	106	228	214	302	123	670	195	330	648	46
Future Volume (veh/h)	87	196	106	228	214	302	123	670	195	330	648	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	87	196	93	228	214	104	123	670	189	330	648	42
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	193	158	190	280	484	143	550	155	278	817	53
Arrive On Green	0.07	0.12	0.12	0.12	0.17	0.17	0.09	0.44	0.44	0.17	0.53	0.53
Sat Flow, veh/h	1594	1673	1376	1594	1673	1414	1594	1248	352	1594	1554	101
Grp Volume(v), veh/h	87	196	93	228	214	104	123	0	859	330	0	690
Grp Sat Flow(s),veh/h/ln	1594	1673	1376	1594	1673	1414	1594	0	1600	1594	0	1655
Q Serve(g_s), s	7.8	16.7	9.3	17.3	17.7	7.6	11.0	0.0	63.9	25.3	0.0	49.2
Cycle Q Clear(g_c), s	7.8	16.7	9.3	17.3	17.7	7.6	11.0	0.0	63.9	25.3	0.0	49.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.22	1.00		0.06
Lane Grp Cap(c), veh/h	107	193	158	190	280	484	143	0	705	278	0	870
V/C Ratio(X)	0.82	1.02	0.59	1.20	0.76	0.21	0.86	0.00	1.22	1.19	0.00	0.79
Avail Cap(c_a), veh/h	110	193	158	190	280	484	170	0	705	278	0	870
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.8	64.2	60.9	63.8	57.6	33.9	65.1	0.0	40.6	59.8	0.0	28.0
Incr Delay (d2), s/veh	33.0	69.3	6.7	129.1	12.4	0.3	26.9	0.0	110.7	114.3	0.0	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	10.6	3.5	13.8	8.4	2.6	5.5	0.0	45.6	18.8	0.0	19.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	99.8	133.4	67.5	193.0	70.0	34.2	92.0	0.0	151.3	174.1	0.0	33.3
LnGrp LOS	F	F	E	F	E	C	F	A	F	F	A	C
Approach Vol, veh/h		376			546			982			1020	
Approach Delay, s/veh		109.4			114.5			143.9			78.9	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.7	82.4	22.0	22.9	30.0	70.1	14.4	30.5
Change Period (Y+Rc), s	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2	* 4.7	6.2
Max Green Setting (Gmax), s	* 16	73.7	* 17	16.7	* 25	63.9	* 10	24.0
Max Q Clear Time (g_c+I1), s	13.0	51.2	19.3	18.7	27.3	65.9	9.8	19.7
Green Ext Time (p_c), s	0.0	6.4	0.0	0.0	0.0	0.0	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	111.3
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Roundabout
1: Gravenstein Hwy N & Occidental Rd 08/29/2023

Intersection	
Intersection Delay, s/veh	181.7
Intersection LOS	F

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	389	744	988	1024
Demand Flow Rate, veh/h	397	759	1007	1045
Vehicles Circulating, veh/h	1231	897	626	576
Vehicles Exiting, veh/h	390	736	1002	1080
Ped Vol Crossing Leg, #/h	1	2	0	1
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	81.7	201.2	198.5	189.5
Approach LOS	F	F	F	F

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	397	759	1007	1045
Cap Entry Lane, veh/h	393	553	729	767
Entry HV Adj Factor	0.980	0.980	0.981	0.980
Flow Entry, veh/h	389	744	988	1024
Cap Entry, veh/h	385	542	715	751
V/C Ratio	1.010	1.373	1.382	1.363
Control Delay, s/veh	81.7	201.2	198.5	189.5
LOS	F	F	F	F
95th %tile Queue, veh	12	34	43	43

Intersection	
Intersection Delay, s/veh	23.9
Intersection LOS	C

Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	248	1053	1011
Demand Flow Rate, veh/h	253	1074	1031
Vehicles Circulating, veh/h	859	88	194
Vehicles Exiting, veh/h	366	1024	968
Ped Vol Crossing Leg, #/h	4	4	4
Ped Cap Adj	0.999	0.999	0.999
Approach Delay, s/veh	13.5	21.0	29.4
Approach LOS	B	C	D

Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	253	1074	1031
Cap Entry Lane, veh/h	575	1261	1132
Entry HV Adj Factor	0.980	0.980	0.981
Flow Entry, veh/h	248	1053	1011
Cap Entry, veh/h	563	1236	1110
V/C Ratio	0.441	0.852	0.911
Control Delay, s/veh	13.5	21.0	29.4
LOS	B	C	D
95th %tile Queue, veh	2	11	14