Revised Draft Environmental Impact Report

Central Larkspur Specific Plan

SCH #2001112092

Volume 1 - DEIR Text

Prepared by:

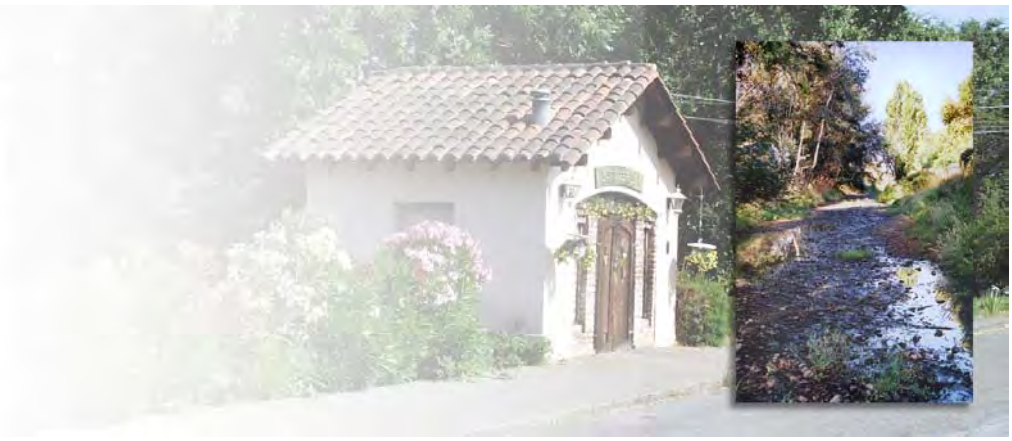
EDAW
2022 J Street
Sacramento, CA 95814

November 14, 2003

EDAW

Revised Draft Environmental Impact Report

Central Larkspur Specific Plan



SCH #2001112092

Volume 1 - DEIR Text

Prepared for:

City of Larkspur
400 Magnolia Avenue
Larkspur, CA 94939

Contact:

Robert Pendoley
Consulting Planner
415/472-3614

Prepared by:

EDAW
2022 J Street
Sacramento, CA 95814

Contact:

Sydney Coatsworth
Principal-in-Charge
916/414-5800

November 14, 2003

EDAW

2T099.01

TABLE OF CONTENTS

Chapter/Section Page

VOLUME I EIR TEXT

ACRONYMS AND ABBREVIATIONS vi

1 INTRODUCTION 1-1
- 1.1 Background 1-1
- 1.2 CEQA Environmental Process 1-2
- 1.3 Permits and Other Approvals that May Use This EIR to Implement the Project 1-5

2 PROJECT DESCRIPTION 2-1
- 2.1 Project Location 2-1
- 2.2 Project Setting 2-1
- 2.3 Goals and Objectives 2-5
- 2.4 Project Characteristics 2-8
- 2.5 Methodology and Assumptions for the EIR Analysis 2-18

3 EXECUTIVE SUMMARY 3-1
- 3.1 Introduction 3-1
- 3.2 Site Location and Description 3-1
- 3.3 Purpose of and Need for the Project 3-2
- 3.4 Project Overview and Components 3-3
- 3.5 Project Background 3-5
- 3.6 Scope and Content 3-5
- 3.7 Impacts, Mitigation Measures, and Unavoidable Significant Impacts 3-6
- 3.8 Permits and Other Approvals that May Use this EIR to Implement the Project 3-6
- 3.9 Alternatives to the Proposed Project 3-7
- 3.10 Evaluation of Alternatives and Identification of the Environmentally Superior Alternative 3-7
- 3.11 Areas of Controversy/Issues to be Resolved during Environmental Review 3-8

4 ENVIRONMENTAL IMPACT ANALYSIS 4-1
- 4.1 Land Use/Plans and Policies 4.1-1
- 4.2 Housing and Population 4.2-1
- 4.3 Geology and Soils 4.3-1
- 4.4 Hydrology and Water Quality 4.4-1
- 4.5 Biological Resources 4.5-1
- 4.6 Air Quality 4.6-1
- 4.7 Traffic and Circulation 4.7-1
- 4.8 Noise 4.8-1
- 4.9 Public Services and Facilities 4.9-1
- 4.10 Visual Quality and Aesthetics 4.10-1

TABLE OF CONTENTS
(CONTINUED)

Chapter/Section Page

4.11 Historical, Cultural and Archaeological Resources 4.11-1
4.12 Hazards and Hazardous Materials 4.12-1

5 OTHER CEQA-MANDATED SECTIONS 5-1
5.1 Growth-Inducing Impacts 5-1
5.2 Significant Unavoidable Adverse Impacts and Significant and Irreversible Commitment of Resources 5-3

6 ALTERNATIVES TO THE PROJECT 6-1
6.1 Introduction 6-1
6.2 Alternatives Considered 6-1
6.3 No Project Alternative 6-2
6.4 Low Density Alternative 6-9
6.5 Residential Focus Alternative 6-14
6.6 Comparison of Proposed Project and Alternatives 6-20
6.7 Evaluation of Alternatives 6-24

7 REFERENCES 7-1
7.1 Printed References 7-1
7.2 Personal Communications 7-9

8 REPORT PREPARATION 8-1

EXHIBITS

2-1 Specific Plan Area Location and Setting 2-2
2-2 Central Larkspur Specific Plan Area 2-3
2-3 Annotated Aerial View of Plan Area and Environs 2-4
2-4 Specific Plan Subareas 2-9

4.1-1 Location of Central Larkspur Specific Plan in Relation to Larkspur Downtown Specific Plan and Historic District 4.1-2

4.3-1 Regional Fault System 4.3-4

4.4-1 100 and 500–Year Flood Limits 4.4-3
4.4-2 Specific Plan Area Drainage 4.4-7

4.5-1 Views of Subarea 3 ..... 4.5-3
4.5-2 Views of Larkspur Creek 4.5-4
4.5-3 Sensitive Biological Resources in the Vicinity of the Specific Plan Area 4.5-7

4.7-1 Local Roadway Network Study Intersection Locations 4.7-2
4.7-2 Existing Lane Geometries 4.7-7
4.7-3 Existing A.M. (P.M.) Peak-Hour Volumes 4.7-11
4.7-4 Golden Gate Transit Bus Routes in the Study Area 4.7-13
4.7-5 Specific Plan A.M. (P.M.) Peak-Hour Volumes 4.7-24

TABLE OF CONTENTS
(CONTINUED)

Chapter/Section Page

4.7-6 Existing Plus Specific Plan A.M. (P.M.) Peak-Hour Volumes 4.7-27
4.7-7 Existing Plus Cumulative (No Specific Plan) A.M. (P.M.) Peak-Hour Volumes 4.7-37
4.7-8 Existing Plus Cumulative Plus Specific Plan A.M. (P.M.) Peak-Hour Volumes 4.7-38

4.8-1 Noise Measurement Locations 4.8-6
4.8-2 Larkspur Noise and Land Use Compatibility Standards 4.8-11

4.10-1 Views of Mt. Tamalpais from East and South Central Portions of Niven Nursery Site 4.10-2
4.10-2 Views to West from Edge of Niven Nursery Site at East Ward Street and from Magnolia Avenue 4.10-3
4.10-3 Views of Railroad Buildings 4.10-4

4.12-1 Subarea 3 – Hazardous Materials Evaluation Areas 4.12-9
4.12-2 Proposed Soil Removal and Filling in Subarea 3 ..... 4.12-15

TABLES

1-1 Permits and Other Required Approvals that May Use This EIR to Implement the Project 1-5

2-1 Land Use Development Potential 2-10
2-2 Subarea Data 2-11
2-3 Summary of Project Vehicle Trip Rates 2-20
2-4 Project Description – Subarea 1 2-21
2-5 Project Description – Subarea 2 2-22
2-6 Project Description – Subarea 3 2-22
2-7 Theoretical Maximum Intensity in Development Subareas 2-23

3-1 Summary of Impacts and Mitigation Measures 3-9

4.2-1 Larkspur's "Fair Share" of New Affordable Residential Units 4.2-2

4.3-1 Modified Mercalli Intensity Scale of 1931 ..... 4.3-6
4.3-2 Comparison of Richter Magnitude and Modified Mercalli Intensity 4.3-7
4.4-1 Tidal Characteristics 4.4-2
4.4-2 Runoff Calculations—Rational Method 4.4-16

4.6-1 Federal and State Ambient Air Quality Standards 4.6-2
4.6-2 Air Quality Data for San Rafael, 2000-2002 ..... 4.6-4
4.6-3 Winter Project Emissions - Pounds per Day (2015) 4.6-9
4.6-4 Summer Project Emissions - Pounds per Day (2015) 4.6-10

4.7-1 Summary and Comparison of Average Daily Traffic Volumes 4.7-6
4.7-2 Existing Peak Hour Intersection Level of Service 4.7-9

TABLE OF CONTENTS
(CONTINUED)

Chapter/Section Page

4.7-3 Summary of School Crosswalk Counts 4.7-15
4.7-4 Summary of Specific Plan Area Parking Occupancy 4.7-17
4.7-5 Summary of Specific Plan Vehicle Trip Rates 4.7-19
4.7-6 Subarea New Land Use Summary 4.7-20
4.7-7 Summary of Daily and Peak Hour Specific Plan Vehicle Trips Maximum Land Use Intensity 4.7-21
4.7-8 Vehicle Trip Distribution Summary 4.7-23
4.7-9 Specific Plan Share of Existing and Future Peak Hour Intersection Volumes 4.7-25
4.7-10 Existing Plus Specific Plan Peak-Hour Intersection Level of Service 4.7-26
4.7-11 Central Larkspur Specific Plan Area Parking Standards 4.7-33
4.7-12 Summary of Specific Plan Parking Supply Standards 4.7-33
4.7-13 Existing Plus Cumulative (No Specific Plan) and Existing Plus Cumulative Plus Specific Plan Conditions Intersection Level of Service 4.7-39
4.7-14 Level of Service After Mitigation 4.7-46

4.8-1 Definition of Acoustical Terms 4.8-2
4.8-2 Typical Sound Levels Measured in the Environment and Industry 4.8-3
4.8-3 Reaction of People to and Damage to Buildings from Continuous Vibration Levels 4.8-4
4.8-4 Results of Noise Measurements at 690 Riviera Circle, 76 Via La Brisa, and 71 Riviera Circle 4.8-8
4.8-5 Results of Vibration Measurements at 690 Riviera Circle, 76 Via La Brisa, and 71 Riviera Circle 4.8-9
4.8-6 Traffic and Noise Level Increases from Existing Scenario to Existing Plus Specific Plan Scenario 4.8-14
4.8-7 Traffic and Noise Level Increases from Existing Plus Cumulative (No Specific Plan) Scenario to Existing Plus Cumulative Plus Specific Plan Scenario 4.8-16

4.9-1 School Capacity and Enrollment, 2002-2003 School Year 4.9-1
4.9-2 Student Generation per Residential Unit 4.9-7

6-1 Land Use Types, Intensities, and Trip Generation (P.M. Peak Hour) by Specific Plan Subarea and Alternative 6-3
6-2 Intersection Levels of Service: Proposed Project Versus No Project Alternative 6-6
6-3 Cumulative Intersection Levels of Service: Proposed Project Versus Low Density Alternative 6-12
6-4 Cumulative Intersection Levels of Service: Proposed Project Versus Residential Focus Alternative 6-18
6-5 Comparison of Project and Alternatives 6-25

Chapter/Section Page

VOLUME II APPENDICES

A Notice of Availability, Notice of Preparation, and Notice of Completion for the Revised Draft EIR, and Comment Letters

B General Plan Amendments and General Plan Figure 2-6

C-1 Geotechnical Investigation for the Niven Nursery Site, Harza Engineering Company 1998

C-2 Review of Geologic Conditions for the Central Larkspur Specific Plan, Larkspur, California, World Environmental Science & Technology 1999

C-3 Doherty Drive Preliminary Geotechnical Evaluation Settlement and Vehicle Induced Vibrations

D-1 Preliminary Biological Assessment, Niven Nursery Project Site, Larkspur, California, Zander Associates 1998

D-2 Preliminary Wetland Delineation, Diane Renshaw 1999

D-3 List of Plant Species Observed by Zander Associates (1998) and Diane Renshaw (1999)

D-4 California Natural Diversity Database for the U.S. Geological Survey San Rafael Quadrangle

E-1 2005 and 2015 Aggregate Project Air Emissions

E-2 Results for 2005 Air Emissions

E-3 Results for 2015 Air Emissions

E-4 Carbon Monoxide Analysis

F-1 LOS Descriptions for Signalized and Unsignalized Intersections

F-2 Detailed Calculations of the Intersection LOS Analysis

F-3 Gas Station Trip Generation

G Photographs of Noise Measurement Equipment and Locations

H-1 Phase I Site Assessment and Initial Phase II Assessment, Harza Engineering Company 1998

H-2 Soil and Groundwater Sampling and Analysis Report, ENSR International 2001

ACRONYMS AND ABBREVIATIONS

AB .....Assembly Bill
ABAG .....Association of Bay Area Governments
ADT.....average daily trips
AST .....aboveground storage tank

BAAQMD.....Bay Area Air Quality Management District
Bay Mud .....alluvial deposits of sand, silt, clay, a clayey silt/silty clay formed in the estuarine and deeper portions of the bay
BKF.....Brian Kangas Foulk
BMP .....best management practice

Cal/EPA.....California Environmental Protection Agency
California UBC.....California Uniform Building Code
Cal/OSHA .....California Occupational Safety and Health Administration
Caltrans.....California Department of Transportation
CAP .....Clean Air Plan
CARB .....California Air Resources Board
CCR.....California Code of Regulations
CDFG.....California Department of Fish and Game
CEQA.....California Environmental Quality Act
CERCLA .....Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CESA.....California Endangered Species Act
CFR.....Code of Federal Regulations
cfs .....cubic feet per second
CGS.....California Geological Survey
CMSA.....Central Marin Sanitation Agency
CNDDB.....California Natural Diversity Database
CNEL.....Community Noise Equivalent Level
CNPS.....California Native Plant Society
CO.....carbon monoxide
CRHR .....California Register of Historical Resources
CUPA.....certified unified program agency
CWA.....Clean Water Act

dB.....decibel
dBA.....A-weighted decibel
DHS.....California Department of Health Services
DOSH.....Division of Occupational Safety and Health
DTSC.....Department of Toxic Substances Control

EIR.....environmental impact report
EPA.....U.S. Environmental Protection Agency
ESA.....Endangered Species Act

FAR.....floor area ratio
FEMA.....Federal Emergency Management Agency
FHWA.....Federal Highway Administration
FIRM.....Flood Insurance Rate Map

GIS.....Geographic Information Systems

H_2S.....hydrogen sulfide
HABS.....Historic American Buildings Survey
HCM.....Highway Capacity Manual
HCP.....Habitat Conservation Plan
HI.....Hazard Index
HOV.....high-occupancy vehicle
HWMP.....Hazardous Waste Management Program
Hz.....hertz

in/sec.....inches per second
ITE.....Institute of Transportation Engineers

L_{01}.....A-weighted noise level exceeded 1% of the time during the measurement period
L_{10}.....A-weighted noise level exceeded 10% of the time during the measurement period
L_{50}.....A-weighted noise level exceeded 50% of the time during the measurement period

L_{90} ..... A-weighted noise level exceeded 90% of the time during the measurement period
L_{dn} ..... day/night noise level
L_{eq} ..... equivalent noise level
L_{max} ..... maximum A-weighted noise level during the measurement period
L_{min} ..... minimum A-weighted noise level during the measurement period
LOS ..... Level of Service

MCL ..... Maximum Contaminant Level
MCSTOPPP ..... Marin County Storm Water Pollution Prevention Program
mg/kg ..... milligrams per kilogram
mg/L ..... milligrams per liter
MHHW ..... Mean Higher High Water
MHW ..... Mean High Water
MLLW ..... Mean Lower Low Water
MLW ..... Mean Low Water
mm/sec ..... millimeters per second
MMWD ..... Marin Municipal Water District
MOA ..... memorandum of agreement
MTBE ..... methyl tertiary butyl ether
MTL ..... Mean Tide Level

NGVD ..... National Geodetic Vertical Datum
NMFS ..... National Marine Fisheries Service
NO_2 ..... nitrogen dioxide
NOI ..... Notice of Intent
NOP ..... Notice of Preparation
NO_x ..... oxides of nitrogen
NPDES ..... National Pollutant Discharge Elimination System
NRHP ..... National Register of Historic Places

OHWM ..... ordinary high-water mark
O_3 ..... ozone
OSHA ..... Occupational Safety and Health Administration

Pb .....lead
PCB .....polychlorinated biphenyl
$PM_{2.5}$ .....fine particulate matter
PM_{10} .....respirable particulate matter
ppb .....parts per billion
ppm .....parts per million
PPV .....Peak Particle Velocity
PRC .....Public Resources Code
PRG .....Preliminary Remediation Goal
PWA .....Philip Williams & Associates

Qaf .....artificial fill
Qm .....Bay Mud

RAW .....Removal Action Workplan
RBC .....risk-based concentration
RCRA .....Resource Conservation and Recovery Act of 1976
RMS .....Root Mean Square
ROG .....reactive organic gases
RWQCB .....Regional Water Quality Control Board

San Francisco Bay RWQCB .....San Francisco Bay Regional Water Quality Control Board
SARA .....Superfund Amendments and Reauthorization Act
SB .....Senate Bill
SCWA .....Solano County Water Agency
SO_2 .....sulfur dioxide
SO_4 .....sulfates
SWPPP .....Storm Water Pollution Prevention Plan
SWRCB .....State Water Resources Control Board

TAC .....Toxic Air Contaminant
TIF .....Traffic Impact Fee
TPH .....total petroleum hydrocarbons
TSI .....thermal systems insulation

UBC .....Uniform Building Code

$\mu g/m^3$ .....micrograms per cubic meter
Unified Program .....unified hazardous waste and hazardous materials management regulatory program
USACE.....U.S. Army Corps of Engineers
USC.....United States Code
USFS .....U.S. Forest Service
USFWS.....U.S. Fish and Wildlife Service
USGS.....U.S. Geological Survey
UST.....underground storage tank

VdB.....Vibration decibel

WEST.....World Environmental Services & Technology

1 INTRODUCTION

1.1 BACKGROUND

The *Draft Central Larkspur Specific Plan* (2001 Draft Specific Plan) (City of Larkspur 2001) was prepared by Thomas Cooke Associates for the City of Larkspur (City) in June 2001 to facilitate the redevelopment of a 22-acre area adjacent to downtown Larkspur. The *Draft Central Larkspur Specific Plan Draft Environmental Impact Report* (previous Draft EIR) (City of Larkspur 2002) was subsequently prepared by Lamphier-Gregory for the City pursuant to the California Environmental Quality Act of 1970 (CEQA) (Public Resources Code [CEQA] §21000 et seq., as amended) and the State CEQA Guidelines (Guidelines) (Title 14 California Code of Regulations §15000 et seq.). The previous Draft EIR was based on the project description, goals, and policies described in the 2001 Draft Specific Plan.

In June 2002 the previous Draft EIR was circulated for a 45-day review period to affected agencies, interested organizations, and private individuals. A number of substantive comments were received on the previous Draft EIR; based on this input, it was determined that the 2001 Draft Specific Plan and the previous Draft EIR would be revised and updated as appropriate and recirculated pursuant to Guidelines §15088.5). Accordingly, the City prepared a revised Draft Specific Plan, dated October 2003.

The City has revised the previous Draft EIR to reflect the revised Specific Plan and recirculated this Revised Draft EIR under Guidelines §15087 for public review because significant new information was added to the EIR after public notice was given of the availability of the previous Draft EIR for public review but before the document was certified.

In accordance with the State CEQA Guidelines, a Notice of Preparation (NOP) of the Revised Draft EIR was distributed on April 2, 2003 to public agencies and organizations, as well as to private organizations and individuals with a possible interest in the project. The purpose of the NOP was to provide notification of the City's plans to prepare a Revised Draft EIR and to solicit input on the scope and contents of the Revised Draft EIR. Two comment letters were received in response to the NOP. The NOP and the comment letters are included in Appendix A of this Revised Draft EIR.

This Revised Draft EIR augments and updates the previous analysis and focuses on the environmental impacts identified as potentially significant, based on the City scoping process, including the comment letters received in response to the NOP, and based on comments received in response to the circulation of the previous Draft EIR. This Revised Draft EIR includes and incorporates text, exhibits, and reference documents from the previous Draft EIR, where appropriate.

This Revised Draft EIR will be circulated for a 60-day public review period. During that time, responsible agencies, organizations, and the public may submit written comments on the sufficiency or adequacy of the Revised Draft EIR in evaluating the environmental effects that may be associated with the adoption and implementation of the Specific Plan.

A public hearing on the Revised Draft EIR will be held during the 60-day public review period. Oral and written comments on the adequacy of the Revised Draft EIR received at the public hearing and written comments received during the public review period will be included in the Final EIR. Responses to all comments received on the Revised Draft EIR will be presented in the Final EIR, and the text, tables, and exhibits in the Final EIR will be revised as appropriate.

Because the EIR has been substantially revised and the entire Revised Draft EIR is recirculated, the City will not individually respond to those comments received during the earlier circulation period; however, these comments are part of the administrative record and are available for review at the City Planning Department's public counter during business hours:

City of Larkspur Planning Department
400 Magnolia Avenue
Larkspur, CA 94939

The City requests that reviewers submit new comments on the Revised Draft EIR (Guidelines§15088.5[f][1]). The City will respond to all comments received during the recirculation period. Accordingly, with this document, the City has directly notified every agency, organization, or person who commented on the previous Draft EIR that it does not intend to respond to comments on the previous Draft EIR and that new comments must be submitted. Although part of the administrative record, the previous comments do not require a written response in the Final EIR.

1.2 CEQA ENVIRONMENTAL PROCESS

This Revised Draft EIR has been prepared by the City in accordance with the requirements of CEQA, as amended, and the Guidelines. An EIR is an informational document that is designed to inform decision makers, other responsible or interested agencies, and the general public of the potential environmental effects of a proposed project. The environmental review process accomplishes the following objectives: enable decision makers, the public, and responsible agencies to evaluate a project in terms of its environmental consequences; allow examination and implementation of ways to eliminate or reduce any potentially adverse impacts; and allow consideration of alternatives to the project as proposed. While CEQA requires that major consideration be given to avoiding environmental damage, the lead agency and other responsible agencies must balance adverse environmental effects against other public objectives, including economic and social goals, in determining whether and in what manner a project should be approved.

The basic purposes of CEQA are to:

- inform governmental decision makers and the public about the environmental effects of proposed activities,
- involve the public in the decision-making process,

- identify ways that damage to the environment can be avoided or significantly reduced, and
- prevent environmental damage by requiring changes in the project through the use of alternatives or mitigation measures.

Before approving the project, the City, as the lead agency and decision-making entity, is required to certify that the EIR has been completed in compliance with CEQA, that the proposed project has been reviewed and the information contained in the EIR has been considered, and that the EIR reflects the independent judgment of the City. Additionally, before approving the project, CEQA also requires the City to adopt "findings" with respect to each significant environmental effect identified in the EIR (CEQA §21081, State CEQA Guidelines §15091). For each significant effect, CEQA requires the approving agency to make one or more of the following findings:

- The project has been altered to avoid or substantially lessen significant impacts identified in the EIR.
- The responsibility to implement alterations or carry out mitigations is under the jurisdiction of another agency. Such alterations or mitigations have been adopted or should and can be adopted by another agency
- Specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make the mitigation measures or project alternatives identified in the Final EIR infeasible.

If the City concludes that the proposed project would result in the significant effects identified in the EIR, but those effects would not be substantially lessened or avoided by feasible mitigation measures and alternatives, the City must adopt a "statement of overriding considerations" before approving the proposed project (CEQA §21081[b], Guidelines §15093). Such statements are intended under CEQA to provide a written means by which the City balances in writing the benefits of the proposed project and the significant and unavoidable environmental impacts. Where the lead agency concludes that the economic, legal, social, technological, or other benefits outweigh the unavoidable environmental impacts, the City may find such impacts "acceptable" and approve the project.

In addition, pursuant to CEQA §21081.6, the City, when approving a project, must also adopt a monitoring or reporting program for the changes that were incorporated into the project or made a condition of project approval in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program is adopted at the time of project approval and must be designed to ensure compliance during project implementation.

This EIR analyzes the potential significant environmental effects of adopting the proposed Central Larkspur Specific Plan (Specific Plan). The Guidelines define "significant effect on the environment" as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project …" (State CEQA Guidelines §15382). The

Revised Draft EIR recommends mitigation measures to reduce these impacts and also addresses less-than-significant environmental effects.

The Specific Plan does not propose the development of any individual projects, but does provide a framework for general future development within the Specific Plan and serves to provide a Preliminary Development Plan for Subarea 3. Although the Specific Plan establishes density ranges for future development, setback requirements, dedication, and/or fee requirements, site-specific details for future development projects, including the Precise Development Plan for Subarea 3, are largely unknown at the present time. For this reason, the evaluation of the environmental impacts that may be associated with adoption and implementation of this Specific Plan is appropriately more general than would be conducted for an EIR that focuses on a specific development project.

Because of the general (rather than project-specific) focus of the Specific Plan, the use of a "Program" EIR is appropriate in reviewing the environmental impacts that may be associated with implementation of the Specific Plan. This EIR has therefore been prepared as a Program EIR rather than as a more detailed "Project" EIR, pursuant to State CEQA Guidelines §15168. A Program EIR may be prepared on a series of actions that can be characterized as one large project and are related geographically and are logical parts in the chain of contemplated actions. The Program EIR allows the City to consider broad policy alternatives and programwide mitigation measures at an early time when there is greater flexibility to deal with basic problems or cumulative impacts.

It is expected that this EIR will be used as a "first tier" document that assesses in a broader fashion, impacts of subsequent, individual development proposals. Consistent with Guidelines §15168(a) the City of Larkspur will use this analysis in conjunction with project-specific analyses of projects proposed for the Specific Plan area in its evaluation and decision-making process. A comment received on the previous DEIR expressed concern that individual projects would be approved without additional environmental review. Specifically, Government Code §65457 exempts from CEQA review "[a]ny residential development project, including any subdivision, or any zoning change that is undertaken to implement and is consistent with a specific plan" for which an EIR has been certified. Similar provisions are made in CEQA §21087.7(a) and Guidelines §15182. However, Government Code §65457 further states that substantial change in the project, substantial changes in circumstance, or the availability of new information after adoption of the specific plan would invalidate the exemption unless and until a supplemental environmental impact report for the specific plan or project is prepared and certified.

Future development projects are required to obtain planning approvals from the City of Larkspur. While it is the City's intention to use the information and analysis in this EIR for future projects to the maximum extent practical to avoid repetitive discussion and duplication of effort, it is also the City's intention to conduct project-level environmental review of individual projects, including elements that cannot be known at this time. For example, specifics of traffic generation and distribution, elements of site design, visual and aesthetic

quality, relationship to Larkspur Creek and proposed protection measures, and other issues will need to be evaluated in the context of the Specific Plan EIR analysis as they relate to future development proposals. At the time that development applications are received, the City will determine the content and degree of further site-specific environmental review and will prepare the appropriate environmental document. As such, subsequent environmental documentation will be required for development activities that may have effects that were not adequately addressed in this EIR.

1.3 PERMITS AND OTHER APPROVALS THAT MAY USE THIS EIR TO IMPLEMENT THE PROJECT

The first set of approvals that will be considered by the Planning Commission and City Council will include amendments to the General Plan and the Downtown Specific Plan, adoption of the Specific Plan, and rezoning of Subarea 3 to Planned Development District, with the adoption of the Specific Plan as the Preliminary Development Plan. These actions are just the first steps in a chain of contemplated City actions that will guide the ultimate development of the area defined within the Specific Plan boundaries. Subsequent City approvals must be granted and other actions must occur before site development. The information included in this EIR will also be used by other regulatory agencies in deciding whether to grant permits or approvals necessary to construct and operate proposed projects. The permits and other required approvals are listed in Table 1-1.

Table 1-1
Permits and Other Required Approvals that May Use This EIR to Implement the Project

Agency	Permit/Approval/Certification	Reason
City Council (Subsequent to review and recommendation by the Planning Commission)	Certification of the Final Central Larkspur Specific Plan EIR	To certify the Final EIR as adequate and complete review of the environmental effects of the Specific Plan.
	Approval of amendments to the General Plan and the Downtown Specific, adoption of the Central Larkspur Specific Plan, and rezoning of Subarea 3	To amend the General Plan to redesignate 16.8 acres from Low Density Residential to Low Density Residential and Parkland and revise the land Use Element and Circulation Plan, to amend the Downtown the Specific Plan to remove Subareas 1 and 2 from the Downtown Specific Plan boundaries, to adopt the Specific Plan, and to rezone Subarea 3 from L-1, Light Industrial, to P-D, Planned Development District with the Specific Plan as the Preliminary Development Plan.

Table 1-1 Permits and Other Required Approvals that May Use This EIR to Implement the Project		
Agency	**Permit/Approval/Certification**	**Reason**
City Council and Planning Commission	Certification and approval of project-specific environmental documents, as appropriate	To review project-specific elements.
	Planning approvals for individual development projects including rezone, design review, use permits, tentative and subdivision maps, historic preservation review, grading permits, and other entitlements as required by the Zoning and other City Ordinances	To ensure that subsequent development projects are reviewed by the City for their consistency with the Specific Plan.
City Department of Public Works and Engineering	Approval of stormwater drainage facilities	To ensure that development plans are in compliance with the City's storm drainage design standards.
	Approval of Erosion Control Plan	To control the potential for stormwater to erode soils and cause them to enter Larkspur Creek.
	Issuance of grading permit	To ensure that grading is conducted in compliance with the City's grading standards.
Heritage Preservation Committee	Historic preservation review	Advisory to City Planning Commission to ensure that development projects are reviewed for protection of historic resources.
State Water Resources Control Board	Storm Water Pollution Prevention Plan	Required for the discharge of stormwater from construction and developed areas that are 1 acre or larger.
California Environmental Protection Agency, Department of Toxic Substances Control	Demolition Plan approval	Required for the safe demolition of existing structures.
	Removal Action Workplan and Health and Safety Plan	Required to reduce the impact of contaminated soils.

2 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The Specific Plan area is located in central Larkspur (Exhibit 2-1); portions of the Specific Plan area lie within, adjacent to, and northeast of downtown Larkspur (Exhibit 2-3). The total area covered by the Specific Plan is 27.58 acres. As shown in Exhibit 2-2, the Specific Plan encompasses a 22-acre rectangular-shaped area of relatively flat land that is bordered by Magnolia Avenue on the west; East Ward Street, Meadowood Drive, and Larkspur Creek on the south; Larkspur Creek on the east; and Doherty Drive on the north. The entire Doherty Drive right-of-way, from Magnolia Avenue east to the city limit (5.58 acres), is also included in the Specific Plan area. Doherty Drive is bordered by Mt. Tamalpais Racquet Club, Hall Middle School, Piper Park, and residential development on the north, and by Redwood High School, Tamalpais High School District facilities and the rest of the project area on the south.

2.2 PROJECT SETTING

The entire Specific Plan area has been disturbed in the past, and a majority of the area has been developed with commercial, recreational, transportation, and civic uses (Exhibit 2-3). The Niven Nursery occupies 16.8 acres in the eastern portion of the Specific Plan area. Abandoned greenhouses and other facilities used for nursery operations occupy most of this area. A small retail nursery currently operates on the northeastern corner of the property. The southwestern portion of the Specific Plan area has a cluster of four small commercial buildings, including the former Northwestern Pacific Railroad station and warming house; a City park; a City-owned parking lot; Larkspur Plaza, which includes Albertsons market and other retail shops; a gas station; and an American Legion hall.

Elevations within the Specific Plan area range from 7 to 22 feet above sea level, and the Specific Plan area is relatively flat except for the area just east of Magnolia Avenue, where portions of the Specific Plan area drop 7 feet in elevation in a distance of about 100 feet. Larkspur Creek is subject to tidal action and freshwater surface runoff flows. The northwestern portion of the Specific Plan area is subject to flooding as a result of backup into an existing concrete ditch during extreme high tides. Larkspur Creek is a tributary to Corte Madera Creek, located approximately 1 mile east-northeast of the Specific Plan area. The prevailing soil conditions consist of 5 to 7 feet of fill material underlain by Bay Mud.

Where not occupied by structures or pavement, disturbed areas of the Specific Plan area are dominated by weedy species and scattered ornamental and invasive trees and shrubs. Tidal wetlands and waters of the United States have been identified along Larkspur Creek.

Historically, the Specific Plan area was occupied by the Coastal Miwok Indians, and supported ranching and farming operations in the 19th century. The Niven Nursery, in the eastern portion of the Specific Plan area, dates back to the early 1920s. The railway station and warming house were built in 1929. The building that is now the American Legion hall was built sometime before 1909.

Exhibit 2-1

Exhibit 2-2 (landscape)

Exhibit 2-3

The Specific Plan area provides views of Mt. Tamalpais from various locations, views of Larkspur Creek and creekside vegetation, views of the railroad station and warming house, and a view across Magnolia Avenue to several offsite buildings that are historically significant.

The area surrounding the Specific Plan area is completely developed, consisting of a tennis club, middle school, and public park on the north side of Doherty Drive; a high school district corporation yard on the east side of Larkspur Creek; low- to medium-density residential units to the south; and downtown commercial and office uses to the southwest and west.

A detailed discussion of the existing setting of each environmental issue area is provided in Chapter 4, Environmental Impact Analysis.

2.3 GOALS AND OBJECTIVES

Under California law (Government Code §65450 et seq.), a city or county may use the mechanism of a specific plan to enact specific regulations, programs, and legislation to help achieve goals expressed in its adopted General Plan. California law requires that such a specific plan include text and diagrams addressing the following issues: the distribution, location, and intensity of land uses, including open space; the location and capacity of major infrastructure systems, including transportation, wastewater, and stormwater drainage; standards and criteria for development and use of natural resources; and implementation measures, including capital improvement and financing mechanisms necessary to execute the specific plan.

The draft Central Larkspur Specific Plan was prepared to facilitate the development of the Niven property and additional underdeveloped area to the west of the Niven property. The Specific Plan is based on a firm policy position established in the Larkspur General Plan and the Downtown Larkspur Specific Plan. Additionally, the Central Larkspur Specific Plan Committee established planning principles to guide its deliberations and decisions during preparation of the Specific Plan.

The Larkspur General Plan, adopted in 1990, assigns the land use category Low Density Residential (up to five dwelling units per acre) to the Niven property (Land Use and Circulation Map, Larkspur General Plan). The General Plan provides two goals and an action program that relate to vacant properties, including the Niven property:

- **Goal 13:** On those lots where development or redevelopment is expected to occur, integrate natural features into new development, to the greatest extent reasonably feasible.
- **Goal 14:** Maintain Larkspur's small-town character.
- **Action Program [22]:** For a change in land use to other than the existing nursery uses, prepare a Specific Plan for the Niven Nursery property that identifies community desires for future use.

The General Plan discusses planned changes for the Niven property in General Plan Figure 2-6 that designates the property as a "Location of Land Use Changes" along with the following accompanying text:

> The [16.8-acre] Niven Nursery property fronting on Doherty Drive is designated Low Density Residential. However, the present wholesale and retail nursery uses on the site are viewed as desirable and will be allowed to remain indefinitely. Therefore, the property will retain its present zoning of L-1, Light Industrial, and the zoning ordinance will be amended to restrict the property to its present use. The property will be rezoned when it is no longer used for nursery, and a Specific Plan will be required before the property is redeveloped in any use other than nursery… Some parts of this site may have potential for higher density residential—such as housing that is affordable to seniors and others—and commercial development, but potential problems with traffic, as well as transition to adjacent uses, must be addressed first.

The Larkspur Downtown Specific Plan provides a detailed plan to guide and facilitate the continuing development of the Downtown area. The Downtown Specific Plan boundaries include Subareas 1 and 2 of the Central Larkspur Specific Plan. Goal 1 and Goal 2 of the Larkspur Downtown Specific Plan pertain to the Nazari property in Subarea 1 and the Lucky supermarket property (now the Albertsons supermarket) in Subarea 2 as listed below:

1. Lucky Supermarket. If the Lucky supermarket expands, the addition shall visually support the creation of a plaza around the railroad buildings on the Nazari property. Loading facilities shall be located so that they will not disrupt the connection between Larkspur Plaza and the Nazari property.

2. Nazari Property. Goals for this site are:

   - Consideration of a public plaza on the corner of East Ward and Magnolia.
   - Creation of an open space that preserves the context of the historic railroad buildings, with a possible view and pedestrian corridor to them from Magnolia Avenue.
   - Development of a Class I bicycle/pedestrian path with separation of bicyclists from autos in the former railroad right-of-way.
   - Placement of storefront and business facades facing Magnolia Avenue, Larkspur Plaza, and the public open spaces.
   - Encouragement of pedestrian connections between Magnolia Avenue, Larkspur Plaza, and public open spaces on the site.
   - Prohibition of through vehicle traffic on the railroad right-of-way.
   - Coordination of the design of the site with the creation of a northern gateway into the Downtown.
   - Creation of a human-scaled building ensemble composed of elements reflecting the architectural scale of existing buildings in the Downtown.

Goal 4 of the Downtown Specific Plan states the following under "Plan Objectives and Programs":

4. Improve the sense of connection between the components of the Downtown including Larkspur Plaza, the Nazari property and the retail core of Downtown, the Lark Creek Shoppes, and Larkspur Creek.

    b. Allow for expansion of the Lucky supermarket and development of the Nazari property that will create linkages between these properties and the existing Downtown.

The Central Larkspur Specific Plan has six proposed goals that define the plan's overall purpose and provide general direction for formulating policies and objectives.

- **Goal 1: Land Use.** Develop the Specific Plan area as an integrated and cohesive mixed-use neighborhood that is a focal point and an activity center for Downtown and serves as a transition to the surrounding community. The majority of the land area will be in low-density residential use compatible with the surrounding community. Provide sufficient open space to preserve and enhance environmental resources and serve as a community amenity.
- **Goal 2: Transportation.** Create a pedestrian friendly environment, minimize traffic impacts and promote alternative modes of transportation by balancing the density, intensity, and mix of land uses. Provide a system of traffic improvements, safe, direct and attractive bicycle and pedestrian routes, and adequate parking.
- **Goal 3: Housing.** Develop the area as a predominantly low-density residential neighborhood emphasizing a range and diversity of housing types, perceived scales and density. Encourage a range of housing affordability, including housing affordable to very low-, and moderate-income households and senior citizens.
- **Goal 4: Community Design.** Design the area and individual buildings to complement and respect Larkspur's small town character and our historic Downtown. The scale and design of residential development should be similar to that in the Heather Gardens, Monte Vista, and the Baltimore Park neighborhoods. The design should emphasize a variety of building sizes, scales and architecture. The design should be pedestrian friendly, and have a strong landscape character. The design should integrate the three subareas of the Specific Plan area.
- **Goal 5: Utilities.** Provide for the distribution, location, extent and intensity of public and private transportation, sewage, water, drainage, solid waste disposal, energy, and other essential facilities to support the land uses described in the Specific Plan. Private development shall pay for utility improvements required to serve new growth.
- **Goal 6. Planning.** Provide a clear plan for implementing the community's goals for the Central Larkspur Specific Plan area. The implementation plan shall include regulations, programs, public works projects, and financing measures to achieve the distribution and location of land uses, including open space, described in the Specific Plan. The Specific Plan will also provide implementation measures for the land use, housing, transportation, community design, and utility goals of the plan.

2.4 PROJECT CHARACTERISTICS

The Specific Plan proposes a mixed-use development area with retail, recreation, cultural, civic, and residential uses that would contribute to the vitality of the Downtown area, combining current land uses with new development. Subarea boundaries have been established to define three distinct planning units within the Specific Plan area. A number of land uses are permitted in each of the subareas, including a range of office, retail, and residential uses, as described in the Specific Plan and regulated by the City Zoning and Subdivision Ordinance. The development subareas are shown in Exhibit 2-4. Subarea 1 consists of five properties fronting on Magnolia Avenue and East Ward Street in the southwest portion of the site, encompassing the historic railroad structures and adjacent commercial buildings, a City park, an access driveway to Larkspur Plaza, a City-owned parking lot, and the American Legion hall. Subarea 2, which fronts on Doherty Drive near Magnolia Avenue, has existing commercial establishments including Albertsons supermarket and a gas station. Subarea 3 encompasses the Niven property. The Doherty Drive right-of-way is included within the Specific Plan boundaries but is not developable for any other use and thus is not included within the development subareas. The Specific Plan boundaries include Doherty Drive to facilitate the design of road improvements that would be most compatible with plan goals.

Proposed uses and land use intensities and densities for each of the subareas are shown in Table 2-1. Properties in the various subareas are described in Table 2-2 and shown in Exhibit 2-4. Other actions that would be required prior to development within the Specific Plan area are described in section 2.5.1, Other Required Actions.

2.4.1 SUBAREA LAND USES

The land uses for each subarea as permitted under the Specific Plan are detailed below. Summaries of land area and development characteristics are provided in Tables 2-4, 2-5, and 2-6 (following the discussion of traffic generation and trip rates in Section 2.5.2).

SUBAREA 1

Subarea 1 is a triangular-shaped area bounded by Magnolia Avenue on the west, East Ward Street on the south, and the Niven property and Larkspur Plaza on the northeast. Currently, land uses within the subarea include Doherty Park; an oversized driveway access from Magnolia Avenue to Larkspur Plaza; a portion of the former Northwestern Pacific railroad right-of-way, including two historic railroad buildings; two one-story commercial buildings; a City-owned parking lot; and an American Legion hall that was built sometime before 1909.

Part of the undeveloped land in Subarea 1 along Magnolia Avenue is used for parking. As illustrated in Table 2-1, principal permitted land uses in Subarea 1 include multifamily residential, retail sales, business and personal services, hotel/inn, office, cultural/civic, and public parking. Total development intensity, exclusive of parking, would not be permitted to exceed a floor area ratio (FAR) of 0.6; however, Specific Plan Land Use Policy 9 (Hotel/Inn) and Standard 2 (FAR Bonus) offer additional development capacity (FAR of 0.8) as an

Exhibit 2-4

Table 2-1
Land Use Development Potential

Subarea	1	2	3	Totals
Land Use Category				
Storefront Downtown	■			
Transitional Downtown		■		
Mixed Density Residential			■	
Principal Uses				
Single-Family Residential			■	
Cottage Homes			■	
Multi-Family Residential	■	■	■	
Retail Sales	■	■		
Business & Personal Services	■	■		
Hotel/Inn	■	■		
Office	■	■		
Cultural/Civic	■	■		
Public Parking	■	■	■	
Public Park			■	
Development Intensity/Density				
Floor Area Ratio (FAR)	0.6 to 0.8 (1)	0.4 to 0.6 (2)	(3)	
Permitted Floor Space (sq. ft.) (Commercial/mixed-use)	57,074 to 76,100 (4)	48,340 to 67,600 (5)		105,414 to 143,700 (6)
Hotel Rooms	36	N/A	N/A	36
Single-Family Homes	N/A	N/A	25 to 35 (7)	
Cottage Homes	N/A	N/A	23 to 33 (7)	
Multifamily	28 (8)	19 (9)	27 (10)	
Total Residential Units	28	19	85	132

Notes:

(1) Land Use Standard 1 sets a base FAR of 0.6; Land Use Standard 2 allows a bonus of up to 0.8 FAR for a hotel.

(2) Land Use Standard 8 sets a base FAR of 0.4; Standard 2 allows a bonus of up to 0.6 FAR, if the bonus floor area is used for affordable housing.

(3) Overall development determined by housing allowances and related standards governing size of units, including maximum 0.4 FAR for individual single-family parcels.

(4) The range of floor space reflects the bonus FAR explained in Note (1) above.

(5) The range of floor space reflects the bonus FAR explained in Note (2) above.

(6) The range of floor space reflects the FAR bonuses explained in Notes (1) and (2) above.

(7) Lower and upper range permitted. Total single-family and cottage units may not exceed 58.

(8) Number of units depends upon mix of uses. Floor area of housing included in overall FAR (see Specific Plan text).

(9) FAR/Density bonus allowed for affordable housing. The bonus floor area may only be used for affordable housing.

(10) Restricted to affordable units.

Source : 2003 Central Larkspur Specific Plan

incentive to encourage development of a hotel/inn in Subarea 1. Building coverage would not exceed 40% of the site area. Doherty Park, a small, triangular-shaped neighborhood park with grassy areas and picnic facilities, would remain in its current condition. As described further below, the Specific Plan policies for Subarea 1 include both the retention of some structures and facilities at the site and the redevelopment of some underused areas.

Table 2-2
Subarea Data

Subarea	Subarea Properties	Land Area	
		Square Feet	Acres
1	A. Nazari [1]	63,064	
	B. City Parking Lot	19,600	
	C. American Legion	10,180	
	D. Driveway Property [2]	5,020	
	E. Doherty Park	9,674	
	Subarea 1 total	107,538	2.5
2	A. Gas Station Property	24,550	
	B. Larkspur Plaza	96,300	
	Subarea 2 total	120,850	2.7
3	Niven Nursery	731,808	16.8
Total		**960,196**	**22**

Notes:
[1] The total area of the Nazari parcel is 66,789 square feet. A portion of this parcel, 3,725 square feet, is outside of the Specific Plan boundaries, and the remaining 63,064 square feet is inside the Specific Plan boundaries.
[2] The total area of the City-owned driveway property is 5,020 square feet. Specific Plan Land Use Policy 16 would make a portion of this property available for private development. For purposes of estimating development potential, it is assumed that up to 2,280 square feet of the driveway property could be made available for private development.

Source : 2003 Central Larkspur Specific Plan

Nazari Property

The Nazari property encompasses the two former railroad buildings, the railroad right-of-way, two one-story commercial buildings, and vacant land along Magnolia Avenue. The two one-story commercial buildings, currently occupied by retail and office uses, would be permitted to be demolished to accommodate construction of new buildings and facilities.

Railroad Buildings

Two existing historic buildings, the former railroad station (now occupied by a restaurant) and warming house (now used as an architect's office), would remain in their present location, and would be preserved to protect their historic value. The buildings would be used in a manner that would contribute to the vitality of adjoining development and immediately surrounding

community-serving outdoor spaces. A complete description of historic and cultural resources is provided in Section 4.11, Historical, Cultural, and Archaeological Resources, of this Revised Draft EIR.

Railroad Plaza

Specific Plan Land Use Policy 11, Railroad Buildings, would require that adequate open space be provided adjacent to the two preserved railroad buildings to provide an appropriate setting for these historic structures. The open space would be accessible to the public and sized and designed to accommodate community-oriented activities. Transportation Policy 20 (North-South Regional Bikeway) would further provide that a new bikeway and footpath alignment be added to connect the bikeway segment on the former Northwestern Pacific Railroad right-of-way with the existing bikeway along Magnolia Avenue. Transportation Policy 8 (Parking Access, Subarea 1) would provide two-way access to Subarea 1 parking located within the former railroad right-of-way directly from East Ward Street.

Hotel/Inn

As mentioned above, Specific Plan Land Use Policy 10 (Hotel/Inn) and Standard 2 (FAR Bonus) would encourage development of a hotel/inn and provide for a bonus FAR of 0.2 as an incentive for development of this use, bringing the total FAR of the site to 0.8.

Residential

The amount of residential space is governed by the overall 0.6 FAR; a maximum of 28 units is permitted. Ground-level residential units may not occupy the street-level space fronting Magnolia Avenue.

Driveway Property

The existing access driveway to Larkspur Plaza from Magnolia Avenue would remain. Specific Plan Land Use Policy 16 (Reclaim City-Owned Land) calls for the City to reclaim a portion of this land (2,280 square feet) by requiring that the driveway entrance be narrowed to provide a more appropriately scaled roadway as a condition of development.

City Parking Lot

The City-owned parking lot at the intersection of East Ward Street and Magnolia Avenue would remain, or would be improved. At present the lot provides 28 parking spaces. Specific Plan Land Use Policy 14 (Parking Lot Improvements) calls for this lot to be redesigned to increase the number of spaces and include landscaping that would allow it to be used as a public gathering space. Land Use Policy 13 (Parking Lot to Be Retained) states that it is the City's policy to continue to maintain and operate the public parking lot in its present location. However, this policy would also allow a sale or trade of the parking lot for conversion to a public library or for mixed-use development (with the resultant revenues being used to help

finance public parking or other community facilities). The General Plan land use designation and the zoning on the property currently allow these uses.

American Legion Property

Another historic structure, the American Legion hall, would also be retained. Existing club activities are encouraged to continue.

Doherty Park

Doherty Park is a developed city park fronting on Magnolia Avenue north of the Nazari property. The park is 9,674 square feet in area and is assumed to remain in use as a park.

SUBAREA 2

Subarea 2, a rectangular-shaped parcel located near the intersection of Magnolia Avenue and Doherty Drive, encompasses the entirety of Larkspur Plaza, which includes a 23,400-square-foot Albertsons supermarket; a contiguous 2,500-square-foot store space and an adjoining 8,200-square-foot commercial building occupied by small retail, personal service, and food sales establishments; a gas station; and 178 parking spaces for these businesses.

Permitted uses in Subarea 2 would include retail sales, business and personal services, office, and residential. A FAR of 0.4 would be allowed in this area. Specific Plan Land Use Policy 23 (Albertsons Loading Dock) would allow an increase in developable floor space of 4,500 square feet. Specific Plan Land Use Standard 8 (Subarea 2 FAR) would conditionally permit additional floor area, not to exceed a FAR of 0.2, for residential space meeting the City's definition of affordable housing. A maximum of 19 multifamily residential units would be permitted and are assumed to be developed for this analysis. Office space is limited to 20% of the total floor area.

Service Station

Specific Plan Land Use Policy 25 (Service Station Encouraged) encourages the continued operation of the service station.

Albertsons Loading Dock

An additional 4,500 square feet of retail or personal services space could be added to the west side of the building if the loading dock is removed.

SUBAREA 3

Subarea 3 consists of the approximately 16.8 acres formerly used for the Niven wholesale nursery operation, which dates back to the early 1920s. Currently, most of this subarea is occupied by abandoned greenhouses and other structures that had been used for nursery operations, although several buildings remain in use for the limited purpose of growing and

wholesaling orchids. A small retail nursery operates on a month-to-month lease in the northeastern corner of the subarea. A caretaker resides in a modular unit on the property.

Permitted land uses under the Specific Plan would be limited to residential, community facilities for the residents, and public-serving parking, as well as a public park. The land use entitlements necessary for adoption of the Specific Plan include an amendment to the Land Use Element of the General Plan to designate a public park in Subarea 3. Housing built within Subarea 3 would require dedication of approximately 0.9 acre to satisfy the General Plan park designation and the City's Park and Recreation Land and Fees Ordinance (Larkspur Municipal Code §17.13). The land devoted to the creek open-space buffer would not satisfy the park requirement. Aside from requirements stated in the goals, policies, an standards of the Specific Plan, other actions would be required before development may occur in Subarea 3, include the following:

- Removal Action Workplan (RAW) for contaminated soils (lead, arsenic, DDT) in Subarea 3 (ENSR, International 2002)
- Soil surcharge in Subarea 3 to precompress the underlying Bay Mud, engineered fill for upper three feet of existing fill materials in Subarea 3, and treatment of corrosive soils in Subarea 3 (Harza Engineering Company 1998a) (Appendix C-1)

The residential density of Subarea 3 would be limited to 85 dwelling units with a maximum 0.4 FAR for individual single family parcels (Table 2-1). The residential development would include a mix of housing types.

Single-Family Detached Homes

Construction of single-family homes would be limited to between 25 and 35 houses (depending upon the number of cottage homes constructed). These houses could be attached or detached and would comply with specific design criteria outlined in the Specific Plan including a building height not to exceed 30 feet, a total building coverage per lot of 40%, and a minimum of 25% of the units with a floor area of 3,000 square feet or less (Land Use Standards 10 [Standards for Single-Family Detached Homes], 10A [Unit Size Range], 10B [Building Height Limit], 10C [FAR], and 10D [Lot Coverage]).

Cottage Homes

Construction of cottage homes would be limited to between 23 and 33 houses (depending upon the number of single-family detached homes constructed). These houses could be attached or detached and would comply with specific design criteria outlined in the Specific Plan, including a maximum building height of 30 feet (Land Use Standards 11 [Standards for Cottage Homes], 11A [Unit Size Range], 11B [Building Height Limit], 11C [Minimum Site Area], and 11D [Design]). Land Use Standard 11A states:

11A. Unit Size Range. The size of cottage homes shall be within the following ranges:

Unit Size (square feet)	% of Units
850 to 1,200	10 to 25
1,201 to 1,550	25 to 35
1,551 to 1,700	25 to 35
1,701 to 1,980	20 to 30

Affordable Multifamily Housing

Specific Plan Land Use Policy 29 (Affordable Housing Site) provides for a 1.2- to 1.5-acre site to be made available for purchase by the City, a nonprofit housing provider, or a third-party developer entity for the purpose of construction of up to 27 units of very low-, low-, and moderate-income housing. The applicable design criteria are a maximum building height of 35 feet, maximum FAR of 0.6, and maximum lot coverage of 50% of the lot area (Land Use Standards 12 [Standards for Multi-Family Housing], 12A [Building Height Limit], 12B [FAR], and 12C [Lot Coverage]). Between 40% and 50% of the units would be restricted to households in which one or more of the residents is 62 years of age or older (Land Use Standard 13 [Standard for Senior Housing]). Priority for eligibility would be given to households with one or more persons employed within a 5-mile radius (Land Use Standard 14 [Standard for Locally Employed Persons]). Units would be available to very low-, low-, and moderate-income households in proportion to the needs identified in the most current "Regional Fair share" allocation or the Housing element (Land Use Standard 15 [Standard for Affordability]).

Inclusionary Housing

In the event that the offer to purchase property for an affordable multifamily housing project is not exercised, the Larkspur General Plan's policy requiring that at least 10% of the units be affordable would be implemented.

Total Housing

If the multifamily housing site is developed as affordable housing, up to 85 residential units may be developed in Subarea 3. If the offer to purchase is not exercised, and the affordable multifamily housing project is not developed, up to 63 market-rate units may be built, of which a minimum of 30 units would be cottage homes. In addition, affordable units would also be required, equal to at least 10% of the market-rate units (0.10 X 63 = 7); it is the City's practice to round up). The maximum number of units that would be allowed if the affordable multifamily project is not developed is 70 units (63 + 7 = 70).

Open Space

An open-space buffer would be provided along Larkspur Creek. The buffer would be at least 50 feet wide from the top of bank on the north/south reach of the creek at the eastern edge of

the Specific Plan area. No building could be located within 50 feet of the top of the bank. On the southern perimeter of the Specific Plan area the buffer would be at least 25 feet wide from the top of the bank on the east/west reach of the creek. No building could be located within 25 feet of the top of the bank. No impervious surface would be located within the open space buffer (Land Use Standard 17, Impervious Surfaces).

Sufficient land would be provided adjoining the western entrance road to Subarea 3 and the backside of the Larkspur Plaza commercial buildings to provide a well-landscaped buffer between the commercial and residential areas.

According to the General Plan, there are no locations within the Specific Plan area that are designated for a public park. The project includes an amendment to the Land Use Element of the General Plan to designate a public park in Subarea 3. The land devoted to the creek open space buffer would not satisfy the park requirement. Housing built within Subarea 3 would require dedication of approximately 0.9 acre to satisfy the General Plan park designation and the City's Park and Recreation Land and Fees Ordinance (Larkspur Municipal Code Section 17.13).

The Bicycle and Pedestrian Trails and Paths section of the General Plan (Chapter 8) identifies existing and planned trails in the city. According to the Bicycle/Pedestrian Circulation Plan, there is an existing bike path on the west side of Magnolia Avenue, a planned bike path along the south side of the Specific Plan area, and a planned bike lane on both sides of Doherty Drive.

Community-Serving Facilities

Community-serving space may be built, including offices, lounge areas, meeting rooms, and indoor and outdoor recreation facilities. These facilities would be privately-owned, primarily for the use of residents of Subarea 3.

2.4.2 CIRCULATION

The circulation system for the Specific Plan area would be designed to facilitate traffic flow, improve safety, and incorporate a bikeway. The City has identified these improvements for consistency with the General Plan, and they are designed to implement General Plan policies. A full consistency analysis is contained in Appendix B-2. Doherty Drive would be improved as follows:

- The section of Doherty Drive from Magnolia Avenue to the entrance to Redwood High School would be reconstructed. Reconstruction would be coordinated with the development of Subarea 3. (Specific Plan Transportation Policy 2 [Doherty Drive Improvements])
- A Class 1 bike path would be incorporated along the south side of the right-of-way. (Transportation Standard 1 [Doherty Drive Improvement Standards] and Standard 1.B [Bikeway])

- Vehicle access to Hall Middle School would be modified to relieve congestion along Doherty Drive. (Transportation Standard 1 and Standard 1.C [Hall School])
- The Golden Gate Transit District bus stop at Hall Middle School would be relocated to the west near the location of the planned pedestrian/bicycle crossing of Doherty Drive and Larkspur Plaza Drive. (Transportation Standard 1 and Standard 1.D [Bus Stop])
- At the approach to and intersection with Magnolia Avenue, the north-side curb of Doherty Drive would be extended to provide space for a Class 1 bike path connection to the Class 1 bike path that currently terminates on Magnolia Avenue about 150 feet north of the Magnolia Avenue/Doherty Drive intersection. (Transportation Standard 1 and Standard 1.F [Magnolia/Doherty Intersection])

In addition to the improvements to Doherty Drive, the following modifications would be incorporated into the project design to be completed as a part of private development projects, except where noted:

- Vehicular access to Subarea 3 from Doherty Drive would be limited to two locations: immediately opposite Larkspur Plaza Drive and immediately opposite the entrance to Piper Park. Intersection design would be consistent with standards outlined in the Specific Plan. (Specific Plan Transportation Policy 14 [Vehicular Ingress and Egress from Doherty Drive to Subarea 3])
- The eastern road entering Subarea 3 from Doherty Drive would be aligned to be adjacent to the designated open-space buffer along Larkspur Creek to its east. (Transportation Policy 15 [Eastern Access Road from Doherty Drive to Subarea 3])
- Residential streets in Subarea 3 may incorporate traffic-calming devices that discourage high-speed travel and use of the streets by unrelated through-traffic. (Transportation Policy 5 [Traffic-Calming] and Policy 36 [Traffic-Calming Methods])
- Each interior right-of-way would include a 5-foot-wide landscaped strip and a 4.5-foot-wide sidewalk on each side of the roadway. Exceptions may be made to the sidewalk requirement where adjoining open areas allow space for a parallel pedestrian path. (Transportation Standard 7 [Sidewalks and Landscape Strips])
- The existing driveway entrance to Larkspur Plaza from Magnolia Avenue would be narrowed to provide a more appropriately scaled roadway (Transportation Policy 11). The road system would be designed to discourage through-traffic between East Ward Street and Doherty Drive. This improvement may have joint City and private development participation. (Transportation Policy 18 [Vehicular ingress and egress from Ward Street to Subarea 3])
- The intersection at Doherty Drive/Larkspur Plaza Drive would be improved with traffic lights, changes in roadway paving material, and advanced intersection warning paving. (Transportation Policy 3 [Doherty Drive/Larkspur Plaza Drive Intersection Improvement Standards], Standard 2 [Traffic Lights], Standard 3 [Changes in Roadway Paving Materials], and Standard 4 [Advance Intersection Warning])

The existing regional bikeway shall be upgraded within the Plan area, and connections to the bikeway north of the plan area shall be improved as follows:

- The existing segment of the bikeway north of Ward Street to the Class 1 bikeway along Magnolia Avenue in the vicinity of the Creekside development shall be upgraded to improve safety for bicyclists and pedestrians.
- A new alignment shall be added to connect the bikeway segment on the former Northwest Railroad right-of-way north of Ward Street with the existing Class 1 bikeway along Magnolia Avenue via Larkspur Plaza Drive and the existing bikeway in the Creekside development. (Transportation Policy 20 [North-South Regional Bikeway])

2.4.3 UTILITIES

The Specific Plan includes onsite and offsite requirements for utilities, including sewer, water, and storm drain facilities, consistent with and implementing General Plan policies as noted in Appendix B-2:

- All new utility lines would be installed underground within street rights-of-way or in easements on private property. (Specific Plan Utilities Policy 2 [Undergrounding])
- Sanitary sewer facilities would be upgraded to adequately serve planned development. (Utilities Policy 7 [Sanitary Sewers])
- The existing 32-inch storm drain under East Ward Street would be upgraded to 42 inches. ("Stormwater Drainage" in Specific Plan Chapter 6, Utilities)
- A 42-inch storm drain would be provided under Doherty Drive to serve a major portion of Subarea 3. The storm drain would be located at the easternmost end of the subarea, in the approximate vicinity of the new Piper Park intersection. ("Stormwater Drainage" in Specific Plan Chapter 6, Utilities)
- A detailed drainage plan would be required for the development of Subarea 3 and would ensure that discharge into Larkspur Creek would not exceed existing discharge conditions. (Utilities Policy 10 [Drainage Plan, Subarea 3])
- Discharge of surface pollutants to Larkspur Creek and Corte Madera Creek would be minimized. Planning and design techniques would be implemented to promote stormwater quality protection and would incorporate onsite swales and detention areas in Subarea 3. (Utilities Policy 11 [Pollutants])

2.5 METHODOLOGY AND ASSUMPTIONS FOR THE EIR ANALYSIS

2.5.1 OTHER REQUIRED ACTIONS

If the Specific Plan would be adopted, the following planning actions would be required:

- General Plan amendments (parkland, bike routes, etc.) (see Appendix B)

- Downtown Specific Plan amendments (boundary changes to remove Subareas 1 and 2 from the Downtown Specific Plan)
- Rezone of Subarea (from L-1, Light Industrial, to P-D, Planned Development District)

It is assumed that these actions would take place during the approval process for the Specific Plan.

2.5.2 THEORETICAL MAXIMUM DEVELOPMENT DENSITY AND INTENSITY

The proposed Specific Plan would permit a number of land uses including a range of residential types, retail, business and personal services, hotel/inn, office, cultural/civic, and public parking. The actual development that would occur subsequent to adoption of the Specific Plan would be driven by market forces in effect at the time development projects are proposed; it could include any number of combinations of type, intensity, and density, in compliance with the permitted land use types and development policies contained in the Specific Plan. Because the actual development that could occur in the future is too speculative to predict with any certainty at this time, the theoretical maximum development that could occur under the Specific Plan was defined and used for the project description for purposes of the CEQA analysis. This allows the EIR to disclose a worst-case scenario of future development of the Specific Plan.

For purposes of this environmental analysis, each subarea in the Specific Plan was reviewed to determine the theoretical maximum development density and intensity that could occur based on the policies contained within the Specific Plan. For example, policies within the Specific Plan pertaining to maximum FARs, caps on the amount of a type of development (i.e., office development limited to 20% of the FAR), and preservation of historic structures were assumed in defining theoretical maximum intensity.

Traffic generation is the most variable element of the potential land uses. The permitted land use types within each subarea were reviewed and those uses expected to result in the highest level of traffic generation were assumed to be developed in order to provide the worst case analysis. It is important to note, however, that it is highly unlikely that actual future projects would develop up to the density or intensity depicted in the theoretical maximum development project. A case in point is the existing Larkspur Plaza, which was not developed to the maximum permitted development capacity allowed by the General Plan.

2.5.3 TRAFFIC GENERATION AND TRIP RATES

Traffic generation was considered to be a defining factor in determining the magnitude of potential impacts because of its potential to contribute to regional and offsite circulation, air quality, water quality, noise, and vibration impacts. As shown in Table 2-3, the vehicle trip rates for land uses considered for the worst case analysis are taken directly or based in part on data from the Institute of Transportation Engineers (ITE) *Trip Generation*, 6th Edition (Institute of Transportation Engineers 1997), which is considered an industry standard reference, and from surveys by Wilbur Smith Associates.

Table 2-3 shows a rate for a larger-than-average single-family home (3,000-plus square feet), based on a trip generation survey conducted by Wilbur Smith Associates, transportation consultants, in the city of Corte Madera in May 2002 at Verona Place. The survey found that the sample of 7 large homes located on a cul-de-sac generated peak-hour trips at an overall average rate that was 30% higher than the ITE published rate.

Table 2-3
Summary of Project Vehicle Trip Rates

Land Use	Vehicle Trip Generation Rates		
	A.M. Peak Hour	P.M. Peak Hour	Daily
Large Single-Family Homes* (per unit)	1.10	1.52	14.3
Single-Family Homes (per unit)	0.75	1.01	9.57
Multifamily Homes (per unit)	0.56	0.76	7.18
Cottage Homes (per unit)	0.56	0.76	7.18
Specialty Retail (per 1,000 SF)	1.03	2.59	40.67
Office (per 1,000 SF)	1.56	1.49	11.01
Hotel/Inn (per room)	0.56	0.61	8.23
Community Facilities (per 1,000 SF)	1.32	1.75	22.88

* Trip rates for large single-family home land use obtained from Wilbur Smith Associates.
Source: Institute of Transportation Engineers 1997, except where indicated

ITE does not provide a standard rate for Multifamily Home or Cottage Home, for which the ITE Townhouse rate was used. The Townhouse rate provides a higher-than-expected vehicle trip generation for these uses and represents a conservative approach to trip generation estimates. Within Subarea 3, 25% of the proposed 25 to 35 single-family homes would be less than 3,000 square feet, (Specific Plan Land Use Standard 10A, Unit Size Range), and are analyzed using the standard ITE single-family home trip rate.

2.5.4 DETERMINATION OF MAXIMUM DEVELOPMENT INTENSITY/DENSITY

SUBAREA 1 ASSUMPTIONS

As shown in Table 2-4, Subarea 1 comprises 107,538 square feet of land and presently contains 11,535 square feet of existing retail development. For purposes of this analysis, the entire Nazari property is assumed to be redeveloped. The historic railroad buildings would be required to be retained per Specific Plan Land Use Policy 11 (Railroad Buildings) and are assumed to be incorporated into the redevelopment plan for the site. The City parking lot is assumed to be available for development, although replacement of the existing parking spaces would be required in accordance with Land Use Policy 15 (Replacement Parking). The American Legion hall is assumed to remain pursuant to Land Use Policy 17 (Existing Uses

Encouraged), but similar to the railroad buildings, it is assumed to be incorporated into the redevelopment site design. The total area of the City-owned driveway property is 5,020 square feet. Land Use Policy 16 (Reclaim City-Owned Land) would make a portion of this property available for private development. For purposes of this analysis, it is assumed that 2,280 square feet of the driveway property would be developed. Doherty Park is assumed to remain a City park and is not included in the development assumptions. Under these assumptions, the maximum total new and existing retail development that could be developed to achieve the maximum 0.6 FAR is 58,100 square feet.

Table 2-4
Project Description—Subarea 1

Subarea Properties (Common Names)	Land Area		Building Floor Area @ 0.8 FAR[1]					
			Commercial			Hotel		Total Building Square Feet
	Square Feet	Acres	Existing	New	Total	Floor Area Square Feet	Rooms	
A. Nazari	63,064 [2]		6,880					
B. City Parking Lot	19,600							
C. American Legion	10,180		4,655					
D. Driveway Property	5,020 [3]							
E. Doherty Park	9,674							
Subarea 1 total	107,538	2.5	11,535	46,565	58,100	18,000	36	76,100

Notes:

(1) For purposes of analyzing this alternative, the FAR calculations are based on the total land area of the Nazari property, City parking lot, American Legion hall, and 2,280 square feet of the City-owned driveway property.

(2) The total area of the Nazari parcel is 66,789 square feet. A portion of this parcel, 3,725 square feet, is outside of the Specific Plan boundaries, and the remaining 63,064 square feet is inside the Specific Plan boundaries. The portion that is outside of the Specific Plan area lies in and south of the East Ward Street right-of-way.

(3) The total area of the City-owned driveway property is 5,020 square feet. Specific Plan Land Use Policy 16 (Reclaim City-Owned Land) would make a portion of this property available for private development. For purposes of estimating development potential, it assumed that up to 2,280 square feet of the driveway property could be made available for private development.

Specific Plan Land Use Standard 2 (FAR Bonus) provides an incentive of an additional 0.2 FAR for development of a hotel/inn on the site. This EIR analysis assumes development of a 36-room hotel on the site. The total development assumed is 76,100 square feet as shown in Table 2-4, composed of 58,100 square feet of retail and a 36-room hotel.

SUBAREA 2 ASSUMPTIONS

It is assumed for this analysis that the existing uses in Subarea 2 would continue, and only the *new* retail and residential use permitted to achieve the maximum FAR for this subarea is analyzed. Because the Albertsons is relatively new, it is anticipated that this use would remain in operation for some time. It is also assumed that the gas station would remain, because the Specific Plan (Land Use Policy 25 [Service Station Encouraged]) states that it is the City's policy to encourage its continued operation and because it is the only such facility providing local service to Downtown Larkspur and residents of central Larkspur neighborhoods. Further, the existing Albertsons and gas station, combined with the 4,500 square feet of new retail and 19

residential units would represent the maximum development capacity for the site (Table 2-5). Of the permitted uses, retail development would result in the highest trip generation rate (see Table 2-3) and that is the use assumed for the new 4,500 square feet of commercial development. Redevelopment to other uses permitted in the Specific Plan would not be expected to result in higher trip generation than the vehicle trips that are already being generated by the existing Albertsons and gas station. These trips are reflected in the existing conditions for the area.

Table 2-5
Project Description—Subarea 2

Subarea Properties (Common Names)	Land Area		Building Floor Area						
	Square Feet	Acres	Existing	New	Floor Area @ 0.4 FAR	Floor Area w/ 0.2 FAR/Housing Bonus		Totals	
						Bonus Floor Area	Units	Floor Area [1]	Units [1]
A. Gas Station Proper	24,550		3,770	0 [2]	9,820 [3]	0	0	9,820	0
B. Larkspur Plaza	96,300		34,100	4,500 [4]	38,520	**19,260**	19	57,780	19
Subarea 2 total	120,850	2.7	37,870	4,500 [4]	48,340 [3]	19,260	19	67,600	19

Notes:
[1] Projected total development consists of 67,600 square feet of commercial and residential floor area. This total consists of 48,340 square feet of commercial and 19,260 square feet of affordable housing. The housing units are assumed to be approximately 1,000 square feet in floor area, for a total of 19 units.
[2] The Specific Plan allows for up to 9,820 square feet of commercial development; however, the existing 3,770 square feet of gas station would generate more traffic volume than the commercial development allowed. Based on ITE's Trip Generation (1996), gasoline/service station had a vehicle trip rate of 168.56 per day (12.27 a.m. peak, 14.56 p.m. peak). Specific Plan Land Use Policy 25 (Service Station Encouraged) also states that the City encourages continued operation of the existing motor vehicle service station.
[3] These numbers represent maximum development per the FAR allowance; however, they do not represent development that would generate maximum traffic volume.
[4] The Specific Plan allows up to 4,420 square feet of new commercial development. For a conservative estimate in the EIR analysis, 4,500 square feet of new commercial development is assumed.

SUBAREA 3 ASSUMPTIONS

Assumptions regarding the use of Subarea 3 under the Specific Plan are as shown in Table 2-6.

Table 2-6
Project Description—Subarea 3

Subarea Property (Common Name)	Land Area		Development				
	Square Feet	Acres	Public Park (acres)	Single Family Detached units <3,000 square feet	Single Family Detached units >3,000 square feet	Cottage Units	Multifamily Units
Niven Nursery	731,808	16.8	0.9	7 [1]	28 [1]	23	27

Notes: [1] Per the Specific Plan, up to 75% of the single-family detached units may be greater than 3,000 square feet.

2.5.5 THEORETICAL DEVELOPMENT SCENARIO CONSIDERED THE "PROJECT" IN THIS REVISED DRAFT EIR

Table 2-7 shows the maximum development intensity/density for the permitted land use expected to result in the highest trip generation. This is the theoretical development scenario that is considered the "project" for purposes of analysis in this Revised Draft EIR.

Table 2-7
Theoretical Maximum Intensity in Development Subareas

	Subarea 1	Subarea 2	Subarea 3
Single-Family (<3,000 square feet) (units)	0	0	7
Single-Family (>3,000 square feet) (units)	0	0	28
Multifamily Residential (units)	0	19	27
Cottage Residential (units)	0	0	23
Hotel/Inn (rooms)	36	0	0
Retail (square feet)	58,100	4,500	0
Source: Wilbur Smith Associates 2003			

2.5.6 CUMULATIVE IMPACT ANALYSIS METHODOLOGY

This EIR provides an analysis of cumulative impacts that may result from the implementation of the Specific Plan, as required by §15130 of the Guidelines. Cumulative impacts are defined in Guidelines §15355 as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." A cumulative impact occurs from "the change in the environment, which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time" (Guidelines §15355[b]).

Consistent with Guidelines §15130(a), the discussion of cumulative impacts in this EIR focuses on significant and potentially significant cumulative impacts. Guidelines §15130(b), in part, provides the following:

> The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.

PROJECTS CONTRIBUTING TO POTENTIAL CUMULATIVE IMPACTS

The Guidelines identify two basic methods for establishing the cumulative environment in which a project is to be considered: the use of a list of past, present, and reasonably anticipated future projects or the use of adopted projections from a general plan or other regional planning document. For this EIR, both the list and the plan approach are used. The plan approach is used in Sections 4.6, Air Quality, 4.7, Traffic and Circulation, and others in which impacts are analyzed based on past and future population growth, which is estimated based on General Plan buildout, or city-wide policies of the General Plan. For example, the cumulative traffic impacts are based on the *Citywide Traffic Study*, which in turn is based on buildout of the city in accordance with the General Plan.

The list approach applies for all sections, in which impacts are related to the locations of past, present, and future development projects in the city. Past projects are the existing land uses in the city. The City has identified the following list of known present and probable future projects not including remodels of existing homes, new dwellings to replace existing homes, or single family homes on vacant lots, of which the city averages only one or two a year in the vicinity of the Specific Plan area. These projects, which are included in the list approach, are described below (Kaufman, pers. comm., 2003).

West of U.S. Highway 101 (U.S. 101)

- 1251 South Eliseo: Conversion of a convalescent home to a women's shelter. A traffic study completed for the project concluded that there would be no impacts on traffic (Present-approved, not yet occupied).

East of U.S. 101 (on East Sir Francis Drake Boulevard)

- Drakes Cove/Drakes Landing: 47 single-family/multifamily detached units, immediately east of Larkspur Landing (Present-Zoning approved; tentative map in process).
- An application has also been filed for the development of the sanitary district property adjacent to Drakes Cove for a hotel and office complex. The draft EIR for this project has not been released and the project is being redesigned as a hotel and multifamily housing development (Present).

3 EXECUTIVE SUMMARY

3.1 INTRODUCTION

This Revised Draft Environmental Impact Report (EIR) evaluates the potential environmental impacts that may be associated with the implementation of the Central Larkspur Specific Plan (Specific Plan) by the City of Larkspur (City). The Revised Draft EIR is intended to "identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided" (California Environmental Quality Act (CEQA), Public Resources Code [CEQA] 21002.1(a)).

An EIR is meant to provide an objective, impartial source of information to be used by the lead agency and members of the public in their considerations of the project. The EIR itself does not determine whether or not the project will be approved, but only serves as an informational document in the local planning and decision-making process.

This document has been prepared as a "program" EIR, rather than as a more detailed "project" EIR. The Specific Plan does not propose any individual projects, but instead provides a framework for future development within the Specific Plan area. Because of the Specific Plan's general (rather than project-specific) focus, the use of a "program" EIR is appropriate in reviewing the environmental impacts that may be associated with implementation of the Specific Plan. Although the Specific Plan establishes density ranges for future development, setback requirements, and dedication and/or fee requirements, site-specific details of future development projects are largely unknown at the present time. For this reason, this evaluation of the environmental impacts that may be associated with implementation of the Specific Plan is necessarily more general than one would expect in an EIR that focuses on a specific development projects. Individual development projects that are proposed will require additional, site-specific environmental review beyond that provided in this document.

3.2 SITE LOCATION AND DESCRIPTION

The Specific Plan area is located in central Larkspur (Exhibit 2-1 in Section 2, Project Description); portions of the Specific Plan area lie within, adjacent to, and northeast of downtown Larkspur (Exhibit 2-2). The Specific Plan encompasses a 22-acre rectangular-shaped area of relatively flat land that is bordered by Magnolia Avenue on the west; East Ward Street, Meadowood Drive, and Larkspur Creek on the south; Larkspur Creek on the east; and Doherty Drive on the north. The entire Doherty Drive right-of-way, from Magnolia Avenue east to the city limit (5.58 acres), is also included in the Specific Plan area. Doherty Drive is bordered by Mt. Tamalpais Racquet Club, Hall Middle School, Piper Park, and residential development on the north, and by Redwood High School, Tamalpais High School District facilities on the south, and the rest of the Specific Plan area.

3.3 PURPOSE OF AND NEED FOR THE PROJECT

Under California law (Government Code §65450 et seq.), a city or county may use the mechanism of a specific plan to enact specific regulations, programs, and legislation to help achieve goals expressed in its adopted General Plan. The draft Specific Plan was prepared to facilitate the development of the approximately 16.8 acres formerly used for the Niven wholesale nursery operation and additional underdeveloped area to the west of the Niven property. The Specific Plan is based on a firm policy position established in the Larkspur General Plan and the Downtown Larkspur Specific Plan. The Central Larkspur Specific Plan has six proposed goals that define the plan's overall purpose and provide general direction for formulating policies and objectives:

- **Goal 1: Land Use.** Develop the Specific Plan area as an integrated and cohesive mixed-use neighborhood that provides a focal point and activity center for Downtown and serves as a transition to the surrounding community. The majority of the land area will be in low-density residential use compatible with the surrounding community. Provide sufficient open space to preserve and enhance environmental resources and serve as a community amenity.

- **Goal 2: Transportation.** Create a pedestrian friendly environment, minimize traffic impacts, and promote alternative modes of transportation by balancing the density, intensity, and mix of land uses. Provide a system of traffic improvements, safe, direct, and attractive bicycle and pedestrian routes, and adequate parking.

- **Goal 3: Housing.** Develop the area as a predominantly low-density residential neighborhood emphasizing a range and diversity of housing types, perceived scales and density. Encourage a range of housing affordability, including housing affordable to low- and moderate-income households and senior citizens.

- **Goal 4: Community Design.** Design the area and individual buildings to complement and respect Larkspur's small town character and our historic Downtown. The scale and design of residential development should be similar to that in the Heather Gardens, Monte Vista, and the Baltimore Park neighborhoods. The design should emphasize a variety of building sizes, scales and architecture. The design should be pedestrian friendly, and have a strong landscape character. The design should integrate the three subareas of the Specific Plan area.

- **Goal 5: Utilities.** Provide for the distribution, location, extent, and intensity of adequate public and private transportation, sewage, water, drainage, solid waste disposal, energy, and other essential facilities to support the land uses described in the Specific Plan. Private development shall pay for utility improvements required to service new growth.

- **Goal 6: Planning.** Provide a clear plan for implementing the community's goals for the Central Larkspur Specific Plan area. The implementation plan shall include

regulations, programs, public works projects, and financing measures to achieve the distribution and location of land uses, including open space, described in the Specific Plan. The Specific Plan will also provide implementation measures for the housing, transportation, community design, and utility goals of the plan.

3.4 PROJECT OVERVIEW AND COMPONENTS

The Specific Plan proposes a mixed-use development area with retail, recreation, cultural, civic, and residential uses that would contribute to the vitality of the Downtown area, combining current land uses with new development. Subarea 1 consists of five properties fronting on Magnolia Avenue and East Ward Street in the southwest portion of the Specific Plan area, encompassing the historic railroad structures and adjacent commercial buildings, a City park, an access driveway to Larkspur Plaza, a City-owned parking lot, and the American Legion hall. Subarea 2, which fronts on Doherty Drive near Magnolia Avenue, has existing commercial establishments including Albertsons supermarket and a gas station. Subarea 3 consists of the Niven property. The Doherty Drive right-of-way is included within the Specific Plan boundaries but is not developable for any other use and thus is not included within the development subareas Other planning and site improvements would be required and are described below. A number of land uses are permitted in each of the subareas, as described in the Specific Plan and regulated by the City Zoning and Subdivision Ordinance. These land uses are summarized below.

SUBAREA 1

Principal permitted land uses in Subarea 1 include multifamily residential, retail sales, business and personal services, hotel/inn, office, cultural/civic, and public parking. Total development intensity, exclusive of parking, would not be permitted to exceed a floor area ratio (FAR) of 0.6 (for a maximum of 28 residential units); however, the Specific Plan offers additional development capacity (FAR of 0.8) as an incentive to encourage development of a hotel/inn in Subarea 1. Building coverage would not exceed 40% of the site area.

Doherty Park would remain in its current condition and the American Legion hall would be retained. The two one-story commercial buildings on the Nazari property would be permitted to be demolished to accommodate construction of new buildings and facilities. The former railroad station and warming house would remain in their present location, and provisions would be made to protect their historic value. Open space, sized and designed to accommodate community-oriented activities, would be provided adjacent to the two preserved railroad buildings to provide an appropriate setting for these historic structures. A new bikeway and footpath alignment would be added to connect the bikeway segment on the former Northwestern Pacific Railroad right-of-way with the existing bikeway along Magnolia Avenue via Larkspur Plaza. The existing access driveway to Larkspur Plaza from Magnolia Avenue would remain, but the driveway entrance would be narrowed. The City parking lot at East Ward Street and Magnolia Avenue would remain, or would be improved.

SUBAREA 2

Permitted uses in Subarea 2 would include retail sales, business and personal services, office, and residential. A FAR of 0.4 would be allowed in this area. An additional 4,500 square feet of retail or personal services space could be added to the west side of the Albertsons building if the supermarket's loading dock were removed. Additional floor area, not to exceed a FAR of 0.2, would be conditionally permitted for residential space meeting the City's definition of affordable housing. A maximum of 19 multifamily residential units would be permitted. Office space is limited to 20% of the total floor area. The continued operation of the service station would be encouraged.

SUBAREA 3

Permitted land uses would be limited to residential, community facilities for the residents, and public-serving parking, as well as a public park. Between 25 and 35 single-family homes would be constructed; a minimum of 25% of the units would have a floor area of 3,000 square feet or less. Between 23 and 33 cottage homes ranging from 850 to 1,980 square feet would be constructed. Dedication of approximately 0.9 acre would be required to satisfy the General Plan park designation and the City's Park and Recreation Land and Fees Ordinance.

A 1.2- to 1.5-acre site would be made available for purchase for the purpose of construction of up to 27 units of low- and moderate-income housing (limited to very low-, low-, and moderate-income tenants). Between 40% and 50% of these units would be restricted to households in which one or more of the residents is 62 years of age or older. Priority for eligibility would be given to households with one or more persons employed within a 5-mile radius. If the multifamily housing site were developed as affordable housing, up to 85 residential units may be developed in Subarea 3. If not, then up to 70 units (10%, or seven, of them affordable units) may be built.

An open-space buffer would be provided along Larkspur Creek. The buffer would be at least 50 feet wide from the top of bank on the north/south reach of the creek, and at least 25 feet wide from the top of the bank on the east/west reach. No building and no impervious surface (except bikeways and footpaths) would be located within the open-space buffer. A public park would be provided and community-service space may be built, primarily for the use of residents of Subarea 3.

Aside from the requirements stated in the goals, policies, and standards of the Specific Plan, other actions would be required before development may occur within Subarea 3, include the following:

- Removal Action Workplan (RAW) for contaminated soils (lead, arsenic, DDT) in Subarea 3 (ENSR, International 2002)

- Soil surcharge in Subarea 3 to precompress the underlying Bay Mud, engineered fill for upper three feet of existing fill materials in Subarea 3, and treatment of corrosive soils in Subarea 3 (Harza Engineering Company 1998a) (Appendix C-1)

3.5 PROJECT BACKGROUND

The *Draft Central Larkspur Specific Plan* (2001 Draft Specific Plan) (City of Larkspur 2001) was prepared by Thomas Cooke Associates for the City in June 2001 in order to facilitate the redevelopment of 22 acres adjacent to downtown Larkspur. The *Draft Central Larkspur Specific Plan Draft Environmental Impact Report* (previous Draft EIR) (City of Larkspur 2002) was subsequently prepared by Lamphier-Gregory for the City in conformance with CEQA §21000 et seq., as amended, and the State CEQA Guidelines §15000 et seq., and was based on the project description, goals, and policies described in the 2001 Draft Specific Plan.

In June 2002, the previous Draft EIR was circulated for a 45-day review period. A number of substantive comments were received; based on this input, it was determined that the 2001 Draft Specific Plan and the previous Draft EIR would be revised and updated as appropriate and recirculated pursuant to Guidelines §15088.5(f)(1).

The City has revised the previous Draft EIR to reflect the revised Specific Plan and recirculated this Revised Draft EIR under Guidelines §15087 because significant new information was added to the EIR after public notice was given of the availability of the previous Draft EIR for public review but before the document was certified.

In accordance with the Guidelines, a Notice of Preparation (NOP) of the revised Draft EIR was distributed on April 2, 2003, to public agencies and organizations, as well as to private organizations and individuals with a possible interest in the Specific Plan. The purpose of the NOP is to provide notification that the City plans to prepare an EIR and to solicit input on the scope and contents of the EIR. Two comment letters were received in response to the NOP. The NOP and the comment letters are included in Appendix A of this Revised Draft EIR.

3.6 SCOPE AND CONTENT

This Revised Draft EIR augments and updates the previous analysis and focuses on the environmental impacts identified as potentially significant, based on results from the City's scoping process, including the comment received in response to the NOP, and based on comments received in response to the circulation of the previous Draft EIR. This Revised Draft EIR includes and incorporates text, exhibits, and reference documents from the previous Draft EIR, where appropriate. The environmental issues evaluated in this Revised Draft EIR are the following:

- Land Use and Planning
- Population and Housing
- Geology and Soils
- Hydrology and Water Quality

- Biological Resources
- Air Quality
- Traffic and Circulation
- Noise
- Public Services and Utilities
- Visual Quality and Aesthetics
- Historical, Cultural, and Archaeological Resources
- Hazards and Hazardous Materials

3.7 IMPACTS, MITIGATION MEASURES, AND UNAVOIDABLE SIGNIFICANT IMPACTS

In accordance with Guidelines §315123, a summary of the impacts of the Specific Plan is provided in Table 3-1 at the end of this section. Also provided in Table 3-1 are mitigation measures that are recommended to bring, wherever feasible, impacts of the Specific Plan to within identified thresholds of significance. Finally, the table indicates whether implementation of the recommended mitigation measures can reduce impacts to less-than-significant levels.

A majority of the significant or potentially significant impacts of the Specific Plan would be reduced to less-than-significant levels; however, as described in Chapter 5, Other CEQA-Mandated Sections, and Chapter 6, Alternatives, the following impacts would remain significant and unavoidable after implementation of the identified mitigation measures for the Proposed Project, the Low Density alternative, and the Residential Focus alternative.

- Impact 4.11-3: Potential Alteration of or Other Effects on Historical Resources
- Impact 4.11-5: Possible Discovery of Human Remains

In addition, cumulative growth in Marin County, and in the City of Larkspur, would result in cumulative impacts on cultural resources and consequent loss of those resources throughout the region if cumulative growth would also result in the damage or destruction of historic and archaeological resource, as well as of unknown archaeological resources, such as human remains. The impact caused by the loss of these sites is considered significant and unavoidable.

3.8 PERMITS AND OTHER APPROVALS THAT MAY USE THIS EIR TO IMPLEMENT THE PROJECT

The first set of approvals that will be considered by the Planning Commission and City Council will include amendments to the General Plan and the Downtown Specific Plan, adoption of the Specific Plan, and rezoning of Subarea 3 to Planned Development District, with the adoption of the Specific Plan as the Preliminary Development Plan. These actions are just the first steps in a chain of contemplated City actions that will guide the ultimate development of the Specific Plan area. Subsequent City entitlements must be granted and other actions must occur before site development. The information included in this EIR will be used by the City and other regulatory agencies in deciding whether to grant permits or approvals necessary to construct and operate proposed projects.

3.9 ALTERNATIVES TO THE PROPOSED PROJECT

Guidelines §15126.6(a) requires that an EIR include a comparative evaluation of the proposed project with alternatives to the project that are capable of attaining most of the project's basic objectives. CEQA requires an evaluation of a "range of reasonable" alternatives. The "Proposed Project" analyzed in this Revised Draft EIR was based on the theoretical maximum density and intensity of land use that could be developed on the Specific Plan area given the policies in the proposed Specific Plan. As discussed in Chapter 6, Alternatives to the Proposed Project, the following three alternatives to this "Proposed Project" were considered:

- *The No Project Alternative* is required by CEQA. Under this alternative, the Subarea 3 of the Specific Plan area would remain much as it is today. New commercial and residential uses that are consistent with the City's General Plan and the Larkspur Downtown Specific Plan may occur in Subarea 1 and Subarea 2. There would be no significant and unavoidable impacts under this alternative.

- *The Low Density Alternative* is designed to enable development within the Specific Plan area at residential and commercial retail densities considerably lower than anticipated under the Proposed Project, while meeting the City's objectives for a mix of land uses and including a community center, hotel/inn, and a mix of housing types. This alternative would have the same number of significant and unavoidable impacts as the Proposed Project.

- *The Residential Focus Alternative* is designed to maximize residential development within the Specific Plan area by providing for residential densities higher than anticipated under the Proposed Project while retaining a mix of land uses. Similar to the Proposed Project, this alternative does not include a community center. This alternative would have the same number of significant and unavoidable impacts as the Proposed Project.

3.10 EVALUATION OF ALTERNATIVES AND IDENTIFICATION OF THE ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Guidelines §§15126.6(e)(1), 15126.6(e)(2) state that the EIR shall identify an "environmentally superior" alternative based on the comparative analysis among project alternatives (but not including the No Project Alternative).

Impacts of each of the alternatives were compared to those of the Proposed Project to assess for lesser, similar or greater impacts (see Table 6-5 in Section 6, Alternatives). Based on this comparisons, the No Project Alternative would be regarded as the environmentally superior alternative; however, the No Project Alternative meets none of the objectives of the Specific Plan, would not help the City to meet its fair share of the regional housing need, and would not add to the supply of housing that might be available for those in the local workforce.

When the No Project Alternative has been identified as the environmentally superior alternative, CEQA requires that an additional alternative be identified as the environmentally

superior alternative in the absence of the No Project Alternative. Because the Low Density Alternative would result in reduced number and severity of impacts, it would be regarded as the environmentally superior alternative in the absence of the No Project Alternative. However, this alternative would make less of a contribution toward helping the City to meet its fair share of the regional housing need than would either the Proposed Project or the Residential Focus Alternative.

3.11 AREAS OF CONTROVERSY/ISSUES TO BE RESOLVED DURING ENVIRONMENTAL REVIEW

As mentioned above, in June 2002 the previous Draft EIR was circulated for a 45-day review period. A number of substantive comments were received on the previous Draft EIR stating concerns about various issues, most notably traffic levels, protection of biological resources, and cultural resources/community character and opportunities for environmental review of individual development projects. Based on this input, the City has revised the 2001 Draft Specific Plan and recirculated this Revised Draft EIR, which, where possible, addresses the concerns addressed in the comments on the previous Draft EIR. The City will not individually respond to those comments received during the earlier circulation period, and requests that reviewers submit new comments on the Revised Draft EIR. The City will respond to all comments received during the recirculation period.

TABLE 3-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.1 LAND USE AND PLANNING			
4.1-1: Potential Inconsistency with Policies of Larkspur General Plan	LTS	No mitigation is necessary for this impact.	N/A
4.1-2: Potential Inconsistency with Larkspur Downtown Specific Plan	LTS	No mitigation is necessary for this impact.	N/A
4.1-3: Potential Incompatibility of Future Development Projects with Onsite and Surrounding Land Uses	LTS	No mitigation is necessary for this impact.	N/A
4.1-4: Potential Conversion of Farmland to Nonagricultural Use, Conflict with Existing Zoning for Agriculture, or Conflict with a Williamson Act Contract	LTS	No mitigation is necessary for this impact.	N/A
4.2 POPULATION AND HOUSING			
4.2-1: Inducement of Substantial Population Growth	LTS	No mitigation is necessary for this impact.	N/A
4.2-2: Displacement of Existing Housing or Population	LTS	No mitigation is necessary for this impact.	N/A
4.3 GEOLOGY AND SOILS			
4.3-1: Increased Exposure to Strong Seismic Ground Shaking	LTS	No mitigation is necessary for this impact.	N/A
4.3-2: Potential for Seismic-Related Ground Failure, Including Liquefaction	LTS	No mitigation is necessary for this impact.	N/A

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.3-3: Soil Erosion During Construction Activities	PS	***Prepare and Implement Stormwater Pollution Prevention Plan*** The City shall include the following new policy in the Specific Plan. **New Policy:** To reduce the potential for impacts on Larkspur and Corte Madera Creeks from soil erosion caused by grading and other construction activities, the developer for either public or private projects shall prepare an Erosion Control Plan for any construction activity, including those that involve less than one acre of disturbance area, to control the potential for stormwater to erode site soils and cause them to enter the creeks. The plan, which shall be in the form of a SWPPP, shall be reviewed and approved by the City and the San Francisco Bay Regional Water Quality Control Board (RWQCB) prior to the issuance of construction permits and shall be implemented during construction activities and for the next rainy season following completion of construction. The Erosion Control Plan shall comply with the City's Grading Ordinance and shall include, but shall not be limited to, the following measures: ‣ Grading/earthmoving shall not occur during the rainy season (October 15–March 15). Should construction proceed during or shortly after wet-weather conditions at any time of year, the geotechnical engineer in the field at the time of grading/earthmoving shall provide specific wet-weather grading/earthmoving recommendations.	LTS

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		▸ A vegetated buffer shall be protected during grading/ earthmoving next to Larkspur Creek. This buffer shall be at least 50 feet wide from the top of the bank on the north/south reach of the creek at the eastern edge of the Specific Plan area, and at least 25 feet wide from the top of bank on the east/west reach of the creek at the southern edge of the Specific Plan area. The conditions of all development permits within Subarea 3 and all subsequent grading permits shall both specify that before the start of any grading, orange barrier fencing shall be installed at the outer edge of the protected buffer area. The fencing shall be maintained until all construction activities have ceased. No construction activity, including the storage of construction materials, or vehicles staging or maneuvering, shall be permitted in the buffer area. ▸ Silt fencing and straw bales shall be used along Larkspur Creek to trap any silt flows from unvegetated ground.	
4.3-4: Damage to Onsite Foundations and Other Structures Caused by Soil Compressibility and Secondary Consolidation Settlement.	LTS	No mitigation is necessary for this impact.	LTS

TABLE 3-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.3-5 a and b: Damage to Underground Utilities Caused by Corrosive Soils.	PS	***(a) Implement Mitigation Measure*** The City shall implement Mitigation Measure 4.3-4, Submit Geotechnical Testing and Engineering Design Report, to mitigate the potential for damage to underground utilities from corrosive soils. ***(b) Backfill with Noncorrosive Soil and Use Corrosion-Resistant Materials*** The City shall include the following new policy in the Specific Plan. **New Policy:** Utility line excavations shall be backfilled with noncorrosive soil backfill materials or pipelines shall be constructed of corrosion-resistant materials.	LTS
4.3-6: Destabilization of Excavations and Trenches	LTS	No mitigation is necessary for this impact.	N/A
4.3-7: Potential for Surface Fault Rupture	LTS	No mitigation is necessary for this impact.	N/A
4.3-8: Exposure to Landslides	LTS	No mitigation is necessary for this impact.	N/A
4.3-9: Loss of Topsoil	LTS	No mitigation is necessary for this impact.	N/A
4.3-10: Potential Expansion of Clay Soils	LTS	No mitigation is necessary for this impact.	N/A
4.4 HYDROLOGY AND WATER QUALITY			
4.4-1: Potential Hazards from Tidal Flooding or Stormwater Flooding	LTS	No mitigation is necessary for this impact.	N/A

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.4-2: Increased Flood Hazards to Downstream Areas from Rainfall Runoff	LTS	No mitigation is necessary for this impact.	N/A
4.4-3: Exceedance of Capacity of Existing Onsite or Adjacent Drainage System	LTS	No mitigation is necessary for this impact.	N/A
4.4-4: Resource Degradation Resulting from Contribution of Sediments or Contaminants to Freshwater or Wetland Areas.	PS	***Implement MM 4.3-3*** The City shall include the following new policy in the Specific Plan. **New Policy:** The City shall require implementation of Mitigation Measure 4.3-3, Prepare and Implement SWPPP, to reduce the contribution of sediments or contaminants to freshwater and wetland areas.	LTS
4.4.5: Temporary Lowering of Groundwater Table and Potential Increase in Salinity	PS	***Implement Groundwater Testing Program in Conjunction with Dewatering*** The City shall include the following new policy in the Specific Plan. **New Policy:** A groundwater testing program shall be implemented in conjunction with any dewatering of the Specific Plan area. This program shall include measures to ensure that dewatering for construction will not result in salinity intrusion. Any water removed during dewatering shall be stored and tested for residual contamination consisting of metals or chlorinated pesticides before disposal.	LTS

TABLE 3-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.4-6: Degradation of Groundwater Quality	PS	***Implement Mitigation Measures 4.4-3 and 4.4-5*** The City shall include the following new policy in the Specific Plan. **New Policy:** The City shall require implementation of Mitigation Measure 4.4-3, Prepare and Implement SWPPP, and Mitigation Measure 4.4-5, Implement Groundwater Testing Program in Conjunction with Dewatering, for all development in the Specific Plan area in order to reduce the increase in pollutants conveyed to the groundwater table to a less-than-significant level and ensure that site dewatering for construction will not result in groundwater quality impacts.	LTS
4.5 BIOLOGICAL RESOURCES			
4.5-1: Loss of Habitat for Common Plant and Wildlife Species	LTS	No mitigation is necessary for this impact.	N/A
4.5-2a and b: Effects on Larkspur Creek	PS	***(a) Protect Sensitive Salt Marsh Habitat Associated with Larkspur Creek*** The City shall include the following new policies in the Specific Plan to protect and enhance habitat on the banks of Larkspur Creek and in the buffer area. **New Policy:** The developer of Subarea 3 shall prepare and the City shall approve a native plant restoration plan for upland habitat for the Larkspur Creek buffer area. The restoration plan shall be developed by a qualified restoration ecologist, and shall include the following components: proposed methods to eliminate	LTS

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		non-native, invasive species; a native plant planting and irrigation plan that considers and is compatible with any water treatment and stormwater detention ponds; a description of a proposed monitoring schedule; and performance standards to ensure that the restoration effort is successful. Target species for removal shall include French and Spanish broom, oleander, Himalayan blackberry, pampas or jubata grass, and fennel. Recommended replacement species include but are not limited to arroyo and Pacific willow, coyote bush, native bunchgrasses, toyon, and coast live oak. Implementation of the native plant restoration plan shall be a condition of day project approvals in Subarea 3. Monitoring reports prepared by a qualified restoration ecologist shall be submitted to the City annually for 5 years. The first report shall be due to the City 12 months following the start of implementation of the restoration plan. **New Policy:** To minimize soil erosion and other secondary impacts on wildlife by pedestrians and cyclists, no bikeways or footpaths will be constructed within the Larkspur Creek buffer area. Permanent fencing designed to discourage people and their pets from entering restored habitat in the buffer area shall be installed along the outside edge of the buffer. **New Policy:** Less than 12 months following the start of implementation of the restoration plan, signage that includes interpretive displays shall be posted on	

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		bikeways and footpaths alerting visitors to the nearby sensitive habitat and explaining the importance of protection of these areas. Signs shall also be posted requiring that all dogs be on leashes and kept out of the setback area. ***(b) Implement Mitigation Measure 4.3-3*** The City shall implement Mitigation Measure 4.3-3, Prepare and Implement an Erosion Control Plan.	
4.5-3: Effects on Terrestrial Special-Status Species	LTS	No mitigation is necessary for this impact.	N/A
4.5-4: Effects on Special-Status Fish	LTS	No mitigation is necessary for this impact.	N/A
4.5-5: Effects on Fish and Wildlife Movement	LTS	No mitigation is necessary for this impact.	N/A
4.6 AIR QUALITY			
4.6-1: Conflicts with the Clean Air Plan	LTS	No mitigation is necessary for this impact.	N/A
4.6-2: Obstruction of Implementation of the Clean Air Plan	LTS	No mitigation is necessary for this impact.	N/A
4.6-3: Violation of Air Quality Standards	PS	***Permit Residential Installation of Natural Gas or Pellet Burning Fireplace Appliances Only*** The City shall include the following new policy in the Specific Plan. **New Policy:** The City shall prohibit residential wood burning appliances and fireplaces and shall permit only natural gas or pellet burning fireplace appliances as a	LTS

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		condition of approval of all planned development permits for residential construction. This measure effectively eliminates more than 90% of ROG emissions, thus mitigating emissions below the level of significance. Natural gas and pellet residential heating stove emissions are almost PM10 free; thus, wood smoke impacts would be eliminated. This measure would also control PM10 emissions and avoids contributing to existing violations of the 24-hour and annual PM10 standards. CO and TACs from combustion would also be almost completely eliminated by this measure.	
4.6-4: Health Threats from Potential Construction-Related Release of Asbestos and Lead.	PS	***Implement Mitigation Measure 4.12-2*** The developer shall implement Mitigation Measure 4.12-2, Implement a Demolition Plan, described in Section 4.12, Hazards and Hazardous Materials.	LTS
4.6-5a and b: Substantial Emissions of Dust and Diesel Exhaust During Construction.	PS	***(a) Implement Control Measures to Control Dust that Includes PM10 from Construction Activities*** The City shall include the following new policy in the Specific Plan. **New Policy:** The City shall condition all future development permits to require implementation of effective and comprehensive dust control measures. Implementation of feasible controls, outlined below, can substantially reduce construction PM_{10} emissions. Construction activities are also subject to BAAQMD Regulation VIII, which requires suppressing dust	LTS

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		emissions from all sources of dust generation using water, chemical stabilizers, and/or vegetative ground cover. Implementing fugitive dust control measures can greatly reduce adverse impacts. According to BAAQMD, estimating the amounts of construction dust from a particular project is at best imprecise. The air district prefers to evaluate construction dust significance by project size and proximity to sensitive receptors. Potential adverse impacts then determine which control measures will be implemented. The Specific Plan area is near existing sensitive receptors (residences, schools) and would thus need the most stringent control measures recommended by the BAAQMD. These measures, stated below, would reduce construction dust to the maximum extent feasible (by 70% or more). Therefore, the construction contractor shall implement all of the following measures: 1. Water all active construction areas at least twice daily and more often during windy periods. Active areas adjacent to residences should be kept damp at all times. 2. Cover all hauling trucks or maintain at least 2 feet of freeboard. Pave, apply water at least twice daily, or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas. 3. Sweep daily (with water sweepers) all paved access	

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		roads, parking areas, and staging areas. Sweep adjacent streets daily (with water sweepers) if visible soil material is deposited onto the road surface. 4. Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (previously graded areas that are inactive for 10 days or more). 5. Enclose, cover, water twice daily, or apply (nontoxic) soil binders to exposed stockpiles. 6. Limit traffic speeds on any unpaved roads to 15 mph. 7. Install sandbags or other erosion control measures to prevent silt runoff to public roadways. 8. Replant vegetation in disturbed areas as quickly as possible. 9. Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the construction site. 10. Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph. 11. Designate an air quality coordinator for the project. Prominently post a phone number for this person on the job site, and distribute same to all nearby residents and businesses. The coordinator will respond to and remedy any complaints about dust, exhaust, or other air quality concerns. A log shall be kept of all complaints and how and when the problem was remedied.	

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		(b) Implement All Feasible and Reasonable Control Measures to Reduce Construction Activity TACs. The City shall include the following new text and policy in the Specific Plan. **Text:** Diesel exhaust is a major source of fine particles, as well as more than 40 substances that are listed as hazardous pollutants. The BAAQMD CEQA Guidelines recognize use of alternatively fueled construction equipment as an effective mitigation. Low-emission fuels are currently available to minimize construction equipment TAC emissions. Engine tuning and control equipment retrofit would help minimize emissions of NO_X that contributes to PM_{10} and $PM_{2.5}$. 100% biodiesel fuel, called B100, reduces TAC emissions by approximately 80% to 90%. Ultra-low sulfur fossil diesel fuel (less than 15 ppm by weight) also significantly reduces PM_{10}. Oxidation catalysts or catalytic particulate filters are now available for many types of diesel equipment. These systems require biodiesel or CARB ultra low-sulfur diesel fuel. These systems in combination with ultra-low sulfur diesel can reduce emissions of fine particulates and toxic hydrocarbons by 90 percent or more. CARB-approved commercially available fuel additives, such as PuriNOx, reduce emissions of both NO_X and PM_{10} by 20% to 40%, depending on equipment.	

TABLE 3-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		New Policy: The City shall require all onsite construction and grading equipment to implement the following three emission control techniques: 1. Use biodiesel fuel for all onsite diesel powered equipment. For equipment with engines built in 1994 or later, B100 shall be used. In pre-1994 engines, B-20 fuel (a mixture of 20% biodiesel and 80% fossil diesel fuel) may be used if necessary. If B20 is used, the fossil diesel component should be CARB ultra low-sulfur fuel. OR Use an oxidation catalyst or catalytic particulate filter on all diesel powered equipment rated above 50 horsepower. 2. Use PuriNOx additive or equivalent. 3. Tune vehicle engines to produce minimum NO_X, typically by engine retard of 4–8 degrees. This can reduce emissions by an additional 5%.	
4.6-6: Creation of Objectionable Odors Affecting a Substantial Number of People	LTS	No mitigation is necessary for this impact.	N/A

TABLE 3-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.7 TRAFFIC AND CIRCULATION			
4.7-1: Unacceptable Level of Service at Doherty Drive/Riviera Circle/Redwood High School Intersection	S	***Install Traffic Signal at Doherty Drive/Riviera Circle/Redwood High School.*** Installation of a traffic signal will establish an acceptable LOS to the Doherty Drive/Riviera Circle/Redwood High School intersection. A traffic signal shall be installed at this intersection. The City has a Traffic Impact Fee (TIF), §18.15 of the City Municipal Code. Installation of a traffic signal at the Doherty Drive/Riviera Circle/Redwood High School intersection is a project presently included within the City's TIF. Payment of the fee is required of all new development and is assessed by the City upon the issuance of a building permit. With implementation of this measure, the intersection would be expected to operate at acceptable LOS B during the a.m. and p.m. peak hour.	LTS
4.7-2: Unacceptable Level of Service at East Ward Street/Magnolia Avenue Intersection	S	***Remove Parking and Add Southbound and Westbound Left Turn Lanes at East Ward Street/Magnolia Avenue.*** Additional capacity shall be created at the East Ward Street/Magnolia Avenue intersection by removing approximately four parking spaces from the west curb face of Magnolia Avenue directly north of East Ward Street. Removal of these spaces would allow for the striping of a southbound left turn bay. In addition, approximately four parking spaces shall be removed from the south curb face of East Ward Street east of	LTS

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		Magnolia Avenue to create space for a westbound left turn bay. Removal of parking and addition of the left turn lanes is a project presently included within the TIF. Payment of the fee is required of all new development and is assessed on the issuance of a building permit. There can be a delay between the payment of required fees and the construction and completion of an identified improvement. The City shall monitor new construction to assure that traffic improvements are installed in a timely manner to mitigate impacts. Under Existing Plus Specific Plan conditions and upon completion of the proposed mitigation measure, the intersection would operate acceptably at LOS C during the a.m. and p.m. peak hours.	
4.7-3: Unacceptable Level of Service at King Street/Magnolia Avenue Intersection	S	***Install Traffic Signal at King Street/Magnolia Avenue.*** A traffic signal shall be installed at the King Street/Magnolia Avenue intersection. Installation of this traffic signal is a project presently included within the TIF. Payment of the fee is required of all new development and is assessed by the City on the issuance of a building permit. Upon installation of the traffic signal, the King Street/Magnolia Avenue intersection is projected to operate acceptably at LOS B during the a.m. peak hour and LOS C during the p.m. peak hour. The City shall monitor new construction to assure that the traffic signal is installed in a timely manner to mitigate the impact.	LTS

TABLE 3-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.7-4: Access and Circulation	LTS	No mitigation is necessary for this impact.	N/A
4.7-5: Pedestrian and Bicycle Circulation	LTS	No mitigation is necessary for this impact.	N/A
4.7-6: Increase in Parking Demand	LTS	No mitigation is necessary for this impact.	N/A
4.7-7: Construction Related Traffic	PS	***Prepare and Implement Detailed Construction Traffic Control Plan.*** The City shall include the following new policy in the Specific Plan: **New Policy:** Construction contractor(s) in the Specific Plan area shall be required to prepare a detailed construction management plan(s) prior to beginning work within the Specific Plan area. The plans shall provide information related to duration of the construction, size of work force, average daily truck deliveries, proposed truck routes to and from the construction site, and hours/days of operation. The plans shall include traffic control measures specific to each construction site and vicinity; such measures may include the following: ‣ Preparation and filing of a detailed construction management plan by the contractor. ‣ Provision of on-site staging area for all equipment and material deliveries ‣ Provision of on-site parking for construction work force.	LTS

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		‣ To the extent possible, control of delivery truck activity to off-peak periods. ‣ Use of a flag person as needed during the heaviest construction periods.	
4.7-8: Unacceptable Cumulative Level of Service at Doherty drive/Riviera Circle/Redwood High School Intersection.	S	***Implement Mitigation Measure 4.7-1, Install Traffic Signal at Doherty Drive/Riviera Circle/Redwood High School.*** Mitigation Measure 4.7-1 shall be implemented at Doherty Drive/Riviera Circle/Redwood High School intersection as described above under Project-level Mitigation Measures. Under the Existing Plus Cumulative Plus Specific Plan conditions and upon completion of the proposed mitigation measures, the intersection would operate at LOS C and B, respectively, during the A.M. and P.M. peak hours. This mitigation measure would reduce the impact to a level that is less than significant.	LTS
4.7-9: Unacceptable Cumulative Level of Service at East Ward Street/Magnolia Avenue Intersection	S	***Expand Mitigation Measure 4.7-2 to Add an Additional Northbound Left Turn Lane at King Street/Magnolia Avenue.*** A northbound left turn lane shall be created at this intersection with the removal of approximately two to three parking spaces from the east curb face of Magnolia Avenue located directly south of East Ward Street. Under Existing Plus Cumulative Plus Specific Plan conditions and upon completion of the proposed mitigation measure the intersection would operate	LTS

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		acceptably at LOS C during the a.m. and p.m. peak hours. This mitigation would reduce the impacts to levels that are less than significant.	
4.7-10: Unacceptable Cumulative Level of Service at King Street/Magnolia Avenue Intersection.	S	***Implement Mitigation Measure 4.7-3, Install Traffic Signal at King Street/Magnolia Avenue.*** Mitigation Measure 4.7-3, which is applicable to the intersection of King Street/Magnolia Avenue, shall be implemented as described above under Project-level Mitigation Measures. Under the Existing Plus Cumulative Plus Specific Plan conditions and upon completion of the proposed mitigation measures, the intersection would operate at LOS B and C, respectively, during the A.M. and P.M. peak hours. This mitigation measure would reduce the impact to a level that is less than significant.	LTS
4.7-11: Unacceptable Cumulative Level of Service at Wornum Drive/Tamal Vista Boulevard Intersection.	S	***Reconfigure Northbound Approach to Provide Dedicated Right Turn and Through Lane at Wornum Drive/Tamal Vista Boulevard.*** The City shall coordinate with the City of Corte Madera to ensure the completion of a dedicated northbound right turn lane by widening the northbound approach on Tamal Vista Boulevard. Implementation of this mitigation measure may make it necessary to restrict left turn movements in and out of the North Sandpiper Circle/Tamal Vista Boulevard intersection. Upon implementation of this mitigation measure, the intersection is projected to operate acceptably at LOS C	LTS

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		during the a.m. and p.m. peak hours. This mitigation would reduce the impacts to levels that are less than significant.	
4.7-12: Unacceptable Cumulative Level of Service at Fifer Avenue/Tamal Vista Boulevard Intersection.	S	***Optimize and Coordinate Signals at Fifer Avenue/Tamal Vista Boulevard.*** This T-intersection fully utilizes the existing right-of-way, and therefore the opportunity for widening and other physical changes is constrained. The City shall coordinate with the City of Corte Madera to ensure a change in the current traffic signal phasing and timing at this intersection in order to provide more green light time to the heaviest projected traffic movements. Currently, the northbound and southbound traffic travel concurrently after the northbound left turns are completed. In the proposed phasing plan the northbound and southbound traffic would travel exclusively of each other (split-phase) giving additional time to eastbound right turns (320 plus a.m. and p.m. peak hour vehicles). Implementation of this measure will require coordination with the signalized intersection to the south at Wornum Drive/Tamal Vista Boulevard. Upon implementation of this mitigation measure, the intersection is projected to operate acceptably at LOS C during the a.m. peak hour and LOS D during the p.m. peak hours. This mitigation would reduce the impacts to levels that are less than significant.	LTS

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.7-13: Unacceptable Cumulative Level of Service at Doherty Drive/Piper Park Intersection. ** If the City chooses not to implement mitigation at the Doherty Drive/Piper Park Intersection, this impact would be significant and unavoidable.	S	***Install Traffic Signal at Doherty Drive/Piper Park.*** Installation of a traffic signal at this intersection would result in an acceptable level of service operations following development in the Specific Plan area. With implementation of this measure, the intersection would be expected to operate at acceptable LOS B during the a.m. and p.m. peak hour. This mitigation would reduce the impacts to levels that are less than significant. However, Mitigation Measure 4.7-13 would not likely be implemented at this location based on a number of objective criteria and engineering best practice measures. The intersection fails to meet the City threshold of LOS C or better for unsignalized intersections, based solely on the delay that would be experienced by the southbound approach vehicles. This is less than 20 vehicles per peak hour under all analysis scenarios. Many unsignalized intersections in both urban and suburban settings operate with failing minor approach streets. The criteria used to decide the appropriateness of a traffic signal covers a wide range of safety and quantitative data. One measure is found in the Caltrans publication, Traffic Manual–Traffic Signals & Lighting, Chapter 9, July 1996. The manual provides 11 Traffic Signal Warrants based on minimum vehicle volumes, pedestrian volumes, location (school area) and intersection accident history among others.	LTS

TABLE 3-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		A review of the Caltrans warrants indicates that the intersection at Doherty Drive/Piper Park would not meet the peak hour volume warrant (Warrant 1) and would not likely meet any of the other 10 warrants.	
4.8 NOISE			
4.8-1: Incompatibility of Noise Sensitive Land Uses with Existing Noise Environment	PS	***(a) Conduct Acoustical Evaluation.*** The City shall include the following new policy in the Specific Plan. **New Policy:** Site plans for all development projects within the Specific Plan area shall be evaluated by an acoustical engineer to ensure that residential outdoor use areas are protected to a level not in excess of an Ldn of 55 dBA. The acoustical evaluation shall be reviewed by the City. Measures that could be used to achieve reduction in noise are increasing the distance between the outdoor use areas and any noise sources (for example, the Albertsons loading dock), using the buildings themselves to shield outdoor spaces, and constructing sound walls, earth berms, or combined sound walls and earth berms adjacent to noise sources. ***(b) Provide Mechanical Ventilation.*** The City shall include the following new policy in the Specific Plan. **New Policy:** Mechanical ventilation, which may include air condition or fans, shall be required where the	LTS

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		outdoor noise level at the exterior of new residential uses exceeds an Ldn of 60 dBA.	
4.8-2: Increased Noise Levels during Construction	PS	***Minimize Amount and Duration of Noise Intrusion During Construction and Take Measures to Correct Problems.*** The City shall include the following new policy in the Specific Plan. **New Policy:** The developer shall take the following measures to minimize noise intrusion during construction in the Specific Plan area: 1. Limit construction to the hours of 7 a.m. to 6 p.m. on weekdays, and 9 a.m. to 5 p.m. on Saturdays, Sundays, or legal holidays in accordance with Chapter 9.54 of the Larkspur Municipal Code. 2. Ensure that all equipment driven by internal combustion engines are equipped with mufflers that are in good condition and appropriate for the equipment. 3. Use "quiet" models of air compressors and other stationary noise sources where technology exists. 4. Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a remediation or construction project area. 5. Prohibit unnecessary idling of internal combustion engines.	LTS

TABLE 3-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		6. Designate a "noise disturbance coordinator" responsible for responding to any local complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaints (e.g., starting too early, bad muffler) and institute reasonable measures warranted to correct the problem. Post the telephone number for the disturbance coordinator at a location clearly and easily visible to the public on the construction site.	
4.8-3: Increase in Traffic Noise	LTS	No mitigation is necessary for this impact.	N/A
4.8-4: Potential Increase in Vibration	LTS	No mitigation is necessary for this impact.	N/A
4.9 PUBLIC SERVICES AND UTILITIES			
4.9-1: Potential for Exceedance of School Student Capacity	LTS	No mitigation is necessary for this impact.	N/A
4.9-2: Increase in Use of Parks and Other Recreational Facilities	LTS	No mitigation is necessary for this impact.	N/A
4.9-3: Increased Demand for Police Services	LTS	No mitigation is necessary for this impact.	N/A
4.9-4: Increased Demand for Fire Protection and Emergency Medical Response Services	LTS	No mitigation is necessary for this impact.	N/A
4.9-5: Increased Demand for Water Supply, Conveyance, Water Storage, or Water Treatment Services	LTS	No mitigation is necessary for this impact.	N/A

TABLE 3-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.9-6: Increased Demand for Wastewater Treatment Services	LTS	No mitigation is necessary for this impact.	N/A
4.9-7: Need for Improvements to Stormwater collection System	LTS	No mitigation is necessary for this impact.	N/A
4.9-8: Increase in Solid Waste Disposal	LTS	No mitigation is necessary for this impact.	N/A
4.10 VISUAL QUALITY AND AESTHETICS			
4.10-1: Potential Interference with Scenic Vistas	LTS	No mitigation is necessary for this impact.	N/A
4.10-2: Potential Damage to Scenic Resources	LTS	No mitigation is necessary for this impact.	N/A
4.10-3: Potential Degradation of Visual Character	LTS	No mitigation is necessary for this impact.	N/A
4.10-4: Potential Changes in Views Associated with New Sources of Light or Glare	LTS	No mitigation is necessary for this impact.	N/A
4.11 CULTURAL RESOURCES			
4.11-1: Potential Direct or Indirect Destruction of Unique Paleontological Resources	LTS	No mitigation is necessary for this impact.	N/A
4.11-2: Potential Damage to or Destruction of Archaeological Resources	PS	***(a) Implement Archaeological Testing Program*** The City shall include the following new policy in the Specific Plan. **New Policy:** An archaeological subsurface testing program to delineate and define the elements of CA-	LTS

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
**If archaeological resources are found in the subsurface testing program, and destruction of the archaeological resources cannot be avoided, Impact 4.11-2 would be considered significant and unavoidable.		MRN-68 shall be implemented before the beginning of construction. The archaeologist will make a preliminary assessment of NRHP and CRHR eligibility based on the results of the testing. If CA-MRN-68 is found to be potentially eligible for listing, then destruction of this site must be avoided. ***(b) Monitor Construction*** The City shall include the following new policy in the Specific Plan. **New Policy:** A professional archaeologist, who meets the Secretary of the Interior's Standards and Guidelines, and a Native American observer (identified through the Native American Heritage Commission) shall be present to monitor ground disturbing activities within the Specific Plan area. In the event that any archaeological resources are uncovered within the Specific Plan area during future remediation or construction activity associated with the implementation of the Specific Plan, there shall be no further excavation or disturbance of the site or any nearby area until the archaeologist has evaluated the find and appropriate site-specific mitigation has been identified to protect, preserve, remove, or restore the artifacts uncovered.	
4.11-3: Alteration of or Other Effects on Historical Resources	S	**Document Historic Structures** The City shall include the following new policy in the Specific Plan.	SU

TABLE 3-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		New Policy: The Niven Nursery structures that appear to be eligible for listing in the CRHR shall be documented according to Historic American Buildings Survey (HABS) standards. This task shall be performed by a qualified Architectural Historian who meets the Secretary of the Interior's Standards and Guidelines, and shall be accomplished by those proposing development of Subarea 3 and approved by the City Planning Department before any demolition permit for that property is issued. As indicated in the State CEQA Guidelines (Guidelines §15126.4(b)(2)), "In some circumstances, documentation of an historic resource, by way of historic narrative, photographs or architectural drawings, as mitigation for the effects of demolition of the resource will not mitigate the effects to a point where clearly no significant effect on the environment would occur." Although documentation would mitigate the demolition of these structures to some extent, it would not reduce the effects of demolition to a less-than-significant level, and demolition of these structures would remain a significant and unavoidable impact associated with implementation of the Specific Plan.	
4.11-4: Potential Direct or Indirect Destruction of Unique Geologic Features	LTS	No mitigation is necessary for this impact.	N/A

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.11-5: Possible Discovery of Human Remains ** If human remains are found during construction, and development of the site cannot be avoided, then Impact 4.11-5 would be considered significant and unavoidable	PS	***Stop Potentially Damaging Work if Human Remains are Uncovered During Construction, Assess the Significance of the Find, and Pursue Appropriate* Management** The City shall include the following new policy in the Specific Plan. **New Policy:** California law recognizes the need to protect Native American human burials, skeletal remains, and items associated with Native American burials from vandalism and inadvertent destruction. The procedures for the treatment of Native American human remains are contained in California Health and Safety Code §7050.5 and §7052 and CEQA §5097. In accordance with the California Health and Safety Code, if human remains are uncovered during construction at the project site, the construction contractor shall immediately halt potentially damaging excavation and notify the City or the City's designated representative. The City shall immediately notify the coroner. The California Health and Safety Code states that if human remains are found in any location other than a dedicated cemetery, excavation must to be halted in the immediate area, and the county coroner is to be notified to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (California Health and Safety Code §7050.5[b]). If the coroner determines that the remains are those of a Native American, he or	LTS

TABLE 3-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		she must contact the Native American Heritage Commission by phone within 24 hours of making that determination (California Health and Safety Code §7050[c]). The responsibilities of the City for acting upon notification of a discovery of Native American human remains are identified in CEQA §5097.9.	
4.12 HAZARDS AND HAZARDOUS MATERIALS			
4.12-1a and b: MTBE and Hydrocarbons in Groundwater at Larkspur Service Station Site	PS	***(a) Protect Construction Workers and Public Against Exposure to MTBE.*** The City shall include the following new policy in the Specific Plan. **New Policy:** When any construction work is undertaken in the Specific Plan area, the following measures shall be incorporated into the project prior to the issuance of construction permits and implemented during construction activities to prevent construction workers and the public from coming into contact with MTBE: ‣ Construction personnel should wear appropriate construction clothing (i.e., long pants, hard hat, gloves) during construction to minimize potential contact with groundwater containing MTBE. This clothing shall be in compliance with the requirements for construction personnel issued by Cal/OSHA and OSHA. ‣ Appropriate notices shall be posted at the project site to warn construction personnel and public of the	LTS

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		presence of contaminated groundwater. ‣ The City and the San Francisco Bay RWQCB shall be notified immediately if discolored or odorous groundwater is encountered during excavation activities. ‣ When not under active construction or remediation, open trenches shall be covered where contaminated groundwater is present to prevent the public from coming in contact with contamination. ***(b) Prepare and Implement Dewatering Plan, and Install Impermeable Membrane Around Excavation Area if Necessary.*** The City shall include the following new policy in the Specific Plan. **New Policy:** The contractor for any construction work undertaken in the Specific Plan area shall prepare a dewatering plan and submit the plan to the City and the San Francisco Bay RWQCB for approval prior to issuance of construction permits. Dewatering of the excavation areas shall be performed in compliance with the occupational safety and health guidelines of Cal/OSHA and OSHA, and in a manner that allows discharge to the sanitary sewer system. If dewatering is not required, groundwater shall be tested to determine the presence of MTBE or other hydrocarbons, and water shall be treated using appropriate methods approved by the City and the San Francisco Bay	

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		RWQCB. Any water removed during dewatering shall be stored and tested for residual contamination before disposal. Water shall also be tested after treatment to ensure that constituent levels meet requirements for surface or groundwater discharge before disposal or infiltration. If necessary, an impermeable membrane shall be installed around the excavation area to prevent contaminants from reaching Larkspur Creek.	
4.12-2: Demolition-Related Release of Hazardous Materials, Including Materials Containing Lead and Asbestos	PS	***Implement a Demolition Plan***. The City shall include the following new policy in the Specific Plan. **New Policy:** Site surveys for the presence of potentially hazardous building materials shall be reviewed/performed, and a demolition plan for safe demolition of existing structures in Subarea 3 shall be incorporated into the project prior to the issuance of construction permits and implemented during construction activities. The demolition plan shall address protection of both onsite workers, offsite residents, and occupants in nearby schools from chemical and physical hazards. The demolition plan shall be reviewed and approved by DTSC and by the City. All contaminated building materials shall be tested for contaminant concentrations and shall be disposed of at appropriate licensed landfill facilities. Before demolition, hazardous building materials such as peeling, chipping, and friable lead-based paint, window	LTS

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		glazing, and building materials containing asbestos shall be removed in accordance with all applicable guidelines, laws, and ordinances. The Demolition Plan shall include a program of air monitoring for dust particulates and attached contaminants. Dust control and suspension of work during dry windy days shall be addressed in the Demolition Plan. Before a demolition permit is obtained from the BAAQMD, an asbestos demolition survey shall be conducted in accordance with the requirements of BAAQMD Regulation 11, Rule 2. The California Division of Occupational Safety and Health (DOSH) and OSHA do not define threshold limit values for lead-containing paints and, therefore, paints or coatings containing any detectable amounts of lead are regulated by these agencies' standards, if construction activities covered in the scope of these standards emit lead. The DOSH standards prescribe procedures to be followed based on anticipated exposure resulting from construction activities performed. Demolition procedures may involve potential worker exposure above the DOSH action level for lead. Therefore, the requirements of Guidelines §1532.1 must be followed. These requirements include but are not limited to the following: ‣ Loose and peeling lead-containing paint and window glazing should be removed before building demolition. Workers conducting removal of lead paint and window glazing must receive training in	

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		accordance with Guidelines §1532.1. ‣ The lead paint and window glazing removal project should be designed by a lead project designer, project monitor, or supervisor certified by the DHS. ‣ A written Lead Compliance Plan that that meets the requirements of the lead construction standard must be prepared by any contractor whose actions would have an impact on lead coatings. ‣ Workers conducting removal of lead paint and window glazing must be certified by DHS in accordance with Guidelines §1532.1. ‣ Workers who may be exposed above the Action Level must have blood lead levels tested before commencement of lead work and at least quarterly thereafter for the duration of the project. Workers who are terminated from the project should have their blood lead levels tested within 24 hours of termination. ‣ A written exposure assessment must be prepared in accordance with Guidelines §1532.1. ‣ Any amount of lead waste generated, including window glazing and painted building components, must be characterized for proper disposal in accordance with Title 22, §66261.24. In addition, compliance with BAAQMD Regulation 11, Rule 1, Lead, which contains procedures that limit daily emissions of lead and ensures "a person shall not	

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		discharge an emission of lead, or compound of lead calculated as lead, that will result in ground level concentrations in excess of 1.0 $\mu g/m^3$ averaged over 24 hours." This regulation required calculations of and monitoring of lead concentrations to ensure compliance.	
4.12-3: Exposure to Hazardous Materials during Removal of Contaminated Soil	PS	***Implement Removal Action Workplan and Health and Safety Plan.*** The City shall include the following new policy in the Specific Plan. **New Policy:** The RAW developed for Subarea 3, under the oversight of DTSC, shall be incorporated into the project prior to the issuance of construction permits and implemented during construction activities. The workplan includes provisions for safe removal, transportation, and disposal of selected contaminated soil from Subarea 3. Removal of contaminated soils from the areas identified would reduce the cancer risk to less than 1 in 1 million. Clean fill shall also be placed over much of Subarea 3, further reducing the potential for exposure of people to residual soil contamination. A detailed Health and Safety Plan shall be prepared to address measures to protect workers and the community during remedial activities, and shall be reviewed and approved by DTSC.	LTS

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.12-4: Development on Hazardous Materials Sites	PS	***Implement Mitigation Measure 4.12-3.*** The City shall implement Mitigation Measure 4.12-3, Implement Removal Action Workplan and Health and Safety Plan, described above.	LTS
4.12-5: Release of Contaminated Groundwater	PS	***Implement Groundwater Testing, Storage, Treatment, and Disposal.*** The City shall include the following new policy in the Specific Plan. **New Policy:** Any groundwater removed from excavations in Subarea 3 during construction shall be temporarily stored and tested to determine the appropriate method of treatment and/or disposal. Provisions for this measure shall be incorporated into the project prior to the issuance of construction permits.	LTS
4.12-6: Potential Contamination of Soils Near Redwood High School, San Andreas High School, and Hall Middle School	PS	***Implement Demolition Plan and Removal Action Workplan.*** The City shall include the following new policy in the Specific Plan. **New Policy:** The proposed hazardous materials remediation plans and actions for Subarea 3 shall be implemented to reduce the overall risk to students at the nearby Redwood High School and Hall Middle School. During the demolition and remediation process, special measures shall be taken in accordance with an approved Demolition Plan and RAW to contain and remove potentially hazardous substances and wastes under controlled conditions. These plans, which must be	LTS

TABLE 3-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		approved by the City prior to the issuance of construction permits, shall address approved routes, truck cleaning and inspection, and contingencies for addressing spills and other accidents.	
4.12-7: Potential Interference with Airport Operations	LTS	No mitigation is necessary for this impact.	N/A
4.12-8: Interference with an Adopted Emergency Response or Emergency Evacuation Plan	LTS	No mitigation is necessary for this impact.	N/A
4.12-9: Exposure of People or Structures to Wildland Fires	LTS	No mitigation is necessary for this impact.	N/A

NI = No Impact LTS = Less-than-Significant S = Significant PS = Potentially Significant SU = Significant Unavoidable

4 ENVIRONMENTAL IMPACT ANALYSIS

SCOPE OF THE ENVIRONMENTAL IMPACT ANALYSIS

Sections 4.1 through 4.12 of this Revised Draft EIR present the environmental impact analysis for the anticipated effects of the adoption of the Specific Plan. Issues evaluated in these sections consist of a full range of environmental topics originally identified for review in the NOP (Appendix A). The environmental issues and the sections in which they are discussed are:

< Land Use and Planning
< Population and Housing
< Geology and Soils
< Hydrology and Water Quality
< Biological Resources
< Air Quality
< Traffic and Circulation
< Noise
< Public Services and Utilities
< Visual Quality and Aesthetics
< Historical, Cultural, and Archaeological Resources
< Hazards and Hazardous Materials

STRUCTURE OF THE ENVIRONMENTAL IMPACT ANALYSIS

Each section in this chapter presents a detailed evaluation of a particular resource area and includes a discussion of existing conditions (both physical and regulatory), potential environmental impacts associated with the Specific Plan, and revised or additional policies proposed to mitigate significant environmental impacts.

Existing Setting. The Existing Conditions subsection presents relevant information on both the regional and local physical environment and the regulatory/planning environment for the Specific Plan area. This subsection also presents information on the laws, regulations, and plans that relate to the resource area being evaluated.

Environmental Impacts. The Environmental Impacts subsection identifies the environmental impacts of implementation of the Specific Plan. Project-level impacts are presented first, followed by cumulative impacts. The relevant thresholds of significance used to identify impacts and methodology used in the analysis are presented before the evaluation of impacts. Throughout the discussion, impacts are identified numerically and sequentially. For example, impacts discussed in Section 4.1 are identified as 4.1-1, 4.1-2, and so on. An impact statement presented at the beginning of each impact discussion provides a summary of the impact and its level of significance. The impact analysis includes evidence and explanation supporting the conclusion on the level of significance for the impact. Growth-inducing impacts are presented in Section 5.1, Growth Inducing Impacts.

Mitigation Measures. The Mitigation Measures subsection proposes new Specific Plan policies to reduce significant and potentially significant impacts. Distinct mitigation measures are provided. Each mitigation measure is identified numerically to correspond with the number of the impact being reduced by the measure. For example, Impact 4.1-1 would be mitigated by Mitigation Measure 4.1-1. Mitigation measures for project-level impacts are presented first, followed by mitigation measures for cumulative impacts.

Level of Significance After Mitigation. This subsection describes whether any significant impacts on the specific resource area would remain after implementation of the mitigation measures presented. Significant and unavoidable impacts are identified in this subsection. (These impacts are also summarized in Section 5.2, Significant and Unavoidable Impacts and Significant and Irreversible Commitment of Resources.)

APPROACH TO THE ENVIRONMENTAL ANALYSIS

For each environmental impact identified in this Revised Draft EIR, a statement of the level of significance of the impact is provided. Each impact is assigned one of the following impact levels:

< A **less-than-significant** impact is an impact that is considered to cause no substantial adverse change in the environment and for which no mitigation measures are required.

< A **significant** impact is an impact that is considered to have a substantial or potentially substantial adverse effect on the environment but for which feasible mitigation measures are available to reduce it to a less-than-significant level. Impacts may also be considered potentially significant if the analysis cannot definitively conclude that an impact could be reduced to less-than-significant levels with mitigation.

< A **significant and unavoidable** impact is an impact that is considered to cause a substantial or potentially substantial adverse effect on the environment and for which no feasible mitigation measures or alternatives are available to reduce it to a less-than-significant level.

POLICY CONSISTENCY

According to State CEQA Guidelines §15125(d), an EIR "shall discuss any inconsistencies between the proposed project and applicable general plans and regional plans." To this end, the Specific Plan has been analyzed for consistency with the Larkspur General Plan. As described in Section 4.1, Land Use and Planning, the Specific Plan is generally consistent with the General Plan. While the consistency of the General Plan is analyzed in this Revised Draft EIR, the final authority for interpretation of these policy statements, and determination of the Specific Plan's consistency, rests with the City.

4.1 LAND USE AND PLANNING

This section describes the land uses and planning environment in the Specific Plan area. The information presented in this section is based on review of the Larkspur General Plan, 1999-2010 (General Plan) (City of Larkspur 1990), the Larkspur Downtown Specific Plan (1992), the Zoning Ordinance, and the Larkspur Park Dedication Ordinance. A review of the consistency of the policies and provisions of these plans and ordinances with the Specific Plan was completed; this review is reflected in the discussion of impacts and mitigation measures contained in this section.

4.1.1 EXISTING SETTING

REGIONAL SETTING

The Specific Plan area is located in the City of Larkspur in Marin County, (see Exhibit 2-1). Marin County is developed in three broad corridors extending from north to south. The eastern corridor is heavily developed with residential suburban, office, and retail uses. The central corridor is agricultural, including extensive ranching and dairy operations. The western corridor is primarily open space devoted to recreational uses, especially the Golden Gate National Recreation Area. Larkspur is located in the eastern side of the county and consists of well established, built-up neighborhoods. San Quentin State Prison encompasses most of the area that lies between Larkspur's eastern boundary and the Richmond–San Rafael Bridge.

LOCAL SETTING

The entire Specific Plan area has been disturbed in the past, and a majority of the site has been developed with commercial, recreational, transportation, and civic uses (see Exhibit 2-3). Existing land uses within each of the Subareas in the Specific Plan area are described in Chapter 2, Project Description.

The area surrounding the Specific Plan area is completely developed. The area to the north, across Doherty Drive, includes the Mt. Tamalpais Racquet Club, Hall Middle School, a sewer pumping station, the Twin Cities Police Department headquarters, and Piper Park (Exhibit 2-3). Further to the northeast is the Greenbrae Marina residential development with approximately 190 single-family homes, some of which have direct boating access to San Francisco Bay.

East of the Specific Plan area, across Larkspur Creek, are the Tamalpais Union High School District offices, district service buildings and equipment yard, and Redwood High School (Exhibit 2-3). South of the Specific Plan area, across Larkspur Creek, are the residential neighborhoods of Meadowood and Heather Gardens, with a total of about 193 homes. Several residential neighborhoods are located to the northwest of the Specific Plan area, west of Magnolia Avenue.

Exhibit 4.1-1

REGULATORY SETTING

The Larkspur General Plan provides a comprehensive long-term plan for development within the city. In addition, the City has adopted the Larkspur Downtown Specific Plan (1992), which includes Central Larkspur Specific Plan Subareas 1 and 2 within its boundaries; it has also designated the Historic District, which includes all of Subarea 1 except the driveway access to Larkspur Plaza and which extends further to the west and southwest of the Central Larkspur Specific Plan area (Exhibit 4.1-1).

Larkspur General Plan

The General Plan designates the areas encompassed by Specific Plan Subareas 1 and 2 as Downtown. The Downtown land use category allows for commercial uses with the goal of promoting retail sales of convenience goods and personal services, while enhancing the vitality and character of the historic commercial area. Compatible uses include restaurants, retail shops, bookstores, and art galleries. Second-story housing is also allowed and off-street parking is required for new development. The maximum allowed FAR is 1.0.

Portions of the area designated Downtown are located within a historic district, which is contiguous with the area in the Historic Preservation District overlay zone. The overlay zone requires that the Heritage Preservation Board review proposed zoning changes and building, demolition, and grading permits. The historic district was officially recognized by the State of California in 1981 and was listed in the National Register of Historic Places (NRHP) in 1982. In order to maintain Downtown's listing on the National Register, a ratio of two contributing structures for every one non-contributing structure must be maintained in the historic district. Contributing structures are structures that are either historically or architecturally significant. Historic significance includes association with the life or activities of a major historic person, organization, or event. Architectural significance can involve many factors, including whether a structure is one of many good examples in the city of a particular architectural style or period.

Inappropriate remodeling can reduce the architectural significance of contributing structures and could ultimately result in the loss of the districts listing on the National Register. In order to remain compatible with the area's historic character, the scale of the buildings, shops, and streets has been kept small, and the area has remained pedestrian oriented.

The General Plan classifies Specific Plan Subarea 3 as Low Density Residential. The Low Density designation allows up to five dwellings per gross acre. One house is allowed on each lot. An attached or detached second unit is also allowed without the requirement to secure a Use Permit. Under this land use category, the minimum allowable lot size is 7,500 square feet in areas where slope gradients are less than 10%. The maximum allowed FAR is 0.4. Based on allowable net density of 5 units per acre for the Low Density Residential designation, the maximum development potential is estimated at 85 units with the potential for higher density allowed for affordable housing. A specific plan is required.

The General Plan establishes a number of land use goals, policies, and programs intended to "preserve and enhance Larkspur's unique physical and natural setting, and its basically residential character, while accommodating suitable new development" (City of Larkspur 1990, p. 28). While many of the goals and policies apply to the general character of Larkspur, several goals and policies in the Land Use Element of the General Plan apply specifically to the Specific Plan area:

Goal 7: Preserve the character of Old Downtown (especially its historic character) and its surrounding neighborhoods.

> **Policy i:** Maintain the existing scale of commercial establishments and the pedestrian orientation of the Old Downtown.
>
> ***Action Program [13]:*** Prepare a Specific Plan for the Old Downtown that addresses appropriate uses, traffic, parking, economic vitality, building preservation, and design of new development, as well as the link between the Old Downtown, the Larkspur Plaza Shopping Center, and North Magnolia Avenue.

Goal 10: Create a "sense of place," as focus, along Magnolia Avenue to serve as a town center for Larkspur.

> **Policy m:** Strengthen the tie between the Magnolia Avenue shops and the newer shopping center at the corner of Magnolia Avenue and Doherty Drive.
>
> ***Action Program [17]:*** Create a town square at or near the Ward-Magnolia intersection.
>
> A major focus of the Specific Plan should be the block on which the Chevron/Walker property [portion of Specific Plan Subarea 1] is located—a property that may be a good location for a town square. A plaza strategically located on this block can tie together the old Downtown and the Larkspur Plaza shopping center at the corner of Magnolia Avenue and Doherty Drive. A Specific Plan for this block and its surroundings can also address ways to create a transition from the shopping center to the Niven Nursery property.
>
> **Policy n:** Improve access to Old Downtown, but do not encourage or permit new thoroughfares parallel to Magnolia Avenue, or one-way streets.
>
> ***Action Program [18]:*** Create additional non-vehicular (pedestrian and bicycle) access points to Downtown to supplement Magnolia Avenue.
>
> The Downtown Specific Plan should consider, among other things: creating additional non-vehicular access points such as completing the trail link on the Northwestern Pacific Railroad right-of-way.

Goal 13: On those lots where development or redevelopment is expected to occur, integrate natural features into new development, to the greatest extent reasonably feasible.

Goal 14: Maintain Larkspur's small-town character.

Policy r: Establish guidelines for the use and development of properties where change is expected to occur.

Action Program [21]: Encourage a vital and active use of the Chevron/Walker property that will also set aside appropriate public space and maintain the historic value and open space of the adjacent railroad right-of-way.

Action Program [22]: For a change in land use to other than the existing nursery uses, prepare a specific plan for the Niven Nursery property that identifies community desires for future use.

Goal 15: Maintain the Northwestern Pacific Railroad right-of-way for public benefit.

Policy t: Preserve the station buildings near Ward Street.

The General Plan also references the land uses in the Specific Plan area in the Land Use Changes section:

9. The [16.8-acre] Niven Nursery property fronting on Doherty Drive is designated Low Density Residential. However, the present wholesale and retail nursery uses on the site are viewed as desirable and will be allowed to remain indefinitely. Therefore, the property will retain its present zoning of L-1 Light Industrial, and the zoning ordinance will be amended to restrict the property to its present use. The property will be rezoned when it is no longer used for a nursery, and a specific plan will be required before the property is redeveloped in any use other than nursery. Some parts of this site may have potential for higher density residential—such as housing that is affordable to seniors and others—and commercial development, but potential problems with traffic, as well as transition to adjacent uses, must be addressed first.

11. The land use designation for the Chevron/Walker property will remain Downtown Commercial, but development proposals will be considered only after a specific plan is completed for the Downtown. A public plaza may be located somewhere in the block.

    The plaza location decision should be viewed in the larger context of what will be developed in the entire area from the intersection of East Ward Street and Magnolia Avenue north to Doherty Drive encompassing the western edge of the Niven property and the existing shopping center. For that reason, the General Plan designates this a special study area that requires preparation of a specific plan before any further development is allowed.

The Land Use Chapter of the General Plan does not currently designate a location for a new park in the Specific Plan area. However, the Community Services and Facilities Chapter of the General Plan does anticipate the development of additional public parks. Parks and

Recreation Goal 1, Policy a, and Action Program [2] call for the creation of additional parks in the City:

Goal 1: Provide park facilities and recreation programs for all age groups.

> **Policy a:** When appropriate, continue to acquire individual lots for mini parks.
>
> **Action Program [2]:** Identify potential park sites that could be acquired either as a condition of development approval or as park development opportunities may someday arise.

The Bicycle and Pedestrian Trails and Paths Chapter of the General Plan (Chapter 8) identifies existing and planned trails in the city. According to the Bicycle/Pedestrian Circulation Plan, there is an existing bike path on the east side of Magnolia Avenue, a planned bike path along the south side of the Specific Plan area, and a planned bike lane on both sides of Doherty Drive. Several goals and policies in the Bicycle and Pedestrian Trails and Paths Chapter of the General Plan apply to the Specific Plan, including the following:

Goal 1: Make it easier to travel around Larkspur by non-motorized transportation modes.

> **Policy a:** Develop a comprehensive and coordinated trails and paths system that serves both recreational and utilitarian travel.
>
> **Policy d:** Survey the "paper streets" of Larkspur to evaluate their usefulness in an overall path system, and preserve those "paper streets" identified as useful for paths.

Goal 2: Provide safe bicycle and pedestrian routes for all users, to schools, shopping and business areas, recreational facilities, open space preserves, and other communities, and associated amenities.

> **Policy e:** Locate and design pedestrian and bike trails separate from streets and automobile traffic wherever possible. Designate on-street bike lanes where off-road paths are not possible.

Goal 4: Reduce the need for long distance and/or frequent shopping travel by private automobile.

> **Policy k:** Encourage means of travel to and between retail areas other than by private automobiles.

Goal 5: Provide hiking trails and access points for public enjoyment and use of open space areas.

Policy l: Provide reasonable access to open space areas via trails and entry points that do not adversely impact adjacent residential areas.

Larkspur Downtown Specific Plan

Subareas 1 and 2 of the Specific Plan are currently located within the boundaries of the Larkspur Downtown Specific Plan, (Exhibit 4.1-1) but a proposed amendment would remove them from the Larkspur Downtown Specific Plan it if the Central Larkspur Specific Plan were to be adopted. The Downtown Specific Plan contains a number of goals, objectives, and programs that are intended to guide the future development of the Downtown area. The following objective and program apply specifically to the Specific Plan area:

Objective B.4: Improve the sense of connection between the components of the Downtown, including Larkspur Plaza, the Nazari property, and the retail core of Downtown, the Lark Creek Shoppes, and Larkspur Creek.

Program B.4.b: Allow for the expansion of the Lucky supermarket [now Albertsons supermarket] and development of the Nazari property that will create linkages between these properties and the existing Downtown.

Goals for individual properties in the Downtown Larkspur Specific Plan include two that are relevant to Specific Plan Subareas 1 and 2:

1. Lucky [Albertsons] supermarket. If the Lucky supermarket expands, the addition shall visually support the creation of a plaza around the railroad buildings on the Nazari property. Loading facilities shall be located so that they will not disrupt the connection between Larkspur Plaza and the Nazari property.

2. Nazari property.

   < Consideration of a public plaza at the corner of Ward and Magnolia.

   < Creation of an open space that preserves the context of the historic railroad buildings, with a possible view and pedestrian corridor to them from Magnolia Avenue.

   < Development of a Class I bicycle/pedestrian path, with separation of bicyclists from autos in the former railroad right-of-way.

   < Placement of storefront and business facades facing Magnolia Avenue and the public open spaces.

   < Encouragement of pedestrian connections between Magnolia Avenue, Larkspur Plaza, and public open spaces on the site.

   < Prohibition of through vehicle traffic on the railroad right-of-way.

- Coordination of the design of the site with the creation of a northern gateway into the Downtown.
- Creation of a human-scaled building ensemble composed of elements reflecting the architectural scale of existing buildings in the Downtown.

The Downtown Larkspur Specific Plan designates Subarea 1 as Storefront Downtown, and Subarea 2 as Transitional Downtown. The Storefront Downtown designation allows for retail, restaurant, office, multifamily residential, and hotel/inn land uses. Ground-floor uses facing Magnolia Avenue would generally be required to have retail uses, and building heights would generally be restricted to 25 feet.

The Transitional Downtown category permits retail, restaurant, office, recreational, multifamily residential, and hotel/inn land uses. The building height limit is two stories or 25 feet, whichever is less.

Zoning Ordinance

As mentioned above, Subarea 1 is zoned Storefront Downtown, and Subarea 2 is zoned Transitional Downtown. These zoning designations are consistent with those in the Larkspur Downtown Specific Plan, as well as with the proposed Specific Plan land use categories in Subareas 1 and 2.

The Storefront Downtown zone allows the following uses: retail sales, not including gas stations and motor vehicle repair; restaurants; multifamily residential; hotels/inns; offices having a retail service character; banks; community meeting facilities; churches; government offices; movie theaters; instructional services; and group homes. Some additional uses are permitted with a use permit. All proposed new structures are subject to the review and approval of the Planning Commission, and for those parcels in the Combining Heritage Preservation District, review and recommendation by the Heritage Preservation Board.

The Transitional Downtown zone allows the following uses: retail sales of products and services, restaurants, multifamily residential, hotels/inns, offices, banks, community meeting facilities, churches, government offices, movie theaters, instructional services, and group homes. Some additional uses are permitted with a conditional use permit. All proposed new structures are subject to the review and approval of the Planning Commission.

Subarea 3 is zoned L-1 Light Industrial. Permitted uses include wholesale businesses, automobile and boat establishments, building material sales yards, public utility building and service yards, contractor's equipment storage yards, car sales, carpenter and cabinet shops, animal hospitals, bakeries, and dry cleaning establishments. Several additional uses are allowed with a conditional use permit. As a part of the approval process for future planned development projects in Subarea 3, Subarea 3 would be rezoned from L-1 Light Industrial to Planned Development. The Planned Development zone would be consistent with the residential uses and the public park that the Specific Plan designated for Subarea 3.

Park Dedication Ordinance

The Larkspur Park Dedication Ordinance (Municipal Code, Chapter 17.13) requires that 5 acres of land be provided for each 1,000 persons residing in the city (Ord. 896 3 (part), 1998) and that such requirements be satisfied by parkland dedications or the payment of in-lieu fees. Where a park has been designated in the General Plan, the ordinance requires that the developer dedicate land for a local park sufficient in size to serve the present and future needs of the residents in the subdivision and pay Park Improvement Fees. When a residential development is approved in areas where a park has not been designated and is not included in the development, or where subdivision is not involved in a residential development, a fee is nevertheless charged by the City to pay for the cost of purchasing and improving parkland needed to service the new homes. The formula for determining population is 2.45 persons per dwelling unit and 1.48 persons per multifamily dwelling (Section 17.13.040). The Park Dedication Ordinance is applicable to all new residential development in the city, including future development within the Specific Plan area. For example, the 85 residential units proposed in Specific Plan Subarea 3 would generate a need for 0.9 acre of parkland. If residential units were developed in Subareas 1 and 2, this figure would be commensurately higher. The Specific Plan recognizes the need for a park, which could be located onsite. Another option for future residential development projects in the Specific Plan area would be to contribute in-lieu fees to develop a park elsewhere in the city pursuant to the Park Dedication Ordinance. All residential developments would be required to pay Park Improvement Fees.

Simultaneous with the adoption of the Specific Plan, the General Plan would be amended to designate a public park in Subarea 3.

4.1.2 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Implementation of the Specific Plan would have a significant impact related to land use and planning if it were to result in:

< inconsistency or conflict with the environmental goals, policies, or guidelines of a general plan or Specific Plan;

< inconsistency or conflict with an ordinance or overlay zone adopted for the purpose of avoiding or mitigating an environmental effect;

< incompatibility of proposed land uses with existing surrounding land uses;

< conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use; or

< any conflict with existing zoning for agriculture, or a Williamson Act contract.

PROPOSED LAND USES

One of the goals of the Specific Plan is to develop the area as an integrated and cohesive mixed-use neighborhood that provides a focal point and activity center for Downtown and serves as a transition to the surrounding community. The Specific Plan promotes a mixed use development with retail, cultural, civic, and residential uses.

Subarea 1

Land use in Subarea 1 would be a combination of existing buildings and new development. Two existing buildings associated with the historic railroad, the former railroad station and the warming house, would remain and would be used in a manner that would contribute to the vitality of adjoining development. Another historic structure, the American Legion hall, would also be retained. The City-owned parking lot at the intersection of East Ward Street and Magnolia Avenue would remain or would be improved. No changes are proposed for Doherty Park. The remaining structures on the site, including the two one-story commercial buildings currently occupied by retail and office uses, would be demolished to accommodate construction of new buildings.

The Specific Plan would allow the new development of a variety of land uses in Subarea 1 including:

< **Hotel/Inn.** Maximum of 36 guest rooms.

< **Residential.** Overall FAR of 0.6.

< **Retail Sales and Offices.** Approximately 58,100 square feet of developable area (if the site is not developed with a hotel and residential uses).

< **Railroad Plaza.** Limited development would be allowed including a Class I bike path, railroad building plaza, parking, and landscaping. Adequate open space would be provided adjacent to the two preserved historic buildings. Open space would be accessible to the public and designed to accommodate community-oriented activities.

< **Library or Other Civic Facilities.** A library may be constructed. The amount of library space would be determined by the amount of other space devoted to residential, retail sales, and office use.

< **Parking.** Parking may be installed along one side of the former railroad right-of-way. Several development scenarios are possible, but each of the alternatives must retain or relocate the existing 28 spaces.

< **Pedestrian and Bicycle Routes.** A new alignment to the regional bikeway, designed to Class I bike path standards, would be added.

The Specific Plan land use category for Subarea 1 is Storefront Downtown. This is consistent with the General Plan designation of Downtown, and the zoning designation, which is also Storefront Downtown.

Subarea 2

Subarea 2 has several existing land uses that are expected to remain. There is an Albertsons supermarket, and small retail establishments occupy an adjoining commercial building. A gas station at the corner of Magnolia Avenue and Doherty Drive provides needed services to the surrounding area, and 178 parking spaces serve the commercial development.

< **Retail Sales and Office.** Specific Plan–permitted uses include retail sales, business and personal services, and office. The allowable increase in existing floor space is 4,500 square feet.

< **Residential.** A maximum of 19 multifamily units would be allowed.

The Specific Plan land use category for Subarea 2 is Transitional Downtown. This is consistent with the General Plan designation of Downtown and with the zoning designation, which is also Transitional Downtown.

Subarea 3

A mix of development would be allowed on Subarea 3 with approval of the Specific Plan. The primary land use would be residential, with supporting facilities. None of the existing structures on the site would be retained.

< **Residential.** Residential density would be limited to 85 residential units and would include a total of 58 single-family detached and cottage homes, and 27 multifamily units. The multifamily units would be low- to moderate-income housing units.

< **Open Space.** An open-space buffer would be provided along Larkspur Creek with an adjacent bikeway/footpath. A landscaped buffer would be provided between Larkspur Plaza in Subarea 2 and proposed residential development in Subarea 3. Public park space would also be provided somewhere in the subarea, consistent with the Larkspur Municipal Code, and with the proposed General Plan amendment discussed below. The precise location and size of the park would be determined as part of the development review process.

< **Community-Serving Facilities.** Offices, lounge areas, meeting rooms, and indoor and outdoor recreation facilities could be provided, primarily for the use of the residents of Subarea 3.

The Specific Plan land use category is Mixed Residential. The current zoning is L1 Light Industrial. The General Plan land use designation for Subarea 3 is Low Density Residential.

General Plan Amendment

The General Plan Land Use Chapter and the Community Services and Facilities Chapter do not designate a public park in Subarea 3, although Community Services and Facilities Chapter Action Program [2] anticipates that additional park land will be acquired and developed within

the city. In order to assure consistency between the General Plan and the Specific Plan, the General Plan would be amended to designate a planned public park in Subarea 3. The full text of the proposed General Plan amendment is shown in Appendix B, General Plan Amendments. The Land Use Chapter text would be amended to designate a planned park on the Niven Nursery site. General Plan Figure 8.2, the Bicycle/Pedestrian Circulation Plan would be amended to designate planned Class 1 Bike Paths on the south side of Doherty Drive and on Larkspur Plaza Drive.

PROJECT-LEVEL IMPACTS

Impact **4.1-1**

Potential Inconsistency with Policies of Larkspur General Plan. *Development proposed under the Specific Plan is generally consistent with the goals and policies of the General Plan. This impact is considered* ***less than significant****.*

Development proposed under the Specific Plan is generally consistent with the goals and policies of the General Plan. Subareas 1 and 2 are designated as Downtown in the General Plan, which allows for commercial uses and promotes retail sales. Maintaining the historic character of the area is also emphasized. Second-story housing is permitted, and the maximum FAR is 1.0. Allowed land uses in the Specific Plan for Subareas 1 and 2 include hotels/inns, multifamily residential units, retail sales, offices, cultural/civic uses, and parking, all uses allowed under the General Plan. The Specific Plan FAR would be 0.6 to 0.8 for Subarea 1 and 0.4 to 0.6 for Subarea 2.

The General Plan designates Subarea 3 as Low Density Residential, which allows for up to five dwellings per gross acre. The Specific Plan proposes a maximum of 85 residential units, which equates to five dwelling units per acre, a density consistent with the General Plan. The General Plan also requires that a specific plan be prepared for any development in the Chevron/Walker property and the Niven Nursery property. The Specific Plan would satisfy the requirement for preparation of a specific plan for those areas.

The Bicycle/Pedestrian Circulation Plan in the General Plan identifies bike routes in the city, including those within or adjacent to the Specific Plan boundary. The Specific Plan includes the provision of a Class I bike path in the former railroad right-of-way in Subarea 1. Also, a bikeway would be provided along the west side of Larkspur Creek. While the Class 2 bike path proposed under the Specific Plan along Larkspur Plaza Drive and the Class 1 paths proposed on the south side of Doherty Drive and west of Larkspur Creek are not identified in the Bicycle/Pedestrian Circulation Diagram (General Plan Figure 8-2), they are consistent with Policies a, d, e, k, and l in the Bicycle and Pedestrian Trails and Paths chapter of the General Plan. The proposed changes to Figure 8-2 would make the proposed bike paths fully consistent with the General Plan.

The proposed designation of a public park site in Subarea 3 is consistent with Goal 1, Policy a, and Action Program [2], and the proposed amendment to the Land Use Chapter and the Community Facilities and Services Chapter of the General Plan. This consistency results from designating a public park location in Subarea 3 in the General Plan amendment and Specific

Plan policies for Subarea 3. Given that the proposed Specific Plan is consistent with the goals and policies in the General Plan, this impact is considered less than significant.

Impact **4.1-2**

Potential Inconsistency with the Larkspur Downtown Specific Plan. *The project would apply new policies and guidelines to Subareas 1 and 2, which are currently within the Larkspur Downtown Specific Plan boundaries. While one of the design guidelines in the Larkspur Downtown Specific Plan may be considered to be inconsistent with the policies in the Specific Plan, both plans would achieve the objective of having pedestrian-scale design in Subareas 1 and 2 that reflects Downtown's historic design character. This impact is considered* ***less than significant****.*

The Land Use Chapter Action Program [13] in the General Plan requires the preparation of a specific plan for the Old Downtown, and such a specific plan must address appropriate uses, traffic, parking, economic vitality, building preservation, and design of new development, as well as the link between the Old Downtown, the Larkspur Plaza Shopping Center, and North Magnolia Avenue. The Larkspur Downtown Specific Plan was developed and adopted to satisfy this General Plan requirement. The requirements and recommendations in the Larkspur Downtown Specific Plan are considered to be the City's vision for the Old Downtown. As such, any future development and planning effort within the Larkspur Downtown Specific Plan area must be consistent with the Larkspur Downtown Specific Plan.

Specific Plan Subareas 1 and 2 are currently located within the Larkspur Downtown Specific Plan boundaries. While the Larkspur Downtown Specific Plan boundaries would be altered as a part of the proposed action so that Subareas 1 and 2 would no longer be within the Larkspur Downtown Specific Plan boundaries, the Specific Plan is intended to achieve the same vision for the Old Downtown within Subareas 1 and 2 as described in the Larkspur Downtown Specific Plan.

The land uses proposed under the Central Larkspur Specific Plan are consistent with those identified in the Larkspur Downtown Specific Plan. An assessment of the consistency between policies in the Central Larkspur Specific Plan and the Larkspur Downtown Specific Plan concluded that the policies are consistent, except for Storefront Downtown guideline (2) of the Downtown Specific Plan, which requires that buildings in the Storefront Downtown designation "follow the pattern of bays found in the neighborhood." The Central Larkspur Specific Plan does not explicitly require bays in Subarea 2, the portion of the project area designated Storefront Downtown in both specific plans. However, the land use and design policies in the Central Larkspur Specific Plan mirror the Downtown Specific Plan in all other respects, and the two plans provide essentially the same standards for achieving pedestrian-scale design in Subareas 1 and 2 that would reflect Downtown's historic design character. Because existing buildings in Downtown do not all have bays, future buildings without bays would not be considered to be inconsistent with the visual character of Downtown. Thus the deletion of the requirement for bays would not diminish the effectiveness of these policies and standards in achieving the objective.

The Heritage Preservation Board's review of proposed zoning changes and building, demolition, and grading permits for development within the Downtown Historic District and the contiguous Historic Preservation District Overlay zone is another planning process that would ensure applicable future development would fit the City's vision for Old Downtown. The southern portion of Subarea 1 (south of Post Street) is located within the Downtown Historic District. Two existing buildings associated with the historic railroad, the former railroad station and warming house, would remain and would be used in a manner that would contribute to the vitality of adjoining development. Another historic structure, the American Legion hall, constructed prior to 1909, would also be retained. The railroad right-of-way's status as "contributing" to Larkspur's historic district would be maintained. Under the Specific Plan, all development in the southern portion of Subarea 1, including a hotel, office, second-story residential, etc., would occur consistent with the restrictions of the historic district, and adequate open space would be required to provide an appropriate setting for the historic railroad buildings. As such, development pursuant to the Specific Plan would be consistent with the Downtown Historic District.

Because the Specific Plan is generally consistent with the land use designations and policies of the Larkspur Downtown Specific Plan and because the future development within the Downtown Historic District is subject to Heritage Preservation Board's review, this impact is considered less than significant.

Impact **4.1-3**

Potential Incompatibility of Future Development Projects with Onsite and Surrounding Land Uses. *The area surrounding the Specific Plan area is almost fully built out, and there are existing land uses in the Specific Plan area that would be retained. Development of the Specific Plan area with retail, residential, open space, civic uses, hotel/inn, or other such uses, would be consistent with existing surrounding and onsite land uses as set forth in the General Plan and the specific plans. This impact is considered* ***less than significant****.*

The Specific Plan area is located within and adjacent to the Larkspur Downtown area and is surrounded by urban development. Existing residential development is located to the south, west, northwest, and northeast. A community park is located to the north, and schools are located to the north and east. This area is almost fully built out. Development of the Specific Plan area with retail, residential, open space, civic uses, hotel/inn, or other such uses, would be consistent with existing surrounding and onsite land uses as set forth in the General Plan. The General Plan and the existing and proposed specific plans contain land use designations, as well as development policies and programs, to ensure that future development projects would be compatible with existing land uses. This impact is considered less than significant.

Impact **4.1-4**

Potential Conversion of Farmland to Nonagricultural Use, Conflict with Existing Zoning for Agriculture, or Conflict with a Williamson Act Contract. *No conversion of farmland to nonagricultural use, would occur, and development of the site would not result in conversion of land that is currently in agricultural use. Development of the Specific Plan area would not conflict with existing zoning provisions intended to promote or retain agricultural uses. No portion of the Specific Plan area is currently under a Williamson Act contract. This impact is considered* ***less than significant****.*

The Larkspur area has experienced an urban level of development and is almost fully built out. No agricultural operations occur in the vicinity of the Specific Plan area. Although the Niven Nursery (Subarea 3) has supported horticultural operations since the early 1920s, the site is no longer used for agricultural production. There is also no identified Prime Farmland, Unique Farmland, or Farmland of Statewide Importance within the Specific Plan boundary. Therefore, there would be no conversion of farmland to nonagricultural uses as a result of implementation of the Specific Plan, and development of the site would not result in conversion of land that is currently in agricultural use.

The Specific Plan area is currently zoned Storefront Downtown (Subarea 1), Transitional Downtown (Subarea 2), and Light Industrial (Subarea 3). Development of the Specific Plan area as proposed would not conflict with existing zoning provisions intended to promote or retain agricultural uses. No portion of the Specific Plan area is currently under a Williamson Act contract. Development permitted under the Specific Plan would not result in the termination of a Williamson Act contract and would not jeopardize agricultural operations on any land currently under a Williamson Act contract. This impact is considered less than significant.

CUMULATIVE IMPACTS

Larkspur and the surrounding area are predominantly built out with a mixture of residential and commercial uses, and little developable land remains. Development in the city would be required to conform to General Plan policies, zoning ordinances, and other planning guidelines and would thus conform to the land use pattern in the city. The commercial, residential, and public uses that would be permitted in the Specific Plan area would be similar to existing land use types in the Specific Plan area and would be required by Specific Plan policies to conform to the existing land use pattern and architectural character. There are no agricultural operations in the Specific Plan area and its vicinity; thus, the Specific Plan would not result in a cumulative farmland conversion impact. As such, no significant cumulative land use impacts are expected.

All development projects within the jurisdiction of the City would be required to be consistent with the General Plan, other plans, and the City's ordinances, including the zoning and subdivision ordinances. Past projects within the City's jurisdiction have also had to be consistent with the City's plans and ordinances. The proposed Specific Plan would be generally consistent with the City's General Plan and Larkspur Downtown Specific Plan, and the zoning would be modified to be consistent with existing plans and the Specific Plan. As such, impacts such as land use incompatibility are not expected to result from the Specific Plan. Because the Specific Plan would not lead to the conversion of farmland, it would not contribute to any cumulative farmland conversion impact. Therefore, no contribution to significant cumulative land use impacts would result from implementation of the Specific Plan.

4.1.3 MITIGATION MEASURES

PROJECT-LEVEL MITIGATION MEASURES

No mitigation measures are required for the following less-than-significant impacts.

4.1-1: Potential Inconsistency with Policies of Larkspur General Plan

4.1-2: Potential Inconsistency with the Larkspur Downtown Specific Plan

4.1-3: Potential Incompatibility of Future Development Projects with Onsite and Surrounding Land Uses

4.1-4: Potential Conversion of Farmland to Nonagricultural Use, Conflict with Existing Zoning for Agriculture, or Conflict with a Williamson Act Contract

CUMULATIVE MITIGATION MEASURES

The project would not contribute to cumulative land use impacts; therefore, no mitigation measures are required.

4.1.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

No significant project or cumulative impacts on land use and planning would result from implementation of the Specific Plan.

4.2 POPULATION AND HOUSING

This section describes the demographics of the residents of Larkspur and the current housing environment, including availability and affordability of housing. Projected needs for additional housing units associated with regional demands for affordable housing are also discussed. References consulted include *Projections 2002*, published by the Association of Bay Area Governments (ABAG) (2001), as well as the General Plan Housing Element.

4.2.1 EXISTING SETTING

REGIONAL SETTING

Population

The U.S. Census Bureau estimated the population of Larkspur in 2000 at 12,014 persons. According to the California Department of Finance, the January 1, 2002, population of Larkspur was 12,000 persons, and the January 1, 2003, population was 12,050 persons. Of that 2003 population, 88.4% was white, 4.3% was Hispanic, 0.8% was black, 3.9% was Asian, and 2.6% was other.

In general, Larkspur's residents are well educated and earn a good income; Larkspur has a larger percentage of older adults than nearby areas. In Larkspur, 22% of the population is 65 years or older (versus 13.5% for Marin County and 10.6% for California) (U.S. Census Bureau 2003). In contrast, the percentage of persons under 5 years old in Larkspur is 4.7%, while the percentage in Marin County is 5.4%, and in California it is 7.3%. The median age in Larkspur is 45.9. (U.S. Census Bureau 2003.)

Income

The median household income in 1999 was $66,710, with 60% of the households earning more than $50,000 per year, and 33% earning more than $100,000. Of the 2,940 families in Larkspur in 1999, 53 (1.8%) were living at poverty level.

Housing

The California Department of Finance estimated that as of January 1, 2001, there were 11,859 persons living in occupied housing units and 155 people living in group quarters, for a total population of 12,014. That same year, there were a total of 6,414 dwellings in Larkspur, of which 2,435 were single-family detached units, 365 were single-family attached units, 544 were multifamily structures with two to four units, 2,832 were multifamily structures with five or more units, and 239 were mobile homes. A total of 6,178 units were estimated to be occupied at that time, resulting in a vacancy rate of 3.7%. On average there were 1.93 persons per household in Larkspur on January 1, 2001. (California Department of Finance 2003).

Fewer than 252 difficult-to-develop acres remain out of a total city acreage of 2,065. With the removal of 114 open-space acres from the remaining acreage, only about 138 difficult-to-

develop acres are actually available for future development in Larkspur. The project site has been completely disturbed in the past and remains partially developed. The surrounding area is completely developed.

Identification of Housing Needs

In *Projections 2002* (December 2001), ABAG estimated that the total population of Larkspur will reach 13,300 by 2025 and that the number of households in Larkspur at that time will grow to 6,580. That would represent an average of approximately 2.02 persons per Larkspur household in 2025 (ABAG 2001). ABAG projected a need for the construction of 303 new residential units with a range of affordability in Larkspur between January 1999 and June 2006 (Table 4.2-1), to provide a "fair share" of the regional demand for housing, including housing for low- and moderate-income households.

Table 4.2-1
Larkspur's "Fair Share" of New Affordable Residential Units

Household Classification	Definition	Number of Units	Percent
Very Low Income	50% of area or county median income	56	18.5
Low Income	Between 51% and 80% of the area or county income	29	9.5
Moderate Income	Between 81% and 120% of the area or county median income	85	28.1
Above Moderate Income	Above 120% of the area or county median income	133	43.9
Total		303	100

Source: Association of Bay Area Governments 2001

LOCAL SETTING

There are currently no residential units in Subareas 1 and 2. In Subarea 3, the Niven property originally was 17.9 acres, but a small portion (1.1 acres) of the property south of East Ward Street was sold, and two homes were built on the parcel. That subdivided land is not a part of the Specific Plan area. Currently, six residential structures occupy the remaining 16.8-acre Niven property. Three of the units are dilapidated and unoccupied; two are used for storage, and one unit—a modular unit—is occupied. A caretaker and his family occupy the modular unit.

REGULATORY SETTING

The *City of Larkspur General Plan Housing Element* (adopted by Resolution 79/90 on December 19, 1990) has an overall goal of promoting social and economic diversity by providing safe and affordable housing to all social and economic segments of the community without degradation of the environmental setting. Section 1.1, Key Issues, of the Housing Element notes that the

city is approaching buildout, and further states, "As the city reaches buildout, the emphasis shifts from growth to renewal. Continual development has impacted the existing infrastructure (roads, public facilities, and the availability of utilities). High market values for housing and land constrain development of low- and moderate-income housing, posing a greater challenge to the City of Larkspur." The California Government Code (§65583(b)(2)) states that "It is recognized that the total housing needs identified … may exceed available resources and the community's ability to satisfy this need within the context of the general plan requirements ... Under these circumstances, the quantified objectives need not be identical to the identified housing needs, but should establish the maximum number of housing units that can be constructed, rehabilitated, and conserved over a five-year time period."

Based on data from the late 1980s, the Larkspur Housing Element indicated that approximately 46% of low-income households that *owned* homes in Larkspur were overpaying for housing, and approximately 82% of low-income households that were *renting* in Larkspur were overpaying for housing. Given the increase in local housing costs since that time, it is likely that a large proportion of low-income households continue to overpay for housing in Larkspur.

The 1990 Housing Element presents a number of objectives, policies, and programs, many of which address the need for low- and moderate-income housing. The Larkspur Housing Element indicates that even if buildout is attained, the need for housing units affordable to very low- and low-income households, as identified by ABAG, will not be met for the following reasons:

< Remaining undeveloped sites are, for the most part, the most difficult sites to develop. Either they are on steep slopes with geotechnical problems or they are on marsh fill and subject to settlement problems.

< Many of the sites lack adequate infrastructure to support development; the roads are at Level of Service (LOS) D, resulting in excessive traffic congestion on main city thoroughfares.

< Development of canyon areas would create fire hazards in heavily vegetated hillside areas.

< Sensitive environmental conditions make the few remaining available sites expensive to purchase and to develop.

The Housing Element addresses the need for affordable housing. Objective 2 acknowledges the development of new low- and moderate-income housing in Larkspur. "The City seeks to provide its 'fair share' of low and moderate income housing." Program 2.1.1 of Objective 2 establishes specific policies for new housing developments of 10 or more units that include provisions for low- and moderate-income households:

Program 2.1.1 (a). Housing developments of 10 or more units at densities less than 7 units per acre must provide for the sale or rental of a minimum of 5% of all units at prices affordable to moderate-income households and 5% affordable to low-income households.

Program 2.1.1 (b). Housing developments of 10 or more units at densities of 7 units or more units per acre must provide for the sale or rental of a minimum of 7.5% of all units at prices affordable to moderate-income households and 7.5% affordable to low-income households.

The Niven property (Subarea 3) is identified in the Larkspur Housing Element as having the potential to support the development of up to 90 single-family residential units (including nine low- and moderate-income units) on the 17.9-acre site once the nursery use at the site has been abandoned, traffic concerns have been addressed, and a specific plan for such development has been adopted. Since the publication of the Larkspur Housing Element, the size of the developable portion of Subarea 3 has been reduced to approximately 16.8 acres, as described above.

During public workshops on the draft Specific Plan, concern was expressed that many of those employed in Larkspur (particularly those who work in the local school system and who provide other public services) are not able to afford housing within the community. It was suggested that some of the housing that may be proposed within the Specific Plan area should be affordable to local workers.

4.2.2 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Implementation of the Specific Plan would have a significant impact on population or housing if it were to result in:

< the inducement of substantial population growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure);

< the displacement of substantial numbers of existing housing units, necessitating the construction of replacement housing elsewhere; or

< the displacement of substantial numbers of people, necessitating the construction of replacement housing elsewhere.

PROJECT-LEVEL IMPACTS

Introduction

Under the Specific Plan, it would be possible to develop a maximum of 132 residential units: 28 multifamily units in Subarea 1; 19 multifamily units in Subarea 2; and 85 single-family, cottage, and multifamily residential units in Subarea 3. The actual number of residential units

in all three subareas would depend upon the ultimate mix of land uses proposed by developers and approved by the City. For the analysis in this section, it was assumed that the maximum potential number of residential units would be developed.

In Subarea 1, 28 multifamily units could be developed on the Nazari property, with a maximum area of 36,000 gross square feet. The actual number of units would be determined by both the amount of space devoted to other uses within the parcel area (office, retail sales, etc.) and the size of the residential units.

Subarea 2 is currently developed with retail uses. A total of 19 multifamily residential units could be developed under the Specific Plan, depending upon the mix of uses. It is unlikely that the subarea would be developed with residential uses because of existing viable commercial uses, especially a relatively new Albertsons supermarket and a gas station; however, for this analysis it was assumed that all 19 residential units would be developed in Subarea 2.

Potential residential development in Subarea 3 would include a mix of 25 to 35 single-family homes and 23 to 33 cottage homes, with the total not to exceed 58 market-rate homes. In addition, 27 multifamily housing units would be allowed on a 1.2- to 1.5-acre site. These 27 units would be restricted to affordable housing to conform with the Housing Element goal to provide affordable housing for low- and moderate-income families. The site may be made available for purchase by the City, a nonprofit housing provider, or a third-party developer at fair market value. In the event that the site is not purchased, potential development could be an additional 12 cottage units instead of the 27 affordable units. If that were the case, the total number of residential units in Subarea 3 would be limited to 70 units. The affordable housing requirements set forth in the Housing Element (which requires that 10% of the total number of units in a housing development be affordable units) would apply.

The Specific Plan would allow for the development of a maximum of 132 residential units, of these, 19 units in Subarea 2 and up to 27 in Subarea 3 would be affordable to low- and moderate-income households. In addition, at least three of the potential units on the Nazari property would be affordable, for a total of 49 units, or 37% of the maximum potential housing count, affordable to low- and moderate-income households. Development of these low- to moderate-income housing units in the Specific Plan area would contribute to the stock of affordable housing in Larkspur.

Impact **4.2-1**

Inducement of Substantial Population Growth. *Implementation of the Specific Plan would induce population growth of up to 264 residents, representing 2.2% of the city's population. Such an increase is not considered substantial population growth. This impact is considered* ***less than significant****.*

Development of the project area under the Specific Plan would result in the construction of up to 132 housing units. At an average of two persons per household (based on California Department of Finance's 2001 data for households within the City), the estimated population living in the Specific Plan area following the construction of the maximum number of housing

units that could be built would be approximately 264 residents. The new residents living within the Specific Plan area would represent approximately 2.2% of the city's current population. If local population growth continues as projected by ABAG, in 2025 the residents of the Specific Plan area would represent approximately 2% of the city's total population. The Larkspur General Plan has anticipated the development of housing in Subarea 3 once the nursery at that location is no longer operational, by designating it as suitable for low-density residential development. The development of the Specific Plan area with 132 housing units, as proposed under the Specific Plan, could meet up to 43.6% of the City's regional housing need allocation (303 units) between 1999 and 2006. According to ABAG, 56% of the housing need would be for affordable housing units, and approximately 56% of the 132 housing units in the Specific Plan area may be considered affordable. An increase of up to 264 residents, representing 2.2% of the city's population, is not considered substantial population growth, nor would the project involve development on a site that has not been planned for development in the General Plan. This impact is considered less than significant.

Impact **4.2-2**

Displacement of Existing Housing or Population. *One occupied modular housing unit within the Specific Plan area would be eliminated, resulting in the displacement of the unit and its residents. This impact is considered* ***less than significant****.*

There is one occupied modular housing unit within the Specific Plan area. This unit, currently occupied by a caretaker of the Niven property and this family, would be eliminated as a result of proposed Specific Plan development, resulting in the displacement of one residential housing unit and its residents. Because the displacement of one housing unit is not considered to be substantial, this impact is less than significant.

CUMULATIVE IMPACTS

Larkspur and the surrounding area are predominantly built out, with little developable land remaining. The properties adjacent to the Specific Plan area have already been developed; thus the Specific Plan would not induce substantial growth in the immediate vicinity. The development of a maximum of 132 residential units in the Specific Plan area, 27 of which would be low- to moderate-income housing units, would provide additional housing opportunities for the area. The construction of affordable units would contribute to the City's goal of providing its "fair share" of low- and moderate-income housing in the area. A significant amount of growth would not be induced in the area, no substantial displacement would occur, and affordable housing would be added to the area's housing stock. Therefore, there would be no cumulative impacts on population or housing as a result of the Specific Plan.

4.2.3 MITIGATION MEASURES

PROJECT-LEVEL MITIGATION MEASURES

No mitigation measures are required for the following less-than-significant impacts.

4.2-1: Inducement of Substantial Population Growth

4.2-2: Displacement of Existing Housing or Population

CUMULATIVE MITIGATION MEASURES

There would be no significant cumulative impacts on population or housing as a result of the Specific Plan; therefore, no mitigation measures are required.

4.2.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

No significant project or cumulative impacts on population or housing would result from implementation of the Specific Plan.

4.3 GEOLOGY AND SOILS

This section describes the geology, soils, and seismicity of the Specific Plan area. The information presented below has been developed based on several sources of data. These sources include *Geotechnical Investigation for the Niven Nursery Site* (Harza Engineering Company 1998a) (Appendix C-1); *Review of Geologic Conditions for the Central Larkspur Area Specific Plan, Larkspur, California* (World Environmental Science & Technology 1999) (Appendix C-2); personal communication with Miller Pacific Engineering Group (Appendix C-3); and review of published literature, maps, and Internet sites on geology, soils, and seismicity of the area.

4.3.1 EXISTING SETTING

REGIONAL SETTING

The Specific Plan area lies in the central portion of the Coast Ranges Geomorphic Province in the seismically active San Francisco Bay Area. The northwest to southeast trending ridges and valleys of the Coast Ranges have formed in response to the active tectonism of the region. Tectonics of the region are controlled by the San Andreas Fault System. The northwest to southeast striking San Andreas fault represents the boundary between the Pacific Plate, primarily offshore to the east-southeast, and the North American Plate, primarily onshore to the west-northwest. In response to the relative northwest movement of the Pacific Plate with respect to the North American Plate, other faults have formed. These include fault structures such as the Hayward fault, the Rogers Creek fault, and the Calaveras fault, all located within 25 miles of the site. Large-magnitude earthquakes could be generated on any of these regional active faults.

The regional geology of the area is characterized as part of the Franciscan Complex of Jurassic to Cretaceous age. The Franciscan Complex is a tectonostratigraphic group of rocks that form the basement complex of the region between the San Andreas fault and the Hayward and Rogers Creek faults. The rock types within this complex include chert, shale, graywacke sandstone, siltstone, limestone, greenstone, greenschist, and blueschist. Rocks are metamorphosed to various degrees from very low grade to low grade metamorphism. Tectonic deformation of the rocks is very common, with weaker shale units often sheared and fractured around more massive graywacke sandstone and greenstone units. Near San Francisco Bay, this basement complex is overlain by alluvial deposits of sand, silt, and clay and a clayey silt/silty clay formed in the estuarine and deeper portions of the bay (Bay Mud). Bay Mud is a low density, high water content, compressible material and is present underlying portions of the Central Larkspur area. Bay Mud is often interbedded with alluvial sand deposits, especially at the margins of the bay.

LOCAL SETTING

Geologic and Soils Conditions

The Specific Plan area is located on the northwest margin of San Francisco Bay. It is on a natural upland peninsula that extended into the historical wetland margins of San Francisco

Bay. Larkspur Creek is located along the southern and eastern boundaries of the Specific Plan area. This area is generally composed of fine-grained colluvium derived from the erosion of nearby hills and alluvial deposits of marsh sediments and Bay Mud. Soils in the Specific Plan area have been mapped as xerothents-urban complex, indicating significant artificially deposited fill materials that can exhibit variable drainage and engineering strength characteristics (USDA SCS 1979). The artificial fill materials range in thickness from approximately 2 feet to 9 feet below ground surface. This material appears to be composed of fine-grained sand with clay and gravel, and fine-grained sand mixed with organics and shell fragments (West 1999).

Geologic maps of the Specific Plan area published by the California Geological Survey (CGS) (formerly the California Division of Mines and Geology) show the Specific Plan area as being underlain by artificial fill (Qaf) and Bay Mud (Qm). The nearest bedrock to the Specific Plan area consists of Franciscan Complex graywacke sandstone with outcrops located within 0.2 mile to the west (Rice et al. 1976).

The western portion of the Specific Plan area, primarily consisting of Subareas 1 and 2, appears to be underlain primarily by Pleistocene alluvium. The alluvium is underlain by the Franciscan Complex, which formed during the Jurassic and Cretaceous periods between 65 and 180 million years ago (California Division of Mines and Geology 1969, Rice et al. 1976). Investigations at nearby properties at 532 and 600 Magnolia Avenue did not appear to encounter Bay Mud. An excavation of underground storage tanks performed approximately 300 feet west of Subarea 3 at 600 Magnolia Avenue encountered fill and alluvium overlying sandstone and shale bedrock at a depth of approximately 10 feet below ground surface (Environmental Resolutions, Inc. 1999). The extent of Bay Mud underlying the western and topographically higher portion of the Specific Plan area, primarily Subareas 1 and 2, appears to be limited.

Native geologic materials underlying the eastern portion of the Specific Plan area, including most of Subarea 3, consist of Bay Mud (deposited within the last 11,000 years) overlying older Pleistocene alluvium deposited within the last 1.6 million years. Bay Mud is broken down into two units, Younger Bay Mud and Older Bay Mud. Both Younger Bay Mud and underlying Older Bay Mud were encountered in boreholes above alluvial soils at the Niven property (Harza Engineering Company 1998a) (Appendix C-1). Younger Bay Mud consists of highly compressible silt and clay sediments that overlies alluvium and Older Bay Mud and covers the bay bottom and margins. Younger Bay Mud consists of soft, uniform, gray silty clay to clayey silt containing 45% to 95% clay-size particles, silt, minor fine sand, and fragments of shells (California Division of Mines and Geology 1969). The term "Older Bay Mud" is used to describe a deposit of medium stiff dark greenish-gray silty clay with varying amounts of sand and fine gravel. At the mouths of streams and creeks and in marshland areas, Bay Mud is often interbedded with alluvial deposits.

Geotechnical investigations, which would not typically be prepared until development proposals are presented to the City, would include site-specific soil testing results and other detailed geologic and soils information that would be needed for site-specific environmental

and engineering analyses. Because no development proposals for sites within the Specific Plan area have been submitted to the City at this time, no geotechnical investigations are required. Due to the availability of geotechnical investigations previously done for Subarea 3, however, detailed geologic and soils information is presented below for Subarea 3.

Subarea 3 Geologic and Soils Conditions

Harza Engineering Company prepared the *Geotechnical Investigation for the Niven Nursery Site* (Specific Plan Subarea 3) in April 1998 (Appendix C-1). This report indicated that, according to historical maps of former shorelines, Subarea 3 is located on the limits of historic San Francisco Bay margins. Subarea 3 was originally a peninsula trending in an east-west direction through the central portion of the property. Fill was placed on the property in the late 1800s.

The alluvium underlying the Subarea 3 is characterized as medium dense silty, clayey sands and gravels and stiff silty clays (Harza Engineering Company 1998a) (Appendix C-1). Bay Mud (Younger and Older) was encountered to a depth of approximately 35 feet below ground surface, and the alluvium was encountered to 46 feet below ground surface, the maximum depth investigated.

Geologic and Seismic Hazards

The Specific Plan area is located in the seismically active San Francisco Bay Region. Several types of faults are mapped by the CGS (formerly the Division of Mines and Geology). These include active faults with surface displacement within the last 11,000 years; potentially active faults with surface displacement between 11,000 and 1.6 million years ago; and inactive faults with no surface displacement within the last 1.6 million years. Active faults of the region (Exhibit 4.3-1) include the San Andreas fault (located approximately 8 miles southwest of central Larkspur), the Hayward fault (located approximately 10 miles northeast), and the Rogers Creek fault (located approximately 12 miles north-northeast). The smaller inactive San Pablo fault is located approximately 5 miles east of the Specific Plan area, and a relatively small, inactive, unnamed fault is located approximately 1 mile north of the Specific Plan area (Wentworth 1997).

Other geologic faults may be present in the area, but none are considered active by the CGS.

Seismic Hazards

Seismic hazards are generally classified as two types, primary and secondary. Primary geologic hazards include surface fault rupture. Secondary geologic hazards include ground shaking, liquefaction, and surface fault rupture, among others. As no active faults are known to cross central Larkspur, the primary geologic hazard of surface fault rupture is not anticipated to affect the Specific Plan area. Seismically induced damages at the Specific Plan area are likely to be caused by secondary effects such as ground shaking and liquefaction.

Exhibit 4.3-1 Regional Earthquake Faults

Ground Shaking

Based on the geologic materials underlying the Specific Plan area, the ground shaking amplification is estimated to be extremely high (ABAG 2003). However, estimates of actual ground shaking intensity according to the Modified Mercalli Intensity Scale of 1931 (Table 4.3-1), which depend on the size and distance from the earthquake, indicate that earthquake shaking intensity would be as follows:

< IX (strong—nonstructural damage) for a 1989 Loma Prieta type earthquake (Richter Magnitude 6.9 on a distant fault);

< X (violent—considerable damage) for a maximum credible Hayward fault earthquake (Richter Magnitude 7.1); and

< XI (very violent—extreme damage) for the maximum credible regional earthquake (Richter Magnitude 7.9) equivalent to the 1906 San Francisco earthquake (ABAG 2002).

Table 4.3-2 presents a comparison of the Modified Mercalli Intensity Scale to the Richter Magnitude scale. The Richter Magnitude scale is generally reported for earthquakes. Ground shaking intensities are also related to the ground accelerations caused during the earthquakes. Peak ground accelerations are generally reported as a percent of gravity. Peak ground accelerations for the Specific Plan area with a 10% probability of being exceeded in the next 50 years are estimated to be 50% to 60% of gravity (0.5g to 0.6g). (California Division of Mines and Geology 1996.) Damage to a single-family dwelling typically begins at 0.2g (Risk Prediction Initiative 1996).

Liquefaction

Liquefaction is a secondary seismic hazard involving saturated cohesionless sand and silty sand sediments located close to the ground surface. Liquefaction occurs when the strength of a soil is decreased and pore pressure increases as a response to strong seismic shaking and cyclic loading. During the loss of strength the soil becomes mobile, similar to a liquid, and can move both horizontally and vertically. The potential for liquefaction is determined by three main factors: depth of groundwater; soil type (sands and silty sands are most vulnerable); and the seismicity of the area. Liquefaction is most common in saturated sandy soils, and can be responsible for widespread structural damage. At the ground surface, large fissures can open and sand boils can form, resulting in damage to structures, utilities, pavements, and other infrastructure.

The liquefaction susceptibility of fill materials can range from very low to very high, depending on the density of the soil, the unit thickness, water content, and grain-size distribution (Knudsen et al. 1997). Liquefaction commonly occurs in sands and silty sands of relatively uniform grain size distribution, but can also occur to a lesser extent in clayey sands.

Table 4.3-1 Modified Mercalli Intensity Scale of 1931	
I	Not felt except by a very few under especially favorable circumstances.
II	Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.
III	Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibration like passing of truck. Duration estimated.
IV	During the day felt indoors by many, outdoors by few. At night some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motorcars rocked noticeably.
V	Felt by nearly everyone, many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.
VI	Felt by all, many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.
VII	Everybody runs outdoors. Damage negligible in building of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motorcars.
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motorcars disturbed.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.
XI	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bend greatly.
XII	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.
Source: California Geological Survey 2002	

The liquefaction susceptibility of water-saturated Bay Mud is high due to common sand and silty sand lenses, especially at the margins of the bay. The silty clay and clayey silt portions of the Bay Mud formation are not liquefiable, but would be affected by liquefaction of interbedded sand lenses. The liquefaction susceptibility for Pleistocene alluvium is characterized as low to moderate (Knudsen et al. 1997). Because the Franciscan Complex is

composed of consolidated bedrock units such as shale, greenstone and graywacke sandstone, it is not liquefiable.

Table 4.3-2
Comparison of Richter Magnitude and Modified Mercalli Intensity

Richter Magnitude	Expected Modified Mercalli Intensity at Epicenter	General Description
2	I - II	Usually detected only by instruments
3	III	Felt indoors
4	IV - V	Felt by most people; slight damage
5	VI - VII	Felt by all; many frightened and run outdoors; damage minor to moderate
6	VII - VIII	Everybody runs outdoors; damage moderate to major
7	IX - X	Major damage
8+	X - XII	Total and major damage

Source: California Geological Survey 2002

The presence of fill materials and Bay Mud underlying the Specific Plan area make those portions of the area potentially susceptible to liquefaction. However, results of the geotechnical investigation in Subarea 3 indicate that the liquefaction susceptibility of the soil is low based on the density, moisture content and grain size distribution of the soils penetrated (Harza Engineering Company 1998a) (Appendix C-1). Bay Mud underlying the Specific Plan area is dominated by silty clay and clayey silt. A single small area was encountered during the subsurface investigation that was characterized as loose silty sand from the ground surface to 7 feet below ground surface. Because of the high concentration of fines (silt plus clay) of 49%, this material is considered unlikely to undergo liquefaction.

Compressible Soils

The settlement of clay and silt soils is a common problem in development, especially on deposits of Bay Mud, and to a lesser extent alluvial soil, colluvium, and fill. Settlement generally occurs in two phases, known as primary consolidation settlement and secondary consolidation settlement. Primary consolidation settlement is the result of a volume change in saturated cohesive soils because of the expulsion of the water which occupies void spaces. Secondary consolidation settlement is observed in saturated cohesive soils, such as Bay Mud, and is the result of long-term plastic adjustment of soil fabrics. Primary consolidation settlement can amount to very considerable settlement and extreme distress to normal structures. Secondary consolidation settlement is generally much smaller than Primary.

Surface soils encountered during the Harza geotechnical investigation (Appendix C-1) generally consist of fill material. This fill material consists of firm to hard sandy, gravelly clays and silts and medium dense to dense silty sands and gravels extending to depths of approximately 4 to 9 feet. This fill material was found to be heterogeneous and potentially compressible, and was underlain by Bay Mud or alluvial soils consisting of stiff to hard silty

clays and sandy silts. The Bay Mud, extending to a depth of approximately 35 feet, was found to be highly compressible and variable in consistency. The Bay Mud and/or fill material was found to be underlain by alluvial soils consisting of medium dense to dense, silty and clayey sands and gravels and stiff silty clays which extended to the maximum depth explored during the geotechnical investigation of 46 feet below ground surface.

Corrosive Soils

Soils underlying the Specific Plan area are moderately to extremely corrosive to steel because of their salt content. Sandier soils are generally less corrosive than highly saline clayey soils, such as Bay Mud.

REGULATORY SETTING

Various state and local regulations apply to geologic hazards in the San Francisco Bay area. The primary applicable regulations are described below.

State of California

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Special Studies Zone Act, now known as the Alquist-Priolo Earthquake Fault Zoning Act (PRC§2621 et seq.), was enacted in 1972. The Alquist-Priolo Act prohibits construction of most types of buildings intended for human occupancy across the traces of active faults and strictly regulates construction along active faults. The act is intended to reduce the hazard to life and property from surface fault ruptures during earthquakes; it is not directed toward other earthquake hazards.

The Alquist-Priolo Act defines criteria for identifying active faults. A fault is considered "sufficiently active" if one or more of its segments or strands show evidence of surface displacement during Holocene time (approximately the last 11,000 years); it is "well-defined" if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface, using standard professional techniques, criteria, and judgment (Hart and Bryant 1997).

Areas along faults considered sufficiently active and well-defined are zoned differently than other areas, and construction in these areas is regulated more stringently. The Alquist-Priolo Act requires the State Geologist to establish regulatory zones known as "earthquake fault zones" around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and state agencies for their use in planning efforts. According to the California Geologic Survey, the City of Larkspur is not an affected city (CGS, 2003a). Local agencies must regulate most development projects within the zones. Projects include all land divisions and most structures for human occupancy.

Before a project can be permitted in the vicinity of an earthquake fault zone, cities and counties must require a geologic investigation to demonstrate that proposed buildings will not

be constructed across active faults. An evaluation and written report of a specific site must be prepared by a licensed geologist. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back from the fault (generally 50 feet).

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (PRC §§2690–2699.6) addresses nonsurface fault rupture earthquake hazards, including liquefaction, strong ground shaking, and seismically induced landslides. Intended to reduce damage resulting from earthquakes, the Seismic Hazards Mapping Act contains provisions conceptually similar to those of the Alquist-Priolo Act. The state is responsible for identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other earthquake and geologic hazards, and affected cities and counties must regulate development in mapped seismic hazard zones. According to the California Geologic Survey, seismic hazard maps have been planned but are not completed for Marin County, thus no seismic hazard map is currently available for the City of Larkspur (CGS 2003b). As such, the City of Larkspur is currently not considered an affected city.

Under the Seismic Hazards Mapping Act, cities and counties may not issue development permits for sites in seismic hazard zones until appropriate site-specific geologic and geotechnical investigations have been completed and measures to reduce potential damage have been incorporated into the development plans. Information on the seismic hazard maps is not sufficient to serve as a substitute for the required site-specific geologic and geotechnical investigations.

City of Larkspur

Larkspur Municipal Code

The State of California provides minimum standards for building design through the California Uniform Building Code (California UBC) (CCR Title 24). The California UBC is based on the Uniform Building Code (UBC), which is used widely throughout the United States and has been modified for conditions within California. Under Larkspur Municipal Code §15.08.010, the City has adopted the California UBC, with minor amendments, as its building code. Seismic Hazard programs under the Larkspur General Plan require that all unreinforced masonry buildings be seismically upgraded; Chapter 15.07 of the Larkspur Municipal Code addresses earthquake hazard reduction in such buildings, establishing minimum standards for structural seismic resistance (retrofitting) to reduce the risk of loss of life or injury.

Site-Specific Geotechnical Investigations

Under the Larkspur General Plan (1990), geotechnical engineering investigations are required for buildings proposed to be constructed in high seismic hazard areas potentially subject to severe ground shaking and ground failure (Bay Mud, stream and landslide deposits) and critical structures or structures made of materials other than wood frame. The investigations

should include a site-specific characterization of anticipated strong ground motion, which would include the estimated peak horizontal ground acceleration, the duration of strong shaking, and the site period. A structural engineer should then review the seismic data to determine whether the minimum California UBC criteria will be adequate. General Plan Action Program [26] also requires geotechnical investigations for areas subject to settlement and subsidence. A review of geologic data and geotechnical investigations previously conducted within the Specific Plan area has been performed, and, in particular, a geotechnical investigation has been conducted for Subarea 3. Additional geotechnical investigations would be required for subsequent development projects pursuant to the Specific Plan.

4.3.2 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Implementation of the Specific Plan would have a significant impact on geology and soils if it were to result in:

< the exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;

< the exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking;

< the exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction;

< the exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides;

< substantial soil erosion or the loss of topsoil;

< development located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and which could potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse;

< development located on expansive soil, creating substantial risks to life and property; or

< development in areas where soils are incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

While development of the Specific Plan area would expose occupants to some risk from seismic and geologic hazards, the policies and programs of the Larkspur General Plan are intended to

minimize the hazards to new development by requiring the assessment of the conditions that might adversely affect them, and adjusting the design and extent of development projects to minimize risk.

PROJECT-LEVEL IMPACTS

Impact **4.3-1**

Increased Exposure to Strong Seismic Ground Shaking. *Given the seismicity of the region, construction of retail, office, hotel, residential units, and other facilities in the Specific Plan area would result in the risk of exposing an increased number of people and structures to strong ground shaking. Given the required geotechnical investigation and compliance with the City's building codes, this impact is considered* ***less than significant****.*

Implementation of the Specific Plan would expose an increased number of people or structures to the risk of substantial adverse effects (e.g. loss, injury, or death) resulting from strong seismic ground shaking. The U.S. Geological Survey (USGS) Working Group on Earthquake Probabilities (U.S. Geological Survey 2003) estimates that there is a 62% probability that a Richter magnitude 7.0 or greater earthquake will occur in the San Francisco Bay Region between 2002 and 2031. An earthquake of this size anywhere within the region would be felt in the Specific Plan area, and could affect the area through strong seismic ground shaking and other secondary earthquake effects. Given the seismicity of the region, construction of new retail, office, hotel, residential units, and other facilities in the Specific Plan area would result in exposing more people and structures to the risks associated with strong ground shaking.

As discussed in Regulatory Setting above, the Larkspur General Plan requires that geotechnical investigations be performed for buildings proposed to be constructed in high seismic hazard areas that are potentially subject to severe ground shaking and ground failure. Because the presence of Bay Mud and alluvial deposits in the Specific Plan area, this requirement is applicable to the Specific Plan area. Further, the City has adopted the California UBC and seismic hazard programs contained in the Municipal Code that address minimum standards for structural seismic resistance for construction. The City's Building Department reviews and enforces compliance with these standards. These protective measures would ensure that development on the Specific Plan site is engineered and designed to withstand the effects of seismic ground shaking and other secondary earthquake effects. With the required incorporation of seismic construction standards in future development projects, the risk of catastrophic effects of seismically induced ground shaking (such as complete structural failure) would be considered less than significant.

Impact **4.3-2**

Potential for Seismic-Related Ground Failure, Including Liquefaction. *Seismic-related ground failure is considered a hazard in the Specific Plan area. Geologic investigations conducted for the Specific Plan area indicate that liquefaction potential in the Specific Plan area varies from high to very low because the underlying geologic structure trends from fill and Bay Mud on the eastern portion of the site to alluvium underlain by sandstone and shale bedrock on the western portion of the site. Given the required geotechnical investigations and compliance with the City's building codes, this impact is considered* ***less than significant****.*

World Environmental Services & Technology (WEST), in *Review of Geologic Conditions for the Central Larkspur Area Specific Plan* (Appendix C-2), reviewed documents describing the geology, hydrogeology, and soil conditions for the Specific Plan area. WEST conducted a reconnaissance level walk-through of the entire Specific Plan area and found that the geology of the area is variable; the eastern portion of the area is underlain by fill and Bay Mud as described below in the Harza investigation, the western portion of the area is underlain primarily by Pleistocene alluvium, which itself is underlain by Franciscan formation sandstone and shale bedrock. WEST noted that geotechnical investigations performed at two sites located further west on Magnolia Avenue did not encounter Bay Mud at all. The liquefaction susceptibility of water-saturated Bay Mud is high, whereas liquefaction susceptibility for Pleistocene alluvium is low to moderate and for bedrock is very low. However, the preparation of site-specific geotechnical investigations, which would include soil sampling, would result in more precise estimation of the liquefaction susceptibility of the Specific Plan area.

Harza Engineering Company's *Geotechnical Investigation for Niven Nursery Site* (Appendix C-1) addressed the hazard of liquefaction on the Niven property (Subarea 3) and concluded that liquefaction potential on that property is low. Liquefaction is associated primarily with saturated cohesionless soil layers located close to the ground surface, but Harza found no saturated loose sand or silty sand cohesionless units in subsurface boreholes. Soils penetrated were predominantly fine-grained and any sand or silty sand units had high percentages of clay and silt, which would preclude liquefaction from occurring. A full geotechnical investigation for the remainder of the Specific Plan area has not yet been performed, but would be required when development projects are proposed.

Lateral spreading and earthquake-induced landsliding involve lateral ground movements caused by earthquake vibrations. These lateral ground movements are often associated with a weakening or failure of an embankment or soil mass overlying a layer of liquefied sands or weak soils. Due to the relative flatness of the Specific Plan area and the generally low potential for liquefaction in Subarea 3, seismically-induced lateral spreading and landsliding are not expected.

WEST reviewed the Harza study and noted that the recommendations in the Harza report are specific to residential development using slab-on-grade construction on fill and Bay Mud. These findings are not transferable to the remainder of the Specific Plan area, which is expected to use other types of construction for commercial and multifamily development, nor should they be applied to other areas of the Specific Plan that, because of the variable nature of the site geology, are likely to exhibit different underlying characteristics. WEST concluded that "Geotechnical [investigations] should not be used when the nature, size, location, configuration, orientation of the proposed structure is changed" (World Environmental Science & Technology 1999). WEST recommends that geotechnical investigations, including geotechnical testing and engineering design, be performed for seismic setting, maximum credible earthquake magnitude and ground shaking potential, flood potential, and compressibility and liquefaction susceptibility for the remainder of the Specific Plan area. Appropriate codes and specifications defined by the City should be used by properly licensed

professional engineers in the evaluation and design of the proposed structures at the time development applications are submitted to the City and the type of construction and location are known.

The Larkspur General Plan requires that geotechnical investigations be performed for buildings proposed to be constructed in high seismic hazard areas that are potentially subject to severe ground shaking and ground failure. Because of the low to high liquefaction potential of Bay Mud and alluvial deposits, this requirement is applicable to the Specific Plan area. Further, the City has adopted the California UBC and seismic hazard programs contained in the Municipal Code that address minimum standards for structural seismic resistance for construction. The City's Building Department reviews the results of geotechnical investigations, including liquefaction susceptibility, and determines which appropriate standards would be applicable to the proposed development; it also enforces compliance with these standards. These protective measures would ensure that development in the Specific Plan area is appropriately engineered and designed such that damage from liquefaction would not occur. As such, this impact is considered less than significant.

Impact **4.3-3**

Soil Erosion During Construction Activities. *Erosion of soils during construction could affect Larkspur Creek, located along the southern and eastern boundaries of the Specific Plan area, and Corte Madera Creek, to which Larkspur Creek is a tributary, by adding to the sediment load of the creeks. This impact is considered* ***potentially significant****.*

The Specific Plan area is located on a flat, relatively level area with cohesive fill and native soils; as such, soil erosion occurs infrequently on most of the Specific Plan area. However, Larkspur Creek runs along the southern and eastern boundaries of the Specific Plan area, and erosion of soils during construction activities could potentially affect the creek in those areas. Soils loosened, exposed, and stored in piles during construction in the vicinity of Larkspur Creek could potentially become mobilized by stormwater during construction activities. Such uncontrolled soil erosion could potentially affect the creek by adding to its sediment load. Because Larkspur Creek is a tributary of Corte Madera Creek, the amount of sediment in Corte Madera Creek could also increase as a result. The City reviews certain types of projects, including those that may be constructed in the Specific Plan area, for compliance with the City's Grading Ordinance and the Subdivision Code (see Section 4.4, Hydrology and Water Quality, for additional information). In compliance with the federal Clean Water Act, (CWA) the City requires the submission of Stormwater Pollution Prevention Plan (SWPPP) for all construction activities involving more than 1 acre of land. The SWPPP, which must be prepared before the issuance of Building Permits and prior to the commencement of construction activities, will include specifications for best management practices (BMPs) that will be implemented during project construction to minimize runoff from the construction areas, including storage and maintenance areas and building materials handling areas. The SWPPP requirement does not apply to construction projects involving less than 1 acre of land; as such, some construction activities in the Specific Plan area, particularly those occurring near Larkspur Creek, may result in an increase in sediment runoff into the creek. For this reason, potentially significant impacts related to soil erosion may result during future construction in the Specific Plan area.

Impact **4.3-4**

Damage to Onsite Foundations and Other Structures Caused by Soil Compressibility and Secondary Consolidation Settlement. *Portions of the Specific Plan area are underlain by Bay Mud, which is susceptible to soil compression and secondary consolidation. Increases in traffic loads on Doherty Drive is not expected to cause noticeable settlement, and implementation of recommendations in site-specific geotechnical investigations, which are required by the General Plan, would reduce the risk of settlement to new buildings in the Specific Plan area. This is a* ***less-than-significant impact****.*

Soil compression may cause a form of subsidence, better known as settlement, that could result in structural damage under certain circumstances. Soils underlying the Specific Plan area are potentially compressible. Existing onsite fill and underlying Bay Mud are present at variable thicknesses and depths. Structures could be susceptible to primary consolidation settlement of up to 17 inches, which could damage foundations, utilities, concrete slabs, pavements, and other site improvements. Differential settlement of buildings placed over variable underlying site conditions can also occur, potentially causing damage. Secondary consolidation settlement of Bay Mud and other Specific Plan area soils after surcharge, which is recommended in the geotechnical investigation for Subarea 3, may result in up to 1.5 inches of settlement to the area (Harza Engineering Company 1998a) (Appendix C-1), potentially resulting in damage to foundation systems, utilities, concrete slabs-on-grade, and other structures.

The Harza geotechnical investigation included recommendations for residential development on the Niven property; however, for the remainder of the site, WEST concluded that "Geotechnical [investigations] should not be used when the nature, size, location, configuration, orientation of the proposed structure is changed." WEST recommended that geotechnical investigations, including geotechnical testing and engineering design, be performed for seismic setting, maximum credible earthquake magnitude and ground shaking potential, flood potential, and compressibility and liquefaction susceptibility for the remainder of the site and appropriate codes and specifications should be used by properly licensed professional engineers in the evaluation and design of the proposed structures at the time development applications are submitted to the City and the type of construction and location are known. As discussed in the regulatory setting section of this chapter, the Larkspur General Plan requires that geotechnical investigations be performed for buildings proposed to be constructed in areas subject to settlement and subsidence. As such, development project's proposed for portions of the Specific Plan area underlain by Bay Mud would be required to include the preparation of geotechnical investigations that would address soil compression. Implementation of site-specific soil treatment and other remediation recommended in the geotechnical investigations would reduce the risk of soil compression and secondary consolidation on buildings in the Specific Plan area to a less-than-significant level.

Settlement is an existing cause of damage to Doherty Drive. Comments received on the previously circulated Draft EIR (Busse, Maltzahn, 2002) and confirmed by the City Planning Department (Pendoley, pers. comm., 2003) noted that Doherty Drive has been subject in the past to settlement and submersion. Based on the thickness of the Bay Mud beneath Doherty Drive and the length of time the fill has been in place, it is estimated that 90 to 95 percent of the settlement has already occurred in the 30 or more years since the fill/roadway was

constructed (Morisoli, pers. comm., 2003). Thus while additional settlement may occur in the future, the extent of the settlement would be more limited than was experienced in previous years.

Settlement is sometimes attributed in part to increased vehicular traffic on roadways. Development in the Specific Plan area would contribute additional vehicular traffic to Doherty Drive. Specifically, the future development in the Specific Plan area would contribute 99 trips during the P.M. peak hour to the segment of Doherty Drive east of Piper Park, whereas the existing volume is 1,000 trips during the P.M. peak hour. During the construction phases of future development, heavy equipment may also be routed to Doherty Drive. It has been speculated that additional traffic on Doherty Drive would increase the potential for inducing settlement. According to geotechnical analysis of Doherty Drive, however, transient loads, such as moving vehicles, regardless of their weight, would have no noticeable effect on settlement of the street surface (Miller Pacific Engineering Group, pers. comm., 2003). These "transient" loads do not induce settlements of the Bay Mud because they are relatively light in relation to soil or asphalt fill and the Bay Mud can withstand short term loads with no noticeable settlement. In contrast, very heavy vehicles, if parked along the roadway for a period of months or years, would theoretically induce some small settlement of the underlying Bay Mud; however, these settlements would likely be so small that they would not be noticeable (Morisoli, pers. comm., 2003). As such, the Specific Plan would not be expected to have a significant impact related to settlement-related damage of Doherty Drive.

Impact **4.3-5**

Damage to Underground Utilities Caused by Corrosive Soils. *Highly corrosive soils underlying the Specific Plan area could cause damage to underground utilities, potentially leading to the disruption of service. This impact is considered* ***potentially significant****.*

The soils underlying the Specific Plan area are moderately to extremely corrosive to steel. The highly corrosive soils could cause damage to underground utilities constructed of steel pipelines. Corrosion of utility pipelines could result in the disruption of utility services and the release of natural gas, water, or wastewater into the environment. The geotechnical investigations currently required by the General Plan do not specifically require testing for corrosive soils and do not require implementation of protective features against corrosive soils. As such, this impact is considered potentially significant.

Impact **4.3-6**

Destabilization of Excavations and Trenches. *Shallow groundwater conditions potentially encountered during grading and utility construction could result in unsafe conditions for construction workers. Given the compliance with existing safety regulations, this impact is considered* ***less than significant****.*

The Specific Plan area is located on a natural upland peninsula that extended into the historical wetland margins of San Francisco Bay. It is located adjacent to tidally influenced surface water within Larkspur and Corte Madera Creeks and may therefore be tidally influenced. Fluctuations in the groundwater level could occur in the Specific Plan area as a result of tidal fluctuations, the change in seasons, variations in rainfall, and other factors. Because the area is a former tidal marsh and is located adjacent to tidal marsh, shallow

groundwater conditions may be encountered during grading operations and utility construction at the Specific Plan area. Shallow groundwater may act to destabilize excavations and trenches during construction, resulting in unsafe conditions for construction workers. However, given required dewatering and trench stabilization in compliance with occupational safety and health guidelines of the California Occupational Safety and Health Administration (Cal/OSHA) and federal OSHA, this impact is considered less than significant.

Impact **4.3-7**

Potential for Surface Fault Rupture. *The nearest mapped active earthquake fault, the San Andreas fault, is located 8 miles from central Larkspur. No known active faults traverse the Specific Plan area. This impact is considered* ***less than significant****.*

Surface fault rupture is not considered a hazard in the Specific Plan area. The nearest active earthquake fault zoned under the Alquist-Priolo Earthquake Fault Zone Act is the San Andreas fault, located approximately 8 miles southwest of central Larkspur, and the Hayward fault, located approximately 10 miles to the northeast. This impact is considered less than significant.

Impact **4.3-8**

Exposure to Landslides. *The Specific Plan area is flat and relatively level; the nearest location with potentially unstable slopes is south of East Ward Street. This impact is considered* ***less than significant.***

The Specific Plan area is flat and relatively level, and is located to the north and east of the nearest hills. The offsite location nearest to the Specific Plan area with potentially unstable slopes is south of East Ward Street, and it is not expected to affect the Specific Plan area because of its distance from the area. Because there are no known landslides that would potentially affect the Specific Plan area, this impact is considered less than significant.

Impact **4.3-9**

Loss of Topsoil. *The Specific Plan area is dominated by fill soils, not topsoil. This impact is considered* ***less than significant****.*

Elements of construction for subsequent development projects, such as installation of underground utility lines and storm drain installation and upgrading, would require excavation of soils. Such work could potentially result in the loss of surface material in the Specific Plan area. However, the soils in the Specific Plan area are dominated by human-placed fill soils that are not properly characterized as topsoil. Since the Specific Plan area was filled, very little topsoil has formed in the area. This impact is considered less than significant.

Impact **4.3-10**

Potential Expansion of Clay Soils. *Because of the density and pre-existing high water content of soils beneath the Specific Plan area, soil expansion is not a substantial concern. This impact is considered* ***less than significant****.*

Clay soils, which may expand when surcharged with water, are present in soils underlying the Specific Plan area, which include fill, Bay Mud, and alluvium. Soil expansion can result in

damage over time to building foundations, underground utilities, and other subsurface facilities if they are not designed and constructed appropriately to resist the changing soil conditions. Volume changes of expansive soils can also result in the consolidation of soft clays, also known as shallow ground subsidence following the lowering of the water table or the placement of fill. Because the soils in the Specific Plan area are of low density and have pre-existing high water content, expansion of the soils is not considered a substantial concern. This impact is less than significant.

CUMULATIVE IMPACTS

Potential geologic and soil impacts are generally site-specific and do not contribute to a cumulative impact; these potential impacts include exposure to seismic ground shaking and surface fault rupture, exposure to seismic-related ground failure, soil erosion and destabilization of excavations and trenches during construction, exposure to structural damage from soil corrosion and settlement, expansion, compressibility and settlement, and exposure to landslides. Additional traffic volume is not expected to induce settlement of Doherty Drive, and settlement-related damage to Doherty Drive would not be attributed to the Specific Plan or cumulative development.

4.3.3 MITIGATION MEASURES

PROJECT-LEVEL MITIGATION MEASURES

No mitigation measures are required for the following less-than-significant impacts.

4.3-1: Increased Exposure to Strong Seismic Ground Shaking

4.3-2: Potential for Seismic-Related Ground Failure, Including Liquefaction

4.3-4: Damage to Onsite Foundation and Other Structures Caused by Soil Compressibility and Secondary Consolidation Settlement.

4.3-6: Destabilization of Excavations and Trenches

4.3-7: Potential for Surface Fault Rupture

4.3-8: Exposure to Landslides

4.3-9: Loss of Topsoil

4.3-10: Potential Expansion of Clay Soils

The following mitigation measures are recommended for potentially significant impacts.

Impact **4.3-3** mitigation

Soil Erosion During Construction Activities.

Prepare and Implement Stormwater Pollution Prevention Plan

The City shall include the following new policy in the Specific Plan.

New Policy: To reduce the potential for impacts on Larkspur and Corte Madera Creeks from soil erosion caused by grading and other construction activities, the developer for either public or private projects shall prepare an Erosion Control Plan for any construction activity, including those that involve less than one acre of disturbance area, to control the potential for stormwater to erode site soils and cause them to enter the creeks. The plan, which shall be in the form of a SWPPP, shall be reviewed and approved by the City and the San Francisco Bay Regional Water Quality Control Board (RWQCB) prior to the issuance of construction permits and shall be implemented during construction activities and for the next rainy season following completion of construction. The Erosion Control Plan shall comply with the City's Grading Ordinance and shall include, but shall not be limited to, the following measures:

< Grading/earthmoving shall not occur during the rainy season (October 15–March 15). Should construction proceed during or shortly after wet-weather conditions at any time of year, the geotechnical engineer in the field at the time of grading/earthmoving shall provide specific wet-weather grading/earthmoving recommendations.

< A vegetated buffer shall be protected during grading/ earthmoving next to Larkspur Creek. This buffer shall be at least 50 feet wide from the top of the bank on the north/south reach of the creek at the eastern edge of the Specific Plan area, and at least 25 feet wide from the top of bank on the east/west reach of the creek at the southern edge of the Specific Plan area. The conditions of all development permits within Subarea 3 and all subsequent grading permits shall both specify that before the start of any grading, orange barrier fencing shall be installed at the outer edge of the protected buffer area. The fencing shall be maintained until all construction activities have ceased. No construction activity, including the storage of construction materials, or vehicles staging or maneuvering, shall be permitted in the buffer area.

< Silt fencing and straw bales shall be used along Larkspur Creek to trap any silt flows from unvegetated ground.

Impact **4.3-5a, b** mitigation

Damage to Underground Utilities Caused by Corrosive Soils.

(a) Implement Mitigation Measure 4.3-4

The City shall implement Mitigation Measure 4.3-4, Submit Geotechnical Testing and Engineering Design Report, to mitigate the potential for damage to underground utilities from corrosive soils.

(b) Backfill with Noncorrosive Soil and Use Corrosion-Resistant Materials

The City shall include the following new policy in the Specific Plan.

New Policy: Utility line excavations shall be backfilled with noncorrosive soil backfill materials or pipelines shall be constructed of corrosion-resistant materials.

CUMULATIVE MITIGATION MEASURES

No cumulative mitigation measures are required because no significant cumulative impacts would result.

4.3.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

All impacts are considered less than significant with the implementation of mitigation measures.

4.4 HYDROLOGY AND WATER QUALITY

This section describes the existing hydrologic conditions for the Specific Plan area, including tidal influence, site drainage, sedimentation, flood hazards and water quality. This description of existing conditions is based on a review of existing regional and site information, on site reconnaissance conducted by Philip Williams & Associates (PWA) staff, and by quantitative analyses performed by PWA. Existing information reviewed includes topographic maps (U.S. Geological Survey 1993), historical topographic maps, Flood Insurance Rate Maps (FIRMs) (Federal Emergency Management Agency [FEMA] 1984), and previous studies including *Larkspur Creek Channel Study* (BSI Consultants, Inc. 1989), *Irving Group Property Residential Development Drainage Study* (Brian Kangas Foulk 1998), and *City of Larkspur Flood Insurance Study* (FEMA 1983). Water quality information includes the *Water Quality Control Plan for the San Francisco Bay Basin* (San Francisco Bay Regional Water Quality Control Board [San Francisco Bay RWQCB] 1995) and the *Corte Madera Watershed Resource Evaluation and Information Report* (San Francisco Bay RWQCB 1994). Guidelines for managing water quality impacts, particularly from urban runoff, are described in reports from the Marin County Storm Water Pollution Prevention Program (MCSTOPPP) including *Action Plan 2005: Protecting and Enhancing Marin County's Watersheds* (Marin County Department of Public Works 2001) and the *Condensed Planning and Design Guide for Surface Water Pollution Control Planning and Permanent Best Management Practices* (MCSTOPPP 2003).

4.4.1 EXISTING SETTING

REGIONAL SETTING

Tidal Processes

Regional Tidal Characteristics

Tidal characteristics from the Corte Madera Creek gauge, approximately 1 mile east-northeast of the Specific Plan area, are shown in Table 4.4-1. Mean tide conditions are from the National Ocean Service (National Ocean Service 1983). The 10- and 100-year estimated high tides, which have a respective 10% and 1% probability of occurring in any given year, are from the U.S. Army Corps of Engineers (USACE) (U.S. Army Corps of Engineers 1984).

Historically, the Specific Plan area was located at the interface between the adjacent hills and the vast tidal marsh that extended from the bay to the base of Mt. Tamalpais. The site would have consisted of tidal marshplain (bisected by tidal slough channels) in the northern portions, then would have transitioned to upland areas in the southwestern corner. Fill was placed on the site over time to accommodate development, raising it above regular tidal influence.

Tidal Flooding

Flooding within the city of Larkspur is driven primarily by high tides in San Francisco Bay and concurrent high flows in Corte Madera Creek. Extreme high tides in San Francisco Bay result

Table 4.4-1 Tidal Characteristics		
	Datum	
	MLLW (feet)	NGVD (feet)
Estimated 100-Year High Tide	9.14	6.40
Estimated 10-Year High Tide	8.34	5.60
Mean Higher High Water (MHHW)	5.80	3.06
Mean High Water (MHW)	5.21	2.47
Mean Tide Level (MTL)	3.14	0.40
National Geodetic Vertical Datum, 1929 (NGVD)	2.74	0.00
Mean Low Water (MLW)	1.07	-1.67
Mean Lower Low Water (MLLW)	0.00	-2.74

Notes:
Average tide levels are for the Corte Madera Creek gauge (#941 4874). Ten-year and 100- year high tides are for the nearby Point San Quentin tide gauge (#941 4873) because these data are not available for the Corte Madera Creek gauge (U.S. Army Corps of Engineers 1984).
Datums:
NGVD = National Geodetic Vertical Datum. This represents a nationwide vertical benchmark, and is the standard survey datum used by most cities and agencies. It corresponds approximately with mean sea level.
MLLW = mean lower low water, the datum commonly used by mariners. It represents the average of daily low tides over a 19-year tidal epoch. In Larkspur, it is 2.74 feet below NGVD.

Sources: National Ocean Service 1983, U.S. Army Corps of Engineers 1984

from the combined effects of astronomical high tides and other factors including winds, barometric pressure, ocean temperatures, and fresh water runoff. Exhibit 4.4-1 shows areas mapped within the 100-year and 500-year floodplain on the 1984 City of Larkspur FIRM (FEMA 1984). According to analysis conducted for FEMA flooding downstream of the Tamalpais Creek confluence (located upstream of the Bon Air Road Bridge [Exhibit 4.4-1]) is controlled by extreme high tide events. Flooding upstream of the Tamalpais Creek confluence is controlled by extreme rainfall-runoff events on Corte Madera Creek.

Tidal flooding in the San Francisco Bay area is expected to gradually increase in the future as a result of relative sea level rise. Relative sea level rise is a function of local subsidence and global sea level rise. Information about local subsidence in the vicinity of the Specific Plan area is sparse. The closest sites for which local subsidence rates have been estimated are Point Orient, approximately 5 miles to the east across the bay, and Sausalito, approximately 6 miles to the south; local rates at these sites are -0.002 foot/year, and +0.004 foot/year, respectively (San Francisco Bay Conservation and Development Commission 1987). Given this information, PWA has determined that local subsidence is not significant.

Relative sea level rise, therefore, is equal to the global sea level rise. Current predictions of global sea level rise range from 0.2 feet to 1.1 feet over the next 50 years, with a midrange estimate of 0.6 foot (Watson et al. 1996).

Exhibit 4.4-1

Surface Water Hydrology and Sedimentation

Drainage

The Specific Plan area is located on Larkspur Creek, which drains an area of 1.75 square miles to its confluence with Corte Madera Creek. The Specific Plan area occupies about 21.9 acres, or approximately 2% of the local watershed. Larkspur Creek's headwaters originate in the steep slopes of Mt. Tamalpais; its midregion flows through an urbanized area where an approximately 500-foot reach is culverted. The Specific Plan area is located in the lower watershed areas, where the stream channel slope is considerably flatter. In the lowest reaches adjacent to Piper Park, the channel is extremely flat, and widens significantly before its confluence with Corte Madera Creek (which discharges to San Francisco Bay 1 mile further east [Exhibit 4.4-1]). Approximately 51% of the watershed contains urban development, concentrated mostly in the lower watershed (BSI Consultants, Inc., 1989). The 100-year peak flow on Larkspur Creek at the Meadowood Drive bridge crossing, at the southwest corner of the Specific Plan area, is estimated at 1,463 cubic feet per second (cfs) based on hydrologic modeling reported in the *Larkspur Creek Channel Study* (BSI Consultants, Inc., 1989). This study analyzed the 100-year, 12-hour rainfall event for the Larkspur Creek watershed. The study used USACE's HEC-2 hydraulic model to estimate water surface elevations in Larkspur Creek from the junction of Corte Madera Creek approximately 4,000 feet upstream (including the reach adjacent to the Specific Plan area) to the Meadowood Drive bridge. The study concluded that the creek could convey the 100-year estimated peak discharge along most of this length without significant overbank flows. Two reaches of flood protection structures were recommended on the south and east sides of the channel (opposite bank from the Specific Plan area) to prevent flood encroachment onto homeowner properties.

In its review of BSI Consultants' study, Brian Kangas Foulk (BKF) indicates that the 1989 model is still valid, as there have been no significant changes in watershed drainage since that time (BKF 1998).

Corte Madera Creek drains an area of approximately 28 square miles and enters San Francisco Bay just south of San Quentin State Prison. The 100-year flow at U.S. 101 (approximately 1 mile east-northeast of the Specific Plan area) is 9,000 cfs (FEMA 1983). There is a USGS streamflow gauging station on Corte Madera Creek at Ross (approximately 2.3 miles northwest of the Specific Plan area, #11460000) with records from 1951 through 1993. The Marin County Flood Control and Water Conservation District has operated this gauge since 1993. The lower reaches of Corte Madera Creek are subject to ongoing siltation from sediment supplied by both San Francisco Bay and the Corte Madera Creek watershed. Watershed sediment is supplied during major rainstorm events during the winter months, while sediment from the bay (originally supplied from the Sacramento and San Joaquin Rivers to the bay) is suspended by summer winds and circulated throughout the bay by tidal currents. To maintain navigation access to lower Corte Madera Creek, periodic dredging has been required. Dredging was conducted in 1994 and additional dredging is currently proposed (Foreman, pers. comm., 2002). This dredging includes Corte Madera Creek, the Larkspur Creek

channel, and the Lucky Creek channel. There is some disagreement regarding the relative contribution of sediment from the bay and watershed to sediment accumulations in the lower creek channel (downstream of Doherty Drive). According to Foreman (pers. comm., 2002), sediment from the Larkspur Creek watershed is a significant contributor of sediment to the tidal portions of the Larkspur Creek channel. However, as discussed in the 1989 BSI Consultants report, USACE staff involved in the sedimentation studies in Corte Madera Creek attribute sediment accumulation to tidal sources.

Regional Flood Issues

In the past 50 years there have been several severe flood events on Corte Madera Creek from combined high tides and upland runoff. Significant flood damage occurred in 1951, 1955, 1958, 1960, 1962, 1963, 1967, 1969, 1982, 1983, and 1986 (USACE 1999). USACE began construction of the Corte Madera Creek Flood Control Project in 1967 in an effort to reduce the risk of flooding for surrounding communities. The portion of the project that was built includes an earthen channel from the bay to a location downstream of the College of Marin in Kentfield, and a 1-mile concrete channel from Kentfield to the Ross Post Office. Significant sedimentation occurs in the concrete channelized section, resulting in decreased hydraulic capacity and increased flood hazards in some reaches, and the need for periodic dredging of the channel.

LOCAL SETTING

Tides

Tidal Characteristics

Larkspur Creek flows under the Doherty Drive bridge at the northeast corner of the Specific Plan area, approximately 2,400 feet upstream of its confluence with Corte Madera Creek. Field observations of channel morphology and vegetation indicate that Larkspur Creek is tidally influenced along the east side of the Specific Plan area, to approximately 900 feet upstream of the Doherty Drive bridge crossing.

Tidal Flooding

The 1984 FIRM shows that the 100-year flood elevation from high tides is included within the banks of Larkspur Creek in those areas where it borders the Specific Plan area (Exhibit 4.4-1). The remainder of the Specific Plan area, with the exception of Doherty Drive from the Doherty Drive bridge to Rivera Circle, are mapped as between the 100- and 500-year flood elevations (which have a 1% and 0.2% probability of flooding, respectively, in any given year). These areas are not considered to be within the jurisdictional (100-year) flood zone by FEMA. According to observations by the Twin Cities Police Department and Sloat Nursery employees, Doherty Drive adjacent to the Specific Plan area did not flood during the February 1998 storms (BKF 1998).

A small portion of the Specific Plan area, in and adjacent to the concrete drainage ditch located in the northwestern part of the site (Exhibit 4.4-2), appears to be subject to tidal flooding during extreme tide events. This flood hazard is not shown on the FIRM map (Exhibit 4.4-1), but is hypothesized based on the storm drainage configuration and observations of flooding at high tide by persons familiar with the Specific Plan area. The ditch was observed by PWA staff to drain to a culvert under Doherty Drive, which then appears to be routed to an ungated outfall into a tidal channel, which connects to Corte Madera Creek. A nursery employee stated that extremely high tides "back up" in the concrete ditch, causing local flooding. Winter storm runoff may also contribute (see below).

Surface Water Hydrology and Sedimentation

Drainage

Exhibit 4.4-2 shows drainage features and approximate drainage area boundaries within the Specific Plan area. The Specific Plan area is gently sloped, with elevations ranging from 6.9 feet to 13.5 feet NGVD (BKF 1998). The following are descriptions of the approximate drainage patterns within the Specific Plan area.

The north-central portion of the Specific Plan area currently drains to a concrete ditch located within the Specific Plan area and to the east of the existing Larkspur Plaza shopping center. The BKF study states that water draining to this ditch has backed up and overflowed several times during winter storms (BKF 1998) either as a result of inadequate capacity, or because during high tides, water ponds in the drainage channel and adjacent low-lying areas until either the tide drops, or sufficient hydraulic head develops to allow drainage to the tidal channels located north of Doherty Drive. It is unclear whether this flooding is caused solely by high rainfall runoff during storms, or by a combination of high rainfall runoff and high tides.

The eastern part of the Specific Plan area ponds locally during rain events (BKF 1998), except for the Sloat Nursery parking lot, which drains to an outfall on Larkspur Creek just downstream of the Doherty Drive bridge.

The south-central part of the Specific Plan area drains through a series of culverts and earthen ditches to a 24-inch-diameter outfall, which connects this portion of the Specific Plan area to Larkspur Creek approximately midway along the southeastern property line. Little information is available about drainage on the western edge of the Specific Plan area, which was not included in the 1998 BKF drainage study. Approximate drainage patterns for the southwestern corner of the Specific Plan area included in Exhibit 4.4-2 are based on observations during the field site visits.

Exhibit 4.4-2

Flood Hazards

In the lower reach of Larkspur Creek and the lower part of the Corte Madera Creek watershed, 100-year flooding is governed by extreme tide events coupled with large rainfall-runoff events. The 100-year high tide is estimated to flood the area to an elevation of 6.4 feet NGVD, while 100-year surface flows from rainstorms are estimated to cause flooding to a lower peak elevation (BSI Consultants, Inc., 1989). Current flood mapping (Exhibit 4.4-1) indicates that the Specific Plan area is not within the jurisdictional 100-year flood zone, with the exception of Doherty Drive from the Doherty Drive bridge to Rivera Circle. It is mapped within the 500-year flood zone. Both the 1989 BSI Consultants study of rainfall runoff processes in the Larkspur Creek watershed and studies of channel hydraulics adjacent to the Specific Plan area, indicate that the 100-year rainstorm is also contained within the channel along the Specific Plan boundary with the potential exception of Doherty Drive from the Doherty Drive bridge to Rivera Circle.

While the Specific Plan area is not subject to significant flood hazards, localized ponding is likely during concurrent intense rainstorms and high tides.

Sedimentation

Sediment processes within a watershed are typically divided into three classes: sediment production (occurs in the upper watershed), sediment transport (occurs in the middle reaches), and sediment deposition (occurs in the lowest channel reaches). For Larkspur Creek, sediment is produced in the steeper, upper watershed areas, and transported through the middle reaches to the lower channel reaches. Sedimentation rates in the reach of Larkspur Creek furthest downstream (northerly from Doherty Drive) are high because of the combined influence of low channel slopes and the tides. Sediment from Corte Madera Creek and San Francisco Bay is conveyed on incoming tides, adding to the sediment load. In response to ongoing siltation, the reach of Larkspur Creek adjacent to Piper Park has been dredged for navigational use, resulting in a deep channel that effectively traps and accumulates sediment. In addition, the historical conversion of surrounding tidal marsh to upland development has reduced the tidal flows, which formerly maintained the channel dimensions by tidal scour. Little information is available on sedimentation in Larkspur Creek adjacent to Specific Plan Subarea 3. It appears to be primarily a "transport reach," conveying sediment produced upstream to the lower channel reaches. Some deposition may be occurring in the wetland fringes adjacent to the low-flow channel just upstream of the Doherty Drive bridge. The 1989 BSI Consultants study considered sediment detention facilities in this area and concluded that they were not cost effective due to physical constraints and mitigation required to preserve the scenic quality, or beneficial in terms of flood hazard reduction.

Surface Water Quality

According to the San Francisco Bay RWQCB and the County Flood Control and Water Conservation District, no official water quality monitoring data are available for Larkspur Creek. However, regional water quality data from the *Corte Madera Watershed Resource*

Evaluation and Information Report (San Francisco Bay RWQCB 1994) can be used to infer the general state of water quality in Larkspur Creek based on proximity and similar geological, hydrologic, and land use characteristics. The study reports that the water quality of Corte Madera Creek is generally good, although there are some problems, primarily because of nonpoint source pollution.

The main existing water quality problems are erosion/siltation and presence of high coliform bacteria during the wet winter months. In addition, organic constituents from urban landscaping, metals, and chemicals from the drainage of swimming pools into the creek may be causing degradation of the creek's waters. Unauthorized diversion of water from the creek can also affect water quality by reducing already low summer flows. The *Water Quality Control Plan for the San Francisco Bay Basin* (San Francisco Bay RWQCB 1995) indicates that Corte Madera Creek provides the following beneficial uses:

< Cold freshwater habitat

< Preservation of rare and endangered species

< Noncontact water recreation

< Warm freshwater habitat (note that this habitat is found in different reaches of Corte Madera Creek than those reaches with cold freshwater habitat)

< Wildlife habitat

In addition, the Basin Plan indicates that the creek could potentially provide the following beneficial uses:

< Fish migration
< Water contact recreation
< Fish spawning

In addition to the Corte Madera Creek data, there are also unofficial water quality data from Larkspur Creek. With guidance from Friends of Corte Madera Creek Watershed (Friends of Corte Madera Creek Watershed 1999), the Exploratorium, and the California Department of Fish and Game (CDFG), students from four local schools undertook a water quality monitoring project to track selected water quality parameters in Corte Madera Creek and several of its tributaries. Students from Redwood High School monitored water depth, temperature, pH, dissolved oxygen, turbidity, and conductivity (i.e., salinity) in Larkspur Creek near Redwood High School five times between February and December 1997. Friends of Corte Madera Creek Watershed indicates in its monitoring summary that the data are inconclusive. Some of the data collected are outside of typical ranges or may not be representative of the creeks because of the students' inexperience with sampling techniques, inconsistency in the time of day monitoring was performed, and lack of dry-season data (Friends of Corte Madera Creek Watershed 1999).

Groundwater Hydrology

The geotechnical study for the Niven Nursery portion of the Specific Plan area (Harza Engineering Company 1998a) included eight boreholes to a maximum depth of 38 feet. The boring logs indicated that the groundwater table was encountered at depths between 3 and 20 feet below the ground surface. Most of the wells indicated stabilized groundwater levels at about 5 to 7 feet below the surface, corresponding to groundwater levels at about 0.0 to +3 feet NGVD. In general, shallow groundwater depths at approximately these elevations would be expected in the Specific Plan area. These shallow ground water depths would be consistent with the Specific Plan area's low relief and location adjacent to Corte Madera Creek, Larkspur Creek, and San Francisco Bay, where MTL is about 0.5 foot NGVD. The shallow groundwater depths result from precipitation in the watershed that infiltrates into the soil and gradually migrates downhill, intercepting Corte Madera Creek at an elevation of about mean sea level. Depth to the groundwater table increases gradually upstream of this lower boundary.

Groundwater Quality

In general, brackish groundwater conditions would be expected in the vicinity of the Specific Plan area. This would be consistent with the Specific Plan area's low elevation and location adjacent to tidal saltwater. The primary issues associated with groundwater quality relate to the potential presence of hazardous materials associated with prior or existing land uses on or adjacent to the Specific Plan area. These are described in Section 4.12, Hazardous Materials.

REGULATORY SETTING

Federal, state, and local agencies each may have a role in permitting development activities anticipated under the Specific Plan, depending on the nature of the development. These agencies and their potential permit requirements related to hydrology and water quality are discussed in this section.

Federal

Section 404 of the Clean Water Act

Waters of the United States (including wetlands) are subject to USACE jurisdiction under §404 of the federal CWA. Section 404 regulates the filling and dredging of waters of the United States. A §404 permit would be required for Specific Plan construction activities involving excavation of, or placement of fill material into, waters of the United States or adjacent wetlands. This regulation applies to Larkspur Creek on the south and east margins of the Specific Plan area. In reviewing §404 permit applications, USACE stresses avoidance of impacts, minimization of unavoidable impacts, and mitigation of unavoidable impacts. In addition, a water quality certification (or waiver thereof) from the appropriate state agency stating that the fill is consistent with the state's water quality standards and criteria, pursuant to §401 of the CWA, is required for §404 permit actions. This would need to be requested from the San Francisco Bay RWQCB. Additional environmental analysis, apart from this EIR

document, may be needed as a part of the §404 permit process. The Specific Plan does not anticipate any filling or dredging in the creek.

National Flood Insurance Program

FEMA has produced a FIRM for the City showing areas and elevations of 100-year flood hazard. FEMA requires that finished floor elevations for development within this 100-year flood area be equal to or greater than the 100-year flood elevation. Because the City has more stringent requirements than FEMA, the City's requirements will guide potential development (see below).

State

Sections 1601 and 1603

CDFG has direct jurisdiction, under California Fish and Game Code §§1601–1603, over any activities that would divert or obstruct the natural flow or change the bed, channel, or bank of any river, stream, or lake designated by CDFG in which there is at any time an existing fish or wildlife resource, or from which these resources derive benefit. This applies to Larkspur Creek on the south and east margins of the Specific Plan area. The Specific Plan does not propose any activities that would require a CDFG permit.

The California Fish and Game Code requires that CDFG be formally notified and that a subsequent agreement, including mitigation measures, be completed before such changes can be initiated. General project plans must be submitted to CDFG that are sufficient to indicate the nature of a project for construction if the project would divert, obstruct, or change a streambed; use material from the streambeds; or result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a stream. The requirements of §1601 and §1603 are similar to those for the §404 permit, but the area of jurisdiction is typically defined on a case-by-case basis for the location, nature, and extent of disturbance, and mitigation.

Storm Water Pollution Prevention Plan

As mandated by the 1987 amendments to the federal CWA, discharge of stormwater from developed areas is regulated under the National Pollutant Discharge Elimination System (NPDES). In California, the State Water Resources Control Board (SWRCB) administers the NPDES program via the RWQCBs. In addition, the State Porter-Cologne Act requires the development of basin plans for drainage basins within California. The basin plans are also implemented through the NPDES program.

The San Francisco Bay RWQCB developed and maintains the *Water Quality Control Plan for the San Francisco Bay Basin* (San Francisco Bay RWQCB 1995). This plan includes objectives for the quality of surface waters in the region, including Corte Madera Creek. The plan includes

numerical and narrative objectives that "define the level of water quality that shall be maintained within the region."

The San Francisco Bay RWQCB seeks to reasonably control activities that will adversely affect beneficial uses of the waters within the region. To achieve the goals of the Water Quality Control Plan, the RWQCB, in collaboration with individual counties and cities, has developed regulatory programs to manage and reduce urban runoff pollutants. The most recent regulations derive from the 1999 U.S. Environmental Protection Agency (EPA) regulations under the CWA that require the SWRCB to issue NPDES permits for stormwater discharge. The initial application of the NPDES program (Phase I) applied to larger communities, and applied to projects more than 5 acres in size. The most recent application of the NPDES program (referred to as "Phase II," applying to small municipal separate storm sewer systems) applies to smaller communities, and specifically includes Marin county and the city of Larkspur; it requires permitting/management on sites greater than 1 acre in size. To comply with the RWQCB requirements and receive an NPDES permit for its stormwater system, each county and city must develop a compliance program. Part of this compliance program includes regulation of new development/redevelopment as proposed in the current Specific Plan. A more complete description of the regulations, permit applications, and description of the required management actions is available on the San Francisco Bay RWQCB website (<http://www.swrcb.ca.gov/rwqcb2/>).

Project applicants must submit a Notice of Intent (NOI) to the SWRCB to be covered by the Construction Activities Storm Water General Permit before they may initiate construction on sites that are 1 acre or larger. This requirement also applies to smaller sites that are part of a larger project. The General Permit requires the implementation of a SWPPP, which must be prepared before construction begins. The SWPPP must include:

< Specifications for BMPs that will be implemented during project construction to minimize the potential for accidental releases of pollutants or contamination, and to minimize runoff from the construction areas, including storage and maintenance areas and building materials handling areas.

< A description of a plan for communicating appropriate work practices to field workers.

< A plan for monitoring, inspecting, and reporting any release of hazardous materials.

< Specifications for BMPs that will be incorporated into the project itself to minimize runoff of pollutants after the project has been completed.

< A description of a plan to monitor stormwater runoff after the project has been completed.

Local

The practice of the City Department of Public Works and Engineering is to review any development plans for compliance with its storm drainage design criteria as a part of the design review process required prior to the issuance of Building Permits. The City

Department of Public Works also reviews development plans of certain types of projects (i.e., subdivision projects, projects that propose a total amount of either excavation or fill exceeding one thousand cubic yards) for compliance with the Grading Ordinance and the Subdivision Code and General Plan Action Program [12]: Require site plans to locate structures outside or above the 100-year flood zone wherever possible. Thus, all future development proposed within the Specific Plan area would be required to submit the engineering plans for storm drainage with their applications for development approval. For a description of the types of permits required, see Chapter 1, Introduction. Because the Specific Plan area is entirely within the city limits of Larkspur, additional review by the County Department of Public Works will not generally be necessary. The City's criteria specify that: (1) stormwater drainage facilities must pass the 25-year storm event, and (2) finished floor elevations must be at least 1 foot above the 100-year flood elevation. The City will also review any SWPPPs developed for construction activities in the Specific Plan area. The City may ask for assistance in this review from the County Department of Public Works if necessary (Hill, pers. comm., 2002).

4.4.2 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Implementation of the Specific Plan would have a significant impact on hydrology and water quality if it were to result in:

< exposure of people or structures to a high risk of loss, injury, or death involving flooding, including flooding as a result of failure of a levee or dam;

< placement of structures or improvements within a 100-year flood hazard area as mapped on the FEMA *Flood Insurance Rate Map* City of Larkspur, Marin County, California (Community Panel #065040 0001B) or any other flood hazard delineation map (the City also requires that finished floor elevations be at least 1 foot above the 100-year flood elevation);

< creation or contribution of runoff water that would exceed the capacity of an existing or planned stormwater drainage system;

< substantial alteration of the existing drainage pattern of the Specific Plan area, including the alteration of the course of either marine or fresh water, or a substantial increase in the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite;

< the discharge of sediment or contaminants into surface water or wetlands, other adverse changes in surface water quality, or that could result in a violation of water quality standards or waste discharge standards;

< substantial degradation or depletion of groundwater supplies or substantial interference with groundwater recharge, lowering of the local groundwater table level, or changes in the direction or rate flow of groundwater; or

< the contamination of a public water supply or other substantial degradation of water quality.

PROJECT-LEVEL IMPACTS

Impact **4.4-1**

Potential Hazards from Tidal Flooding or Stormwater Flooding. *The area within the banks of Larkspur Creek adjacent to the Specific Plan area is mapped as below the 100-year flood elevation on the FIRM, and finished floor elevations are required to comply with the City's minimum requirements of 1 foot above the 100-year flood elevation of 6 feet NGVD. The rainfall flood events up to the 100-year event would be contained within the Larkspur Creek channel, thus the Specific Plan area would not be subject to the 100-year flood events. This impact is considered* ***less than significant****.*

Development in the Specific Plan area could potentially be subject to flood hazards from either tidal flooding (from Corte Madera Creek and Larkspur Creek) or stormwater flooding (from Corte Madera Creek or Larkspur Creek). As described above, FEMA and the City require the avoidance of stormwater flooding based on the 100-year storm event. While the risk of flooding from a greater storm event (e.g., 500-year storm event, with a 0.2% probability of occurring in any given year) exists, the likelihood of such an event is not typically deemed considerable for flood control purposes according to federal, State, and local laws and regulations.

The 100-year floodplain designation is assigned by FEMA to natural drainage channels (e.g., Larkspur Creek) and areas below the 100-year flood elevation that are connected to these channels either directly or by culverts or drainage channels that are known to FEMA at the time the FIRMs were done. The only part of the Specific Plan area and the immediate vicinity mapped by FEMA as below the 100-year flood elevation on the FIRM (FEMA 1984) is the area within the banks of Larkspur Creek adjacent to Specific Plan Subarea 3 (Exhibit 4.4-1). The 1989 BSI Consultants study indicates that the rainfall flood events up to the 100-year event are contained within the Larkspur Creek channel along the Specific Plan area. Thus, the Specific Plan area is not part of the jurisdictional floodplain.

However, there are a number of culverts and drainage ditches, which connect the Specific Plan area to Larkspur Creek and Corte Madera Creek, that were presumably not known to FEMA and thus not considered during the FIRM mapping process. During severe storm events, including the 100-year flood event, these culverts and drainage ditches may allow flood waters to flow into portions of the Specific Plan area that are below the 100-year flood elevation. Thus, localized flooding occurs in the Specific Plan area, although these areas are not mapped by FEMA as within the jurisdictional floodplain.

Because the Specific Plan specifies a minimum building setback of at least 25 feet from the top of the bank of Larkspur Creek, (Land Use Standard 16 [Standard for Buffer Width] and Community Design Standard 65 [Creek Setback]), and as all finished floor elevations within the Specific Plan area are required to comply with the City's minimum requirements of 1 foot above the 100-year flood elevation of 6 feet NGVD, future development in the Specific Plan area is not expected to be flooded during a 100-year storm or tidal event. Building

construction in the Specific Plan area would be required to comply with the City's Building Codes, including building standards (i.e., anchoring, flood damage-resistant materials, flood proofing) designed to minimize flood hazards.

Impact **4.4-2**

Increased Flood Hazards to Downstream Areas from Rainfall Runoff. *The Specific Plan area does not contribute significantly to offsite flooding through surface runoff because the storm drains originating within the area drain directly to adjacent tidal creeks and channels, where flood hazards are controlled primarily by tidal water elevations. In addition, much of the Specific Plan area is already developed, and the additional development proposed in the Specific Plan is unlikely to significantly increase surface runoff. This impact is considered* ***less than significant****.*

Development in the Specific Plan area could increase rainfall runoff from the area, increasing flood hazards to downstream areas. In general, however, the Specific Plan area is relatively small (approximately 2% of the watershed area), and this type of potential impact is more cumulative in nature. In particular, the Specific Plan area does not contribute significantly to offsite flooding through surface runoff because the storm drains originating within the area drain directly to adjacent tidal creeks and channels, where flood hazards are controlled primarily by tidal water elevations. In addition, much of the Specific Plan area is already developed with a majority of land covered by impervious surface. Furthermore, Policy 12 (Subarea 3 Drainage Improvements) directs the City to receive stormwater in detention areas before it is discharged into Larkspur Creek. As such, the additional development proposed in the Specific Plan is unlikely to significantly increase surface runoff.

To confirm this conclusion, calculations were made of peak storm runoff from the two onsite drainage areas that currently contain a significant degree of pervious area. Calculations were made both of current conditions and of worst-case future conditions, where the drainage areas were completely covered with impervious surfaces. This was done for the 100-year runoff event using the rational method based on the guidelines in the County Department of Public Works' *Hydrology Manual Simplified Instructions* (Marin County Department of Public Works 2000). The potential increase in surface runoff from implementation of the Specific Plan was calculated. The estimation technique, parameters, and results are shown in Table 4.4-2. The maximum potential increase, approximately 5 cfs, is less than 0.4% of the peak 100-year discharge in Larkspur Creek (to which the two drainage areas drain) of 1,463 cfs (BSI Consultants, Inc., 1989). This is consistent with the conclusion in the 1998 BKF study (BKF 1998). Due to the small contribution of stormwater runoff from the Specific Plan area under paved conditions and because downstream flood hazards are controlled primarily by tidal water elevations, this impact is considered less than significant.

Impact **4.4-3**

Exceedance of Capacity of Existing Onsite or Adjacent Drainage System. *There is evidence that the existing stormwater drainage facilities that service the Specific Plan area are insufficient. However, under the Specific Plan, the East Ward Street culvert and the culvert at the northeastern corner of Subarea 3 under Doherty Drive would both be upgraded, and various BMPs would be implemented to reduce the overall quantity of stormwater and its impact on site drainage facilities. Required design of facilities would need to meet the 25-year flood event criteria. This impact is considered* ***less than significant****.*

Table 4.4-2
Runoff Calculations—Rational Method

Runoff coefficient C				
pervious	0.70			
impervious	0.95			
Rainfall data				
Zone C-2				
L_{60} (in)	1.3			
Q10/Q100	0.715			
Parameter	Existing NE (A)	Existing SE (B)	Fully Paved NE (A)	Fully Paved SE (B)
Total Area (acres)	2.65	2.42	2.65	2.42
Impervious Area (acres)	1.25	0.00	2.65	2.42
Pervious Area (acres)	1.40	2.42	0.00	0.00
Composite C	0.82	0.70	0.95	0.95
% Impervious		47%	0%	100%
Longest Run (feet)	490	410	490	410
Delta Elevation (feet)	6	6	6	6
Slope (feet/feet)	0.012	0.015	0.012	0.015
Tc (minutes)	16	18	11	10
100 I_{tc}* (inches per hour)	2.40	2.29	2.85	2.97
Q100/A (cfs per acre)	1.96	1.60	2.71	2.82
Q100 (cfs)	5.20	3.88	7.17	6.83
10y I_{tc}* (inches per hour)	1.72	1.64	2.04	2.12
Q10/A (cfs per acre)	1.40	1.15	1.94	2.02
Q10 (cfs)	3.72	2.77	5.13	4.88
	NE (A)	SE (B)	Total	
Increase in flow, existing to fully paved (cfs)	1.97	2.95	4.92	

Note: This table provides a comparison of existing conditions vs. fully paved conditions for the two drainage areas (A and B in Exhibit 4.4-2) at the eastern end of the Specific Plan area. Using fully paved conditions provides a worst-case estimate of increase in runoff from those two parcels; all other parcels would have significantly less potential for an increase in runoff.

Sources: Runoff coefficient (pervious), rainfall data, time of concentration equation: Marin County Department of Public Works 2000

Runoff coefficient (impervious): U.S. Army Corps of Engineers 1994

Impervious area: from Exhibit 4.4-2 (source: Zander and Associates)

Slope: Thomas Cooke, pers. comm. – maximum for whole site, conservative for each segment as used in this analysis

I_{tc} = intensity of rainfall, in inches per hour, from Chart K Zone C in Marin County Department of Public Works 2000

Source: PWA 2003

As noted in Existing Setting above, there is evidence that the existing stormwater drainage facilities that service the Specific Plan area are insufficient. If these conditions were not changed as part of the development that occurs under the Specific Plan, this problem could persist. Future Specific Plan development that drains to these facilities could exacerbate the existing deficiencies. The Specific Plan includes several components to improve drainage conditions. These include the following:

< upgrading the 32-inch-diameter East Ward Street culvert to 42 inches (see "Stormwater Drainage" in Chapter 6, Utilities, of the Specific Plan);

< upgrading the culvert at the northeastern corner of Subarea 3 under Doherty Drive to 42 inches (see "Stormwater Drainage" in Chapter 6, Utilities, of the Specific Plan); and

< implementing various BMPs designed to reduce the runoff of contaminants from the Specific Plan area during storms, which would also reduce the overall quantity of stormwater and its impact on site drainage facilities (Utilities Policy 11 [Pollutants]).

Typically, storm drain facilities are designed for the 25-year flood event. According to the City, required design of facilities would need to pass the 25-year flood event (Hill, pers. comm., 2002), and drainage plans would have to be reviewed and approved by the City Engineer or the Director of Public Works prior to the issuance of permits (see Applicable Regulations above). This impact is considered less than significant.

Impact **4.4-4**

Resource Degradation Resulting from Contribution of Sediments or Contaminants to Freshwater or Wetland Areas. *Construction of future development projects within the Specific Plan area has the potential to generate significant quantities of sediment from grading activities as well as petroleum hydrocarbons from equipment operation, fueling, and maintenance. In the longer term, increased motor vehicle use from future development could increase runoff of vehicle-associated pollutants such as fuel hydrocarbons, other automotive fluids, and brake pad material. Because pollutant or sediment transport to Larkspur Creek or directly to offsite tidal creeks could increase, this impact is considered* ***potentially significant****.*

Surface water runoff from the Specific Plan area could potentially convey sediment and various contaminants from the Specific Plan area to Larkspur Creek, or other associated tidal/wetland systems downstream of the Specific Plan area. This potential impact is considered over two separate timeframes: during project construction and in the long term (post construction).

Construction of future development projects within the Specific Plan area has the potential to generate significant quantities of sediment from grading activities as well as petroleum hydrocarbons from equipment operation, fueling, and maintenance. Most of the development projects in the Specific Plan area would involve areas larger than 1 acre in size, and thus, a SWPPP would need to be prepared and implemented pursuant to the general NDPES permit for construction sites (see Applicable Regulations above). The SWPPP would need to include stormwater quality BMPs that would reduce runoff of pollutants during construction to the extent feasible and required by the RWQCB.

Operational activities associated with the future development in the Specific Plan area would also generate pollutants. Typically, runoff from lowland urban areas contains pollutants including sediment, nutrients, oxygen-demanding substances, heavy metals, petroleum hydrocarbons, pathogenic bacteria, and viruses. According to the SWRCB, suspended sediments constitute the largest mass of pollutant loadings from urban runoff. Automobiles are the source of most petroleum hydrocarbon contamination. Fertilizers, pet wastes, faulty septic tanks, and organic yard waste are significant sources of nutrients and bacterial pollutants. Many of the pollutants entering California's waterways arrive via untreated stormwater runoff. Often the "first flush" of runoff from storms immediately following the dry summer and fall months is likely to contain high levels of contaminants that have accumulated during the extended period without surface runoff.

Regarding the scale of this potential impact, much of the Specific Plan area is already developed with urban land uses. As a result, the redevelopment of the area to the range of land use activities allowed by the Specific Plan would not result in a major increase in the runoff of many categories of pollutants from the Specific Plan area. However, increased motor vehicle access would accompany new development under the Specific Plan. This increased vehicle use has the potential to increase runoff of vehicle-associated pollutants such as fuel hydrocarbons, other automotive fluids, and brake pad material. These pollutants can be managed through implementation of postconstruction stormwater quality BMPs required in the SWPPP for each project involving more than 1 acre of land (see Applicable Regulations above).

Some of the postconstruction features that may be included in the SWPPP are already incorporated into the Specific Plan (Policy 69 [Storm Water]). These include treatment control features like permeable parking areas and driveways that are set in sand beds (Standard 72 [Driveways and Parking Areas]), onsite grass/vegetated swales (Standard 73 [Grassy Swales]) and detention basins (Standard 74 [Stormwater Detention]), that detain the first flush of stormwater and allow pollutants to filter or settle out before discharge into Larkspur Creek (Utilities Policy 12 [Subarea 3 Drainage Improvements]). In addition, the SWPPP should include appropriate source control BMPs that reduce the generation of pollutants from activities such as lawn maintenance, vehicle use, fueling and maintenance, material storage, and waste collection and recycling. In particular, to address increased motor vehicle access and the continued presence of a gas station, the use of filters to remove petroleum distillates would be evaluated in the BMP selection process.

Because not all potential projects in the Specific Plan area may require the preparation of SWPPP, pollutant or sediment transport to Larkspur Creek or directly to offsite tidal creeks could increase; this impact is considered potentially significant.

Impact **4.4-5**

Temporary Lowering of Groundwater Table and Potential Increase in Salinity. *Implementation of the Specific Plan would not alter the regional or local groundwater table elevations on a long-term basis or lead to significant impacts on groundwater recharge or flow direction. However, construction period dewatering activities could result in a temporary lowering of the water table. Prolonged pumping and lowering of the water table could result in some increase in salinity if it allowed tidally influenced water to migrate toward the Specific Plan area. This impact is considered* ***potentially significant****.*

As discussed in Existing Setting above, levels of groundwater underneath the Specific Plan area are governed by regional processes of rainfall infiltration throughout the watershed, overall down-watershed groundwater migration, and downstream tidal water control of the groundwater table elevation. Implementation of the Specific Plan would not alter the regional or local groundwater table elevations on a long-term basis. The majority of the Specific Plan area is developed and paved (i.e., greenhouses with paved floors, driveways, buildings). Development of the Specific Plan area would convert a maximum of 3.82 acres of pervious surface into impervious area. This represents only approximately 0.22 percent of the total Ross Valley Groundwater Basin area of 1,765 acres (DWR, 2003). On a regional basis, existing land uses and land uses proposed in the Specific Plan would not differ substantially in the amount of impervious surface; therefore, substantial changes in infiltration rates to groundwater are not expected as a result of Specific Plan implementation. In addition, the current water supply through the Marin Municipal Water District (MMWD) would be maintained under the Specific Plan, precluding the need to construct new wells to pump groundwater. As a result, implementation of the Specific Plan would not lead to significant impacts on groundwater levels, recharge, or flow direction in the area.

Construction period dewatering activities associated with individual project elements, however, could result in a temporary lowering of the water table in the immediate vicinity. Prolonged pumping and lowering of the water table could result in some increase in salinity if it allowed tidally influenced water to migrate toward the Specific Plan area. This impact is considered potentially significant.

Impact **4.4-6**

Degradation of Groundwater Quality. *Substantial changes in recharge rates to groundwater are not expected as a result of Specific Plan implementation. During construction and operation of the projects in the Specific Plan area, pollutants generated by equipment, vehicles, and urban land uses may infiltrate the ground and degrade groundwater quality. This impact is considered* ***potentially significant****.*

As discussed under Groundwater Hydrology above, significant changes in recharge rates to groundwater are not expected as a result of Specific Plan implementation. During construction, petroleum hydrocarbons from equipment operation, fueling, and maintenance may infiltrate the ground. Once occupied, the permitted commercial and residential uses would generate pollutants, including fertilizers, pet wastes, and organic yard wastes. Vehicles may also generate petroleum hydrocarbons. These pollutants may infiltrate the ground and degrade groundwater quality. While the Specific Plan area contains existing uses that already generate these pollutants, additional development permitted by the Specific Plan may increase the amount of pollutants generated.

Source control BMPs that would be implemented through the SWPPP, which is required for some projects that may occur in the Specific Plan area, would minimize pollutant infiltration to the extent practicable. However, not all projects that would be permitted in the Specific Plan would be required to prepare and implement SWPPP. The Specific Plan may result in an increase in the amount of pollutants that may infiltrate the ground and degrade groundwater quality; thus this impact is potentially significant.

Please also refer to Section 4.12, Hazards and Hazardous Materials, for impact analysis and mitigation for existing groundwater contamination in the Specific Plan area.

CUMULATIVE IMPACTS

The potential for addition of urban runoff to adjacent receiving waters (described above as Impact 4.4-4, Resource Degradation Resulting from Contribution of Sediments or Contaminants to Freshwater or Wetland Area) is considered a significant cumulative impact. The Specific Plan area represents approximately 2% of the Larkspur Creek watershed. Adverse water quality conditions in the adjacent streams result from human activities throughout the entire Larkspur Creek watershed. In addition, adverse water quality conditions in Corte Madera Creek result from the combined activities throughout the much larger watershed. Potential pollutants from the Specific Plan area represent a small contribution to the larger scale source of urban and construction-period impacts. Nonetheless, the Specific Plan area would contribute incrementally to an existing impact; therefore, this cumulative impact is considered significant.

Additional development in the city would contribute additional pollutants that may infiltrate into the groundwater in the region. The Specific Plan area represents approximately 1.25 percent of the total Ross Valley Groundwater Basin area of 1,765 acres (DWR, 2003). As such, degradation of groundwater quality (described above as Impact 4.4-6) is a considered a significant cumulative impact.

Impact 4.4-5, Temporary Lowering of Groundwater Table and Potential Increase in Salinity, would not be a significant cumulative impact due to the short duration of the construction dewatering activities and the lack of development adjacent to the Specific Plan area that may contribute to this impact.

4.4.3 MITIGATION MEASURES

PROJECT-LEVEL MITIGATION MEASURES

No mitigation measures are required for the following less-than-significant impacts.

4.4-1: Potential Hazards from Tidal Flooding or Stormwater Flooding

4.4-2: Increased Flood Hazards to Downstream Areas from Rainfall Runoff

4.4-3: Exceedance of Capacity of Existing Onsite or Adjacent Drainage System

The following mitigation measures are recommended for potentially significant impacts.

Impact **4.4-4** mitigation

Resource Degradation Resulting from Contribution of Sediments or Contaminants to Freshwater or Wetland Areas.

Implement MM 4.3-3

The City shall include the following new policy in the Specific Plan.

New Policy: The City shall require implementation of Mitigation Measure 4.3-3, Prepare and Implement SWPPP, to reduce the contribution of sediments or contaminants to freshwater and wetland areas.

Impact **4.4-5** mitigation

Temporary Lowering of Groundwater Table and Potential Increase in Salinity.

Implement Groundwater Testing Program in Conjunction with Dewatering

The City shall include the following new policy in the Specific Plan.

New Policy: A groundwater testing program shall be implemented in conjunction with any dewatering of the Specific Plan area. This program shall include measures to ensure that dewatering for construction will not result in salinity intrusion. Any water removed during dewatering shall be stored and tested for residual contamination consisting of metals or chlorinated pesticides before disposal.

Impact **4.4-6** mitigation

Degradation of Groundwater Quality.

Implement Mitigation Measures 4.4-3 and 4.4-5

The City shall include the following new policy in the Specific Plan.

New Policy: The City shall require implementation of Mitigation Measure 4.4-3, Prepare and Implement SWPPP, and Mitigation Measure 4.4-5, Implement Groundwater Testing Program in Conjunction with Dewatering, for all development in the Specific Plan area in order to reduce the increase in pollutants conveyed to the groundwater table to a less-than-significant level and ensure that site dewatering for construction will not result in groundwater quality impacts.

CUMULATIVE MITIGATION MEASURES

With implementation of Mitigation Measures 4.4-4, 4.4-5, and 4.4-6, the Specific Plan's contribution to potential cumulative impacts would be less than significant.

4.4.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Following implementation of the above mitigation measures, all impacts related to hydrology and water quality would be less than significant.

4.5 BIOLOGICAL RESOURCES

This section discusses biological resources that occur or have the potential to occur in the Specific Plan area and evaluates impacts on those resources that would result from its implementation.

Sources of information used to prepare this section include a preliminary biological assessment prepared by Zander Associates in 1998 (Appendix D-1) and a preliminary wetland delineation prepared by consulting ecologist Diane Renshaw in 1999 (Appendix D-2). Table 1 in Appendix D-3 is a list of plant species observed at Specific Plan Subarea 3 by Zander Associates on March 19, 1998, and plant species observed by Diane Renshaw on November 23, 1999. EDAW biologists reviewed these reports for technical and CEQA adequacy and updated the information as needed, based on information collected by EDAW biologists during a May 28, 2003 reconnaissance-level field survey, before incorporating it into this Revised Draft EIR.

4.5.1 EXISTING SETTING

REGIONAL SETTING

The Specific Plan area is near a number of areas that support biological resources of statewide importance. San Francisco Bay is approximately 1 mile to the east of the Specific Plan area, and tidally influenced Corte Madera Creek, which flows into the San Francisco Bay estuary, is approximately 0.25 mile to the north (Exhibit 2-1). The San Francisco Bay estuary is the largest and most significant estuary on the west coast of the United States. Corte Madera Creek is the largest creek in Marin County and is an important component of the San Francisco Bay estuary. Corte Madera Creek's history parallels that of San Francisco Bay with a large percentage of the historic tidal marshes that once lined its shores now lost to filling or diking (Salzman, pers. comm., 2002). Mt. Tamalpais State Park, an extensive, undeveloped open space, is approximately 0.75 mile west of the Specific Plan area.

LOCAL SETTING

The Specific Plan area is surrounded by roads, schools, residences, and other urban development. The majority of Subarea 3 consists of developed and disturbed areas, including abandoned greenhouses and other facilities used for nursery operations, and the Sloat Garden Center. Although all of the Specific Plan area has been developed at one time or another, the major portion of Subarea 3 has been inactive for a number of years and would likely be redeveloped following the adoption of the Specific Plan. The remainder of the Specific Plan area is currently developed and in active use, and does not support any important biological resources. For this reason, the discussion of biological resources focuses on the 16.8-acre Subarea 3.

Larkspur Creek, a tributary to Corte Madera Creek and San Francisco Bay, borders the south and southeast portions of Subarea 3. The creek, which has been rerouted and channelized into a linear ditch, runs along the southern edge of Subarea 3 before making an abrupt right-

angle turn at the southeast corner of the parcel and then heads north along the eastern edge of the property to the Doherty Drive bridge at Piper Park. Larkspur Creek flows into Corte Madera Creek approximately 0.5 mile downstream of the Doherty Drive bridge. The engineered banks of Larkspur Creek are roughly 10 to 15 feet high and stable.

General Biological Resources

Vegetation

Most of the upland portion of Subarea 3 consists of previously graded and filled areas dominated by non-native grasses and other herbaceous plant species, many of which are considered invasive (Exhibit 4.5-1). Trees and shrubs, most of which are non-native, are also present at scattered locations within the interior portion of Subarea 3. A row of sweet gum (*Liquidamber* sp.) has been planted along the fence line on the northern boundary of the property. Subarea 3 does support scattered patches of native trees and shrubs. A group of large redwoods (*Sequoia sempervirens*) and a number of native oak trees (*Quercus garryana, Q. lobata*) are located above the bank of Larkspur Creek on the southwestern edge of Subarea 3. A small patch of native California bay trees (*Umbellularia californica*) and native willow trees (*Salix lasiandra*) are located on the north side of Meadowood Drive, near the southern boundary of Subarea 3. There are also a few small scattered oaks and California bay trees in the upland portion of Subarea 3.

On the Specific Plan area side, the banks of Larkspur Creek are heavily vegetated with a mix of non-native shrubs and grasses. French broom (*Genista monspessulana*) interspersed with other exotic species (e.g., fennel [*Foeniculum vulgare*], oleander [*Nerium oleander*]) dominates much of the upper creek bank along the eastern boundary of Subarea 3 (Exhibit 4.5-1). The creek bank adjacent to the southern boundary supports similar vegetation and a dense stand of acacia (*Acacia decurrens*). During the May 2003, survey, EDAW biologists noted that much of the non-native vegetation had been removed from the bank opposite the Specific Plan area and replaced with native saplings, shrubs, and grasses. The restoration areas were well maintained and most of the plantings appeared to be in good health. Although most of the trees and shrubs were less than a few feet tall, some of the plantings may have been at least 5 years old. In a letter to the City from Friends of Corte Madera Creek Watershed (dated September 4, 2002) in response to the earlier Draft EIR (Guldman, pers. comm., 2002), it was noted that restoration efforts with native plants have been ongoing since 1996. It was also noted during the May 2003 survey that a dirt pedestrian trail near the southern boundary of the Specific Plan area was located immediately adjacent to the top of the bank located at the opposite side from the Specific Plan area. At this location, the absence of a setback between the trail and creek limits the restoration area to the side of the bank and increases the potential for soil erosion into the creek (Exhibit 4.5-2).

The only native plant community identified in the Specific Plan area is a narrow band of tidal marsh vegetation that grows at the base of the banks along the edges of Larkspur Creek. The band of vegetation varies in width from a few feet to an estimated maximum of 25 feet, depending on channel and bank configuration and flow characteristics. The upper limit of the

Exhibit 4.5-1

Exhibit 4.5-2

tidal marsh is roughly defined by the mean high-water mark. Dominant plants at the downstream end of Larkspur Creek, near the Doherty Drive bridge, include species typically associated with salt marsh habitat including cordgrass (*Spartina foliosa*), marsh lavender (*Limonium californicum*), pickleweed (*Salicornia virginica*), and frankenia (*Frankenia salina*). Approximately 300 feet upstream of the Doherty Drive bridge the salt marsh vegetation begins to transition into a more brackish marsh vegetation type. The primary indicator species of this change is salt marsh bulrush (*Scirpus maritimus*). Salt marsh and brackish marsh species occur with decreasing frequency further upstream. Where Larkspur Creek enters Subarea 3 at the south end of the Specific Plan area, the gravel creekbed is mostly unvegetated (Exhibit 4.5-2). Salt and brackish marsh habitat associated with Larkspur Creek is discussed in more detail below under Sensitive Biological Resources.

Wildlife

Wildlife use of Subarea 3 is typical for urban and suburban areas in Marin County. Because human access to much of Subarea 3 is restricted by permanent fencing, some common wildlife species that prefer large areas of open space with relatively low levels of use by humans (e.g., black-tailed deer [*Odocoileus hemionus*]) are more abundant here than in surrounding areas. Birds observed in Subarea 3 include northern mockingbird (*Mimus polyglottus*), American crow (*Corvus brachyrhynchos*), and house sparrow (*Passer domesticus*). Mammals inhabiting the Specific Plan area in addition to black-tailed deer include raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and opossum (*Didelphis virginia*).

Wildlife along Larkspur Creek is not expected to differ substantially from that found on surrounding uplands because the aquatic and associated marsh habitat is too narrow and is not of sufficient quality (i.e., as compared to the habitat found at the large wetland area along Corte Madera Creek) to support most animals that are typically associated with brackish and salt marsh habitat.

Sensitive Biological Resources

Sensitive biological resources include those identified as such by CDFG, the California Native Plant Society (CNPS), and the U.S. Fish and Wildlife Service (USFWS). Sensitive biological resources for the Specific Plan also include those afforded protection under the City's General Plan.

Special-Status Species

Special-status species include plants and animals in the following categories:

< species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA);

< species considered as candidates for listing as threatened or endangered under ESA or CESA;

< wildlife species identified by CDFG as California species of special concern and by USFWS as federal species of concern;

< animals fully protected in California under the California Fish and Game Code;

< plants listed as endangered or rare under the California Native Plant Protection Act; and

< plants on CNPS's List 1B (plants rare, threatened, or endangered in California and elsewhere) or List 2 (plants rare, threatened, or endangered in California but more common elsewhere). The CNPS lists are used by both CDFG and USFWS in their consideration of formal species protection under ESA or CESA.

The California Natural Diversity Database (CNDDB) was used as the primary source to identify previously reported occurrences of special-status species and sensitive habitats. The CNDDB is a statewide inventory, managed by CDFG, that is continually updated with the location and condition of the state's rare and declining species and habitats. Although the CNDDB is the most current and reliable tool for tracking occurrences of special-status species, it contains only those records that have been submitted to CDFG, and is not always completely up to date. A copy of the CNDDB report for the USGS San Rafael quadrangle, which includes the entire Specific Plan area, is provided in Appendix D-4.

Special-Status Plants

The CNDDB (CNDDB 2003) was queried using Geographic Information Systems (GIS) to identify special-status plant occurrences documented within a 2-mile radius of the Specific Plan area (Exhibit 4.5-3). Special-status plant species identified in the search include white-rayed pentachaeta (*Pentachaeta bellidiflora*), Marin knotweed (*Polygonum marinense*), and Point Reyes bird's-beak (*Cordylanthus maritimus palustris*). White-rayed pentachaeta, federally listed as endangered, was reported most recently in 1991 approximately 0.5 mile southwest and 0.5 mile north of the Specific Plan area (CNDDB 2003). White-rayed pentachaeta is found in valley and foothill grasslands on open, dry, rocky slopes, often on soils derived from serpentine bedrock. Marin knotweed, a federal species of concern, was reported most recently in 1994 in saltgrass and pickleweed habitat along Corte Madera Creek north of the Specific Plan area (CNDDB 2003). Marin knotweed occurs in coastal salt and brackish marshes. Point Reyes bird's-beak, a federal species of concern, was reported approximately 1 mile east of the Specific Plan area at the shore of San Francisco Bay. Point Reyes bird's-beak is restricted to coastal salt marsh. None of these special-status plant species have been reported within the Specific Plan area and none were observed during previous studies. None are expected because of the absence of suitable habitat.

Special-Status Wildlife

Wildlife species listed as threatened or endangered that have been documented within a 2-mile radius of the Specific Plan area include California clapper rail (*Rallus longirsolatum obsoletus*),

Exhibit 4.5-3

California black rail (*Latterallus jamaicensis coturniculus*), and salt-marsh harvest mouse (*Reithrodontomys raviventris*). All three species are associated with tidal salt marsh and brackish marsh habitat.

California clapper rail is state and federally listed as endangered. It is also fully protected under §3511 of the California Fish and Game Code. This species prefers salt marshes intersected by numerous tidal channels and dominated by cord grass, pickleweed, and salt grass (USFWS 1984, Shuford 1993). California clapper rails have been reported in the vicinity of the Specific Plan area at Corte Madera Ecological Reserve and at the Muzzi Marsh which is approximately one mile from the Specific Plan area. A relatively stable population of breeding clapper rails is present in the reserve, which was included in the *Salt Marsh Harvest Mouse and California Clapper Rail Recovery Plan* (USFWS 1984) as an area to be managed for preservation and increase of existing rail populations. In 1987, approximately 30 breeding pairs were present, including 20–22 pairs in the northern portion of the reserve and eight pairs at Muzzi Marsh; in 1992, there were approximately eight pairs in the northern portion and four pairs at Muzzi Marsh. More recent systematic breeding season surveys have not been conducted, but 17 rails were recorded at Muzzi Marsh in 1999 (Evens, pers. comm., 2001). California clapper rail is not expected to occur in the Specific Plan area because the habitat requirement are not found in the portion of Larkpsur Creek adjacent to the Specific Plan area. The tidal marsh vegetation in the adjacent Larkpur Creek is not of sufficient size or quality that would provide adequate cover, foraging habitat, or breeding habitat for this species. For instance, important factors for breeding (e.g., extensive cord grass stands, intertidal mudflats) do not exist adjacent to the Specific Plan area (Shuford 1993).

California black rail is state listed as threatened and is a federal species of concern. The California black rail is fully protected under §3511 of the California Fish and Game Code. Black rails prefer tidal marshes with dense pickleweed cover, but they also occur in brackish and freshwater marshes (Shuford 1993). Black rails are known to occur at the Corte Madera Ecological Reserve in winter, but they are scarce and irregular at this location during the breeding season. The most recent breeding record for California black rail is a territorial male in the northern portion of the reserve in 1982 (Evens, pers. comm., 2001). California black rail is not expected to occur in the Specific Plan area because the habitat requirement are not found in the adjacent portion of Larkpsur Creek. The tidal marsh vegetation adjacent to the Specific Plan area is not of sufficient size or quality that would provide adequate cover, foraging habitat, or breeding habitat for the California black rail. For instance, important factors for breeding (e.g., dense growth of Salicornia, grasses, sedges, or other marsh vegetation) do not exist adjacent to the Specific Plan area (Shuford 1993).

Salt-marsh harvest mouse is state and federally listed as endangered and given fully protected status under §4700 of the California Fish and Game Code. Salt-marsh harvest mice inhabit salt marshes with dense cover dominated by pickleweed. Salt-marsh harvest mouse is known to occur at the Corte Madera Ecological Reserve, which contains the Muzzi Marsh. The *Salt Marsh Harvest Mouse and California Clapper Rail Recovery Plan* (USFWS 1984) states that the Corte Madera Ecological Reserve should be managed for the preservation and increase of

existing harvest mouse populations. Several salt-marsh harvest mice were captured in the northern portion of the reserve in 1975; surveys conducted in the late 1970s and 1980s did not result in any captures. The reserve was not considered a productive area for harvest mice when the *Salt Marsh Harvest Mouse and California Clapper Rail Recovery Plan* was developed. The most recent occurrence of salt-marsh harvest mouse on the reserve was documented in 1990 when one individual was captured in Marta's Marsh in the southern portion of the reserve. No systematic surveys have been conducted on the reserve in the past decade (Botti, pers. comm., 2001), but given the very small number of captures during earlier trapping efforts, salt-marsh harvest mouse appears to be rare in the area. Salt-marsh harvest mouse is not expected to occur in the Specific Plan area because suitable habitat does not exist in the adjacent Larkspur Creek. The salt-marsh harvest mouse inhabits the middle to upper levels of dense pickleweed stands in tidal and diked coastal salt marshes (Biosystem 1994), and this habitat does not exist adjacent to the Specific Plan area.

Several nonlisted special-status species (i.e., species of special concern) could occur in the Specific Plan area including salt marsh common yellowthroat (*Geothlypis trichas sinuosa*) and San Pablo song sparrow (*Melospiza melodia samuelis*). Salt marsh common yellowthroat and San Pablo song sparrow are both California species of special concern and federal species of concern. During the May 2003 survey, two song sparrows were observed along Larkspur Creek by EDAW biologists. The sparrows were not identified to subspecies but were presumed to be San Pablo song sparrows given that most wintering and transient subspecies would not be present at this time. Tidal marsh habitat associated with Larkspur Creek provides potential nesting habitat for both San Pablo song sparrow and salt marsh common yellowthroat.

Special-Status Fish

The only special-status fish reported to the CNDDB within a 2-mile radius of the Specific Plan area is tidewater goby (*Eucyclogobius newberryi*). Although not identified in the CNDDB search results, federally listed anadromous fish including Coho salmon (*Oncorhynchus kisutch*) and steelhead (*O. mykiss*) are known to occur in nearby Corte Madera Creek, which is fed by Larkspur Creek.

Tidewater goby is federally listed as endangered and a California species of special concern. The tidewater goby was collected at Corte Madera Creek at the Kentfield bridge in 1961; the CNNDB lists this occurrence as extirpated. Suitable habitat for the tidewater goby is limited to brackish water in the uppermost region of larger estuaries and coastal lagoons; this type of habitat is not present in the Specific Plan area.

Coho salmon and steelhead are federally listed as threatened; Coho salmon is also state listed as endangered. Both species are anadromous fish that spend their adult lives in the ocean and return to freshwater to spawn. Corte Madera Creek and its tributaries provide suitable habitat for both Coho salmon and steelhead, and both species may use the colder tributaries of Corte Madera Creek as spawning habitat; the most recent (1969) CDFG survey found more than 30,000 juvenile steelhead in the creek and its tributaries (Friends of Corte Madera Creek Watershed 2003). Corte Madera Creek was included by the National Marine Fisheries Service

(NMFS) in the San Francisco Bay unit of critical habitat for Coho salmon (USFWS 1999) and steelhead (USFWS 2000).

In 2002, the U.S. District Court for the District of Columbia approved a consent decree in *National Association of Home Builders, et al. V. Evans, et al.* withdrawing the designations of critical habitat for 19 listed Pacific Coast salmon and steelhead populations. Critical habitat for steelhead migrating through San Francisco Bay was vacated but critical habitat for Coho salmon was unaffected. The decree was in response to litigation challenging the process by which NMFS established critical habitat. This "critical habitat" designation had included all river reaches and their tributaries accessible to the protected species. A new critical habitat proposal is currently under development, but the biological importance of these habitat areas has not changed.

Although the Specific Plan area is located approximately 0.5 mile upstream of the confluence of Corte Madera Creek and Larkspur Creek, the Specific Plan is not considered important habitat for Coho salmon or steelhead. It is unlikely that either species enters Larkspur Creek, except for possibly short durations, because the creek does not provide spawning or migratory habitat or linkage to spawning habitat. Coho salmon and steelhead spawn in clear, cool, freshwater streams with gravel streambeds and well-oxygenated water. Brackish water such as that found in the lower reach of Larkspur Creek is not suitable spawning habitat for either species. The shallow, warm freshwater at the southern end of the Specific Plan area is also unsuitable for spawning.

Sensitive Habitat

Larkspur Creek

Larkspur Creek is considered a sensitive habitat because it supports tidal marsh vegetation and an aquatic environment under the regulatory jurisdiction of CDFG and the USACE. A narrow but clearly defined band of tidal marsh vegetation lines both shorelines of Larkspur Creek for roughly 900 feet upstream of the Doherty Drive bridge (Guldman, pers. comm., 2002). Northern coastal salt marsh, a plant community type described by Holland (1986), grows along both banks of Larkspur Creek, up to a point roughly 300 feet upstream of the Doherty Drive bridge, at which point the salinity levels appear to drop and the plant community begins to intergrade with coastal brackish marsh (Appendix D-2). Both vegetation types are ranked by CDFG as high-priority community types, worthy of special consideration as sensitive or rare.

Although the tidal marsh vegetation associated with Larkspur Creek qualifies as a sensitive biological resource, its importance to native plant and wildlife species typically associated with this habitat is limited. Tidal marsh in the Specific Plan area is limited in extent, and degraded from non-native invasive plant species and human activity (e.g., trash dumping, soil erosion).

Larkspur Creek has been identified as a protected water of the United States. In November 1999, Diane Renshaw conducted a preliminary delineation of jurisdictional wetlands and other waters of the United States using the Routine Method and technical criteria specified in the

1987 USACE Wetlands Delineation Manual. Ms. Renshaw determined that Larkspur Creek and its adjacent linear wetlands meet the definition of "other waters of the United States" and come under USACE jurisdiction. Larkspur Creek is also under CDFG jurisdiction because it meets that agency's definition of a stream regulated under §1600 of the California Fish and Game Code. Ms. Renshaw determined that there are no wetland areas or other waters of the United States on the upland portion of the Specific Plan area.

REGULATORY SETTING

Important regulations that protect biological resources and are applicable to the biological resources in the Specific Plan area are discussed below.

Federal Regulatory Issues

Federal Endangered Species Act

Pursuant to ESA, USFWS and National Oceanic and Atmospheric Administration–Fisheries (NOAA Fisheries, formerly NMFS) have authority over projects that may affect the continued existence of a federally listed (threatened or endangered) species. Section 9 of ESA and federal regulations prohibit the take of federally listed fish or wildlife species (16 United States Code [USC] §1538[a][1][B]). Take is defined under ESA, in part, as killing, harming, or harassing (16 USC §1539[19]). Under federal regulations, take is defined further to include habitat modification or degradation where it actually results or is reasonably expected to result in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

The take prohibition of ESA §9 applies only to listed species of fish and wildlife. Section 9(a)(2)(B) describes federal protection for endangered plants. In general, ESA does not protect listed plants located on nonfederal land (i.e., areas not under federal jurisdiction), unless such species are already protected by state law.

Section 7 of ESA outlines procedures for federal interagency cooperation to conserve federally listed species and designated critical habitat. Section 7(a)(2) requires federal agencies to consult with USFWS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat identifies specific areas that have the physical and biological features that are essential to the conservation of a listed species, and that may require special management considerations or protection.

For projects where federal action is not involved and take of a listed species may occur, the project proponent may seek to obtain an incidental take permit under §10(a) of ESA. This section allows USFWS to permit the incidental take of listed species if such take is accompanied by a Habitat Conservation Plan (HCP) that includes components to minimize and mitigate impacts associated with the take.

ESA requires the development of recovery plans for listed species. Restoring endangered or threatened animal and plant populations to the point where they are again secure and self-sustaining is a primary goal of USFWS. Recovery plans describe the actions considered necessary for the conservation of listed species, establish criteria for downlisting or delisting listed species, and estimate time needed and costs associated with implementing the necessary recovery measures. USFWS has no specific legislative mandate to require federal, state, or local agencies or private entities to implement tasks for endangered and threatened species recovery; however, the implementation schedule, which is included in the recovery plan, indicates potentially "responsible parties" that may be interested in carrying out particular recovery tasks.

Clean Water Act

USACE regulates the placement of fill into waters of the United States under CWA §404. Waters of the United States include lakes, rivers, streams, and their tributaries, and wetlands. Wetlands are defined under §404 as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions. Activities that require a permit under §404 include placing fill or riprap, grading, mechanized land clearing, and dredging. Any activity that would result in the deposit of dredge or fill material within the "ordinary high-water mark" (OHWM) of waters of the United States usually requires a permit, even if the area would be dry at the time the activity takes place.

The CWA and guidelines outlined in a memorandum of agreement (MOA) between EPA and USACE dated November 15, 1989, set forth a goal of restoring and maintaining existing aquatic resources. This MOA directed USACE to strive to avoid adverse impacts and offset unavoidable adverse impacts on existing aquatic resources, and for wetlands, to strive to achieve a goal of no overall net loss of values and functions. While focusing the no-net-loss policy on wetlands, the MOA also noted the value of other waters of the United States, such as streams, rivers, and lakes. Under the guidelines, all waters of the United States are afforded protection, including requirements for appropriate and practicable mitigation based on values and functions of the aquatic resources that will be affected.

In 2001, the U.S. Supreme Court ruled in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* that USACE has jurisdiction only over wetlands that are adjacent to navigable waters of the United States, interstate waters, all other waters where the use or degradation or destruction could affect interstate or foreign commerce, or tributaries to any of these waters. This ruling reversed roughly 2 decades of agency claims of jurisdiction over "isolated" water and substantially weakened federal protection over nontidal wetlands that are not part of, or adjacent to navigable waters of the United States. USACE is currently evaluating its jurisdiction over isolated wetlands on a case-by-case basis.

State Regulatory Issues

California Endangered Species Act

Pursuant to CESA, a permit from CDFG is required for projects that could take a species that is state listed as threatened or endangered (California Fish and Game Code §2050 et seq.). Under CESA, take is defined as an activity that would directly or indirectly kill an individual of a species. The definition does not include "harm" or "harass" as in the federal act. As a result, the threshold for take under CESA is higher than under ESA (i.e., habitat modification is not necessarily considered take under CESA). The take of state-listed species incidental to otherwise lawful activities requires a permit, pursuant to §2081(b) of CESA. The state has the authority to issue an incidental take permit under California Fish and Game Code §2081, or to coordinate with USFWS during the §10(a) process to make the federal permit consistent with CESA.

As under federal law, listed plants have considerably less protection than fish and wildlife under California state law. The California Native Plant Protection Act (California Fish and Game Code §19000 et seq.) allows landowners to take listed plant species, provided that the owner first notifies CDFG and gives the agency at least 10 days to come and retrieve (and presumably replant) the plants before they are plowed under or otherwise destroyed.

Section 1600 of the California Fish and Game Code

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources are subject to regulation by CDFG, pursuant to §§1600–1603 of the California Fish and Game Code. The Code states that it is unlawful for any person or agency to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by CDFG, or to use any material from the streambeds, without first notifying CDFG of such activity. The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. CDFG's jurisdiction within altered or artificial waterways is based upon the value of those waterways to fish and wildlife. A CDFG Streambed Alteration Agreement must be obtained for any project that would result in impact on a river, stream, or lake.

Fully Protected Species under the California Fish and Game Code

Four sections of the California Fish and Game Code (Fish and Game Code §§3511, 4700, 5050, and 5515) list 37 fully protected species. These statutes prohibit take or possession at any time of fully protected species. CDFG is unable to authorize incidental take of fully protected species when activities are proposed in areas inhabited by those species. CDFG has informed nonfederal agencies and private parties that they must avoid take of any fully protected species in carrying out projects.

Local Laws and Ordinances

City of Larkspur General Plan

The Environmental Resource Chapter of the City's General Plan includes the following goals and action programs:

Goal 1. Preserve and enhance a variety of open space features including the wetlands along the Bay and the creeks, wildlife habitats, view corridors, and other amenities which contribute to a sense of openness in Larkspur.

> ***Action Program [7].*** If a development proposal requires the removal of trees or other vegetation of significant resource value or adversely impacts a wetlands area (as defined in implementing ordinances), require the developer to replace the lost resources.
>
> ***Action Program [8].*** Avoid development in areas which contain rare or endangered species of plants or animals.
>
> ***Action Program [12].*** Provide a buffer zone between natural habitats and human use areas (such as paths), and clearly mark the boundaries. Place restrictions on access to these sensitive areas by pets.

Goal 4. Protect open space and shoreline/marsh conservation areas from degradation as a result of public facility needs such as roads, sewers, or flood control.

Trees Protected by the City of Larkspur

The City's Municipal Code regulates the removal of trees that meet the City's definition of mature or "heritage" trees. Under Chapter 12.16 of the Municipal Code, heritage trees are defined as either of the following:

< a live tree or grove of live trees of historical significance specifically designated by official action of the City Council; or

< any live tree that has a trunk with a circumference of 50 inches or more, measured at 24 inches above the natural grade.

Removal of a heritage tree or the excessive pruning of a heritage tree that causes the death of the tree is prohibited, unless a permit is obtained from the City Manager or his/her designee. Chapter 12.16 also specifically mentions that native trees such as redwood, oak, and madrone are especially important to the community. The City provides a Master Tree List, which encourages the planting of native trees, to be used as a guide when trees are planted on private property.

In the Specific Plan area, heritage trees are located along the western edge of Subarea 3, adjoining the former railroad right-of-way. For the Specific Plan, it is assumed that all heritage

trees would be required to be retained and incorporated into the design of the redeveloped areas as mandated by Policy 66 (Heritage Trees) in Chapter 7, Community Design and Community Design Standard 68, Trees to be Retained.

4.5.2 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Implementation of the Specific Plan would have a significant impact if it were to result in:

< 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 CDFG or USFWS;

< a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFG or USFWS;

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

< substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impediment to the use of native wildlife nursery sites;

< any conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;

< any conflict with the provisions of an adopted HCP, Natural Community Conservation Plan, or other approved local, regional, or state HCP; or

< a substantial reduction of habitat for a fish or wildlife species, reduction in a fish or wildlife species population below self-sustaining levels, threat of elimination of a plant or animal community, or a reduction in the number or range of an endangered, rare, or threatened species.

PROJECT-LEVEL IMPACTS

Impact **4.5-1**

Loss of Habitat for Common Plant and Wildlife Species. *Development of Subarea 3 would remove vegetation that currently supports a number of common plant and wildlife species. Many of the animals inhabiting the area would be displaced. Some displaced animals would be expected to successfully relocate to similar habitat elsewhere in the vicinity of the Specific Plan area, but some mortality would also be expected. Disturbed habitat similar to that which would be removed is abundant in Marin County. The Specific Plan would not substantially reduce the population of any plant or wildlife species. This impact is considered* ***less than significant****.*

The majority of the Specific Plan area consists of developed and disturbed areas, including commercial buildings such as the Sloat Nursery in Subarea 3 and parking areas. While some development, including several large greenhouses has occurred in Subarea 3, parts of the subarea are currently undeveloped and provide habitat for a number of common plant and wildlife species.

Grading and construction on vacant and undeveloped lands within the Specific Plan area would remove habitat for a number of common (i.e., nonsensitive) plant and wildlife species. Vegetation that would be cleared would be limited primarily to disturbed weedy plant species, but some small native trees and shrubs would also be removed; it is assumed that no mature trees would be removed and that all trees that meet the definition of heritage trees and trees identified in Specific Plan Community Design Standard 68 (Trees to be Retained) would be protected. Some animals may successfully relocate to nearby parcels with similar habitat, but some mortality is expected, and the local populations of some species in the Specific Plan area would be reduced.

Remaining open space would not be sufficient to accommodate the number of black-tailed deer currently inhabiting the site, and it is likely that the deer population would eventually be eliminated from the Specific Plan area. However, black-tailed deer are abundant through much of Marin County and are not considered sensitive by CDFG, USFWS, or the City. Development of the Specific Plan is not expected to substantially reduce the regional population of black-tailed deer.

Wildlife would also be adversely affected following buildout of the Specific Plan area by an increased population of people and their domestic animals. Domestic dogs would disturb wildlife along pedestrian trails and in the buffer area. Birds within the buffer area would be subjected to increased predation by domestic cats. These indirect impacts would further reduce some native and non-native wildlife populations. However, because wildlife affected in the Specific Plan area is, and would remain, common throughout Marin County, these impacts would be less than significant.

Soil contaminants, such as those described in Section 4.12, Hazards and Hazardous Materials, of this Revised Draft EIR, are present in the Specific Plan area and can also pose risks to plant and wildlife species through root uptake, foraging, and other activities. Development projects in the Specific Plan area may involve construction activities that would excavate and store contaminated soils on ground surface, increasing the risk of exposure of plants and animals to hazardous materials. However, the presence of contaminants, including lead, in Subarea 3 does not pose a significant threat to any plant or wildlife species; given that the exposure time to these contaminants is expected to be very limited, contaminant levels do not exceed those that would result in mortality or injury to wildlife. (See Section 4.12, Hazards and Hazardous Materials, for more information on potential impacts associated with contaminants.)

Impact **4.5-2**

Effects on Larkspur Creek. *Larkspur Creek supports salt and brackish marsh habitat, as well as fresh water habitat, considered sensitive by CDFG. Larkspur Creek also receives federal protection as a water of the United States and state protection as a stream as defined by §1600 of the California Fish and Game Code. The anticipated increase in urbanization and population could have both direct and indirect impacts on the biological resources associated with Larkspur Creek. This impact is considered* ***potentially significant****.*

Northern coastal salt marsh and coastal brackish marsh habitats are both located along the Larkspur Creek channel adjacent to (but not within the boundaries of) Specific Plan Subarea 3. Both habitats are ranked by CDFG as high-priority community types, worthy of special consideration as sensitive or rare. The freshwater habitat associated with the upper reach of Larkspur Creek is also considered sensitive habitat.

Several policies and standards from Chapter 4, Land Use, Chapter 6, Utilities, and Chapter 7, Community Design, of the Specific Plan apply to the sensitive habitat along Larkspur Creek. Objective LU-7 directs the City to retain and enhance open land with special natural habitats and/or scenic value. Community Design Policy 64 (Habitat Enhancement) states that the applicant should undertake a cooperative effort with the City and local environmental interests to enhance the natural habitat value of Larkspur Creek and adjoining protected open space. Possible enhancement actions include regrading of the northern portion of the creek to expand the wetland area. Community Design Standard 65 (Creek Setback) requires that a setback be maintained along Larkspur Creek to protect water quality and natural habitat. The setback standards include:

< A buffer at least 50 feet wide from the top of the bank on the north/south reach of the creek at the eastern edge of the Specific Plan area. No building may be located closer than 50 feet from the top of the bank.

< A buffer at least 25 feet wide from the top of the bank on the east/west reach of the creek at the southern edge of the Specific Plan area. No building may be located closer than 25 feet from the top of the bank.

Community Standard 67 (Creek Setback Ownership) requires that land lying within the Larkspur Creek setback be retained in common ownership to ensure appropriate management of the habitat and watercourse buffer. Policy 11 (Pollutants) in the Utilities Element directs the City to minimize discharge of surface pollutants to Larkspur Creek and Corte Madera Creek, and Policy 12 (Subarea 3 Drainage Improvements) directs the City to receive stormwater in detention areas before it is discharged into Larkspur Creek. Specific Plan Community Design Standards 73 (Grassy Swales) and 74 (Stormwater Detention) would allow water treatment and stormwater detention ponds in the buffer area.

Although the policies and standards in the Specific Plan would reduce impacts on sensitive biological resources associated with Larkspur Creek, impacts would remain potentially significant. Development of Subarea 3 would affect sensitive habitat associated with Larkspur Creek and the Specific Plan area if future development would result in the degradation of

water quality and tidal wetland vegetation during grading and construction from soil erosion caused by nearby construction activity. However, the preparation and implementation of Storm Water Pollution Prevention Plans (SWPPPs) would be required for future development proposals involving more than 1 acre of construction area prior to the issuance of building permits. SWPPPs require the use of Best Management Practices to reduce the release of sediments and other pollutants into Larkspur Creek (see Section 4.3, Geology and Soils, and Section 4.4, Hydrology and Water Quality, for further discussion). As such, construction and operational activities are not expected to result in substantial degradation of water quality and tidal wetland vegetation for some construction activities in the Specific Plan area. However, a SWPPP is not required for all construction activities; sensitive habitat could be directly and indirectly degraded. This is a potentially significant impact.

The Specific Plan calls for preservation of habitat associated with Larkspur Creek. However, the Specific Plan policies appears to less restrictive than General Plan Action Program 12, which directs the City to provide a buffer zone between natural habitat and human use areas. Specific Plan Community Design Policy 9 (Creek Resources) directs the City to make the creekside corridor accessible for passive use by the entire community, and Specific Plan Community Design Policy 10 (Open Space Network) suggests that the creek and creekside vegetation should be integrated with a system of pedestrian and bicycle routes, which would introduce human use into the buffer zone. These Specific Plan policies would reduce the potential to enhance habitat along Larkspur Creek and would allow development in Subarea 3 that could result in significant degradation of the existing sensitive habitat associated with the creek. For the reasons described above, this impact is considered potentially significant.

Impact **4.5-3**

Effects on Terrestrial Special-Status Species. *Eight special-status species have been recorded in the vicinity of the Specific Plan area. Development of Subarea 3 would not substantially reduce the amount or quality of potential habitat for any special-status species. This impact is considered* ***less than significant****.*

Special-status species known to occur in the vicinity of the Specific Plan area include California clapper rail, California black rail, salt-marsh harvest mouse, salt marsh common yellowthroat, San Pablo song sparrow, white-rayed pentachaeta, Marin knotweed, and Point Reyes bird's-beak.

Several of the special-status plants and animals known to occur in this region of Marin County are restricted to tidal wetlands. In the Specific Plan area, tidal wetland vegetation is confined to a narrow strip along the lower reach of Larkspur Creek. The salt marsh vegetation associated with this section of the creek is connected to more extensive and higher quality salt marsh habitat associated with Corte Madera Creek and the Corte Madera Ecological Reserve. The reserve is known to support three state and federally listed species: California clapper rail, California black rail, and salt-marsh harvest mouse. However, these species are not expected to occur in the Specific Plan area. This conclusion is based on the results of three separate habitat evaluations. Zander Associates (1998) determined that no suitable habitat for California clapper rail, California black rail, and salt-marsh harvest mouse exists in, or adjacent to, the Specific Plan area. Consulting Ecologist Diane Renshaw concluded (see Appendix D-2) that it

is possible that individuals of these species might at some time occur along Larkspur Creek but that, in general, the marsh is too small and its quality is dissimilar to the quality of the large wetland area along Corte Madera Creek to provide good habitat for any of these species. EDAW biologists concurred with the findings of Zander Associates and Renshaw, and concluded that California clapper rail, California black rail, and salt-marsh harvest mouse are not expected in the Specific Plan area and none of these species was identified in the Specific Plan area. Special-status species that may inhabit the Specific Plan area include salt marsh common yellowthroat and San Pablo song sparrow. No special-status plants are expected in the Specific Plan area because suitable habitat is absent.

Grading and construction activity associated with development of Subarea 3 would not have a substantial effect on any terrestrial special-status species. Indirect effects of new urban development on special-status species, including increased use of the subarea by residents and visitors, would also have a less-than-significant impact on terrestrial special-status wildlife species. The only special-status species that may inhabit the Specific Plan area are salt marsh common yellowthroat and San Pablo song sparrow. Habitat for both species is limited primarily to the tidal marsh vegetation located immediately adjacent to Larkspur Creek. Impacts on the tidal marsh area and adjacent upland habitat would not significantly reduce the amount of potential nesting or foraging habitat for salt marsh common yellowthroat or San Pablo song sparrow. This impact is considered less than significant.

Impact **4.5-4**

Effects on Special-Status Fish. *Three special-status fish species have been recorded in the vicinity of the Specific Plan area. Development of Subarea 3 would not substantially reduce the amount or quality of potential habitat for any special-status fish. This impact is considered* ***less than significant****.*

Special-status fish known to occur in the vicinity of the Specific Plan area include Coho salmon, steelhead, and tidewater goby. Tidewater goby is not expected in the Specific Plan area because suitable habitat is absent. Larkspur Creek provides low-quality habitat for Coho salmon and steelhead. Development of Subarea 3 is not expected to substantially affect habitat for Coho salmon and steelhead. The low-quality habitat in Larkspur Creek would be adequately protected by the proposed buffer and by other Specific Plan policies and standards intended to minimize impacts on Larkspur Creek. Mitigation Measure 4.3-3, Prepare and Implement Stormwater Pollution Prevention Plan of this Revised Draft EIR, if implemented would help to minimize impacts on salmon and steelhead in Larkspur Creek and downstream. However, due to the lack of high quality or suitable habitat, this impact is considered less than significant.

Impact **4.5-5**

Effects on Fish and Wildlife Movement. *Movement by terrestrial wild animals across the Specific Plan area would become more difficult as buildout of the Specific Plan progresses. Development would not affect any important migratory corridors or the long-distance movement of any wildlife across Subarea 3, as much of the parcel is fenced and the parcel is surrounded by existing development. Movement by resident and anadromous fishes in Larkspur Creek would not be affected. This impact is considered* ***less than significant****.*

Movement by terrestrial wildlife species across the Specific Plan area is currently limited to short-distance movements, as opportunities for long-distance movement is restricted by roads and other development surrounding the area. Subareas 1 and 2 are currently developed with urban uses and a park surrounded by urbanized uses; as such, further development of these two subareas would not affect wildlife movement. Development of Subarea 3 would eliminate much of the existing open space and thus restrict opportunities for wildlife movement across upland portions of the subarea, but this impact would only affect species that are considered common in Marin County. The Specific Plan area does not provide linkages between areas of important wildlife habitat or any recognized migratory corridors.

Larkspur Creek is connected to higher quality habitat downstream, including salt marsh habitat associated with Corte Madera Creek. This linkage would not be substantially affected, since the Specific Plan does not allow uses that would obstruct the flow of water in Larkspur Creek and would establish a buffer adjacent to the creek. As such, opportunities for wildlife movement would be preserved between Larkspur and Corte Madera creeks. Movement by resident and anadromous fish in Larkspur Creek would not be impeded. This impact is considered less than significant.

CUMULATIVE IMPACTS

As under project conditions (see Impact 4.5-2), the anticipated increase in urbanization and population under cumulative conditions could have both direct and indirect impacts on the biological resources associated with Larkspur Creek. The creek supports salt and brackish marsh habitat considered sensitive by CDFG. Therefore, this impact is considered cumulatively significant. There would be no other cumulative impacts related to biological resources as a result of implementation of the Specific Plan.

4.5.3 MITIGATION MEASURES

PROJECT-LEVEL MITIGATION MEASURES

No mitigation measures are required for the following less-than-significant impacts.

4.5-1: Loss of Habitat for Common Plant and Wildlife Species

4.5-3: Effects on Terrestrial Special-Status Species

4.5-4: Effects on Special-Status Fish

4.5-5: Effects on Fish and Wildlife Movement

The following mitigation measures are recommended for potentially significant impacts.

Impact **4.5-2a, b mitigation**

Effects on Larkspur Creek.

Protect Sensitive Salt Marsh Habitat Associated with Larkspur Creek

The City shall include the following new policies in the Specific Plan to protect and enhance habitat on the banks of Larkspur Creek and in the buffer area.

New Policy: The developer of Subarea 3 shall prepare and the City shall approve a native plant restoration plan for upland habitat for the Larkspur Creek buffer area. The restoration plan shall be developed by a qualified restoration ecologist, and shall include the following components: proposed methods to eliminate non-native, invasive species; a native plant planting and irrigation plan that considers and is compatible with any water treatment and stormwater detention ponds; a description of a proposed monitoring schedule; and performance standards to ensure that the restoration effort is successful. Target species for removal shall include French and Spanish broom, oleander, Himalayan blackberry, pampas or jubata grass, and fennel. Recommended replacement species include but are not limited to arroyo and Pacific willow, coyote bush, native bunchgrasses, toyon, and coast live oak. Implementation of the native plant restoration plan shall be a condition of any project approvals in Subarea 3. Monitoring reports prepared by a qualified restoration ecologist shall be submitted to the City annually for 5 years. The first report shall be due to the City 12 months following the start of implementation of the restoration plan.

New Policy: To minimize soil erosion and other secondary impacts on wildlife by pedestrians and cyclists, no bikeways or footpaths will be constructed within the Larkspur Creek buffer area. Permanent fencing designed to discourage people and their pets from entering restored habitat in the buffer area shall be installed along the outside edge of the buffer.

New Policy: Less than 12 months following the start of implementation of the restoration plan, signage that includes interpretive displays shall be posted on bikeways and footpaths alerting visitors to the nearby sensitive habitat and explaining the importance of protection of these areas. Signs shall also be posted requiring that all dogs be on leashes and kept out of the setback area.

(b) Implement Mitigation Measure 4.3-3

The City shall implement Mitigation Measure 4.3-3, Prepare and Implement an Erosion Control Plan.

CUMULATIVE MITIGATION MEASURES

To protect sensitive salt marsh habitat associated with Larkspur Creek, which could be affected under cumulative as well as project conditions (see Impact 4.5-2), the City shall include in the Specific Plan the new policies described in Mitigation Measure 4.5-2 above. There would be no other cumulative impacts related to biological resources as a result of implementation of the Specific Plan; therefore, no further mitigation measures are required.

4.5.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Following implementation of the above mitigation measures, no significant impacts on biological resources would remain.

4.6 AIR QUALITY

This EIR section describes potential impacts on local and regional air quality resulting from adoption of the Specific Plan. This section has been prepared using methodologies and assumptions recommended by the Bay Area Air Quality Management District (BAAQMD) CEQA Handbook. This section describes existing air quality, construction period impacts, emissions associated with implementation of the Specific Plan, the impacts of Specific Plan related emissions on local and regional air quality, cumulative impacts, and mitigation measures to reduce or avoid identified significant impacts.

4.6.1 EXISTING SETTING

REGIONAL SETTING

Larkspur is within the boundaries of the San Francisco Bay Area Air Basin. The climate of the basin is determined largely by a high-pressure system that is almost always present over the eastern Pacific Ocean off the West Coast of North America. High pressure systems are characterized by an upper layer of dry air that warms as it descends, restricting the mobility of cooler marine-influenced air near the ground surface, and resulting in the formation of subsidence inversions. During summer and fall, emissions generated in the basin can react in the presence of sunlight to create ozone smog. Topography and inversions also create conditions conducive to the formation of photochemical pollutants, such as ozone and secondary particulates, such as nitrates and sulfates. In the winter, stagnant conditions between storms can allow pollutant levels to build up to unhealthful levels.

LOCAL SETTING

Temperatures in Larkspur range from the low 40s on winter mornings to the mid 90s on late-summer afternoons. The warmest temperatures generally occur in September and October. Temperature extremes, reaching 100 degrees or dropping to freezing, are rare. Rainfall occurs primarily from late October to early May. Except for occasional light drizzle from thick marine stratus clouds, summers are almost completely dry.

Winds in the San Francisco Bay area display several characteristic regimes. Along the San Francisco Bay shore (i.e., Larkspur), winter winds are generally from the south and southeast, or calm. In the other seasons, winds from the north and northwest predominate (California Air Resources Board 1984). In all cases, local topography can have a strong influence on micro-scale wind patterns.

REGULATORY SETTING

Air Quality Standards

The federal and California Clean Air Acts have established ambient air quality standards for different pollutants (Table 4.6-1). National ambient air quality standards have been adopted for specific criteria pollutants. These criteria pollutants include carbon monoxide (CO), ozone

Table 4.6-1
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standard	Federal Primary Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone (O_3)	1 hour	0.09 ppm	0.12 ppm	Irritation and possibly permanent lung damage.	Motor vehicles, including refining and gasoline delivery.
	8 hours	---	0.08 ppm		
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Deprives body of oxygen in the blood. Causes headaches and worsens respiratory problems.	Primarily gasoline-powered internal combustion engines.
	8 hours	9 ppm	9.0 ppm		
Nitrogen Dioxide (NO_2)	Annual Average	---	0.05 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining, power plants, aircraft, ships, and railroads.
	1 hour	0.25 ppm	---		
Sulfur Dioxide (SO_2)	Annual Average	---	0.03 ppm	Irritates and may permanently injure respiratory tract and lungs. Can damage plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	---		
	24 hours	0.04 ppm	0.14 ppm		
Suspended Particulate Matter (PM_{10}, $PM_{2.5}$)	Annual Geometric Mean	20 µg/m^3 (PM_{10})	15 µg/m^3 ($PM_{2.5}$)	May irritate eyes and respiratory tract, decreases in lung capacity, cancer, and increased mortality. Produces haze and limits visibility.	Industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	Annual Geometric Mean	12 µg/m^3 ($PM_{2.5}$)			
	Annual Arithmetic Mean	---	50 µg/m^3 (PM_{10})		
	24 hours	50 µg/m^3 (PM_{10})	150 µg/m^3 (PM_{10}) 65 µg/m^3 ($PM_{2.5}$)		
Lead	Monthly	1.5 µg/m^3	---	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurologic dysfunction (in severe cases).	Present source: lead smelters, battery manufacturing and recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly	---	1.5 µg/m^3		
Sulfates (SO_4)	24 hours	25 µg/m^3	---	Similar to sulfur dioxide	Industrial processes refineries.
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm (42 µg/m^3)	---	Very pungent odor similar to rotten eggs. Annoying and irritating – high concentrations fatal.	Sources include industrial processes, oil production, and geothermal wells.

Note: ppm = parts per million; µg/m^3 = micrograms per cubic meter.
Source: California Air Resources Board

(O_3), nitrogen dioxide (NO_2), inhalable particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), and lead (Pb). California established ambient air quality standards as early as 1969 through the Mulford-Carrell Act. Pollutants regulated under the California Clean Air Act are similar to those regulated under the federal Clean Air Act. In many cases, California standards are more stringent than the national ambient air quality standards.

Ozone is a considered a secondary pollutant, because it is not emitted directly into the atmosphere, but is produced through a complex series of photochemical reactions involving reactive organic gases (ROG) and NO_X. These two compounds, ROG and NO_X, are recognized as precursors to ozone smog. Because O_3 precursors are transported and diffused by wind, with the capacity to form smog miles from their emission source, ozone is regarded as a regional air pollutant. Ozone is the major component in smog, and exposure to ozone can causes adverse health impacts. When O_3concentrations are predicted to reach or exceed 0.1 parts per million (ppm), the BAAQMD issues a Spare the Air advisory, telling those who would be adversely affected by unhealthful air to avoid exertion and outdoor activity, and requesting voluntary reductions in vehicle use and other actions.

CO is an odorless, colorless gas that can be lethal in high concentrations. The primary sources of CO are motor vehicles, and concentrations of this gas are greatest in areas near the intersections of roadways that carry high volumes of traffic.

Oxides of Nitrogen are produced through fuel combustion, and contribute to the formation of ozone smog. At higher concentrations, NO_X, the brown gas in smog, causes burning eyes, shortness of breath and other temporary and long-term health effects.

The use of high sulfur fuels in petroleum refining and electricity generation may result in emissions of SO_2. Fuel sulfur content has been extensively regulated, and controls on stationary sources have brought the Bay Area into compliance with federal and state standards.

Particulates that are 10 microns in diameter or smaller are identified as PM_{10}. Likewise, $PM_{2.5}$ is composed of fine particulates 2.5 microns in diameter or smaller. If inhaled deeply, these particulates can cause adverse health effects. The greatest proportion of suspended particulates originates from road dust, construction activities, and farming. During the winter, wood smoke from fireplaces can be the source of up to 40% of ambient respirable particulate matter.

Lead has been phased out as a gasoline additive in California, and annual federal and state ambient air quality standards for this criteria pollutant are met in all parts of the state.

BAAQMD Guidelines

In April 1996, the local air district adopted the BAAQMD CEQA Guidelines. This document provides background information and specific recommendations for agencies preparing and reviewing environmental documents. The guidelines were subsequently updated and revised in December 1999. While not a regulation or rule, the guidelines are generally accepted as the

source for setting, impact evaluation, and best mitigation practices. Other large air districts in California have also adopted similar CEQA guidance, with significance thresholds set depending upon local conditions (e.g., often more stringent in high-pollution areas such as the South Coast Air Quality Management District). The December 1999 BAAQMD CEQA Guidelines were used to help prepare this air quality section (BAAQMD 1999).

Current Air Quality

The BAAQMD and other government agencies operate a network of air quality monitoring stations throughout the Bay Area. The monitoring station closest to the Specific Plan area is in San Rafael. The air quality monitored at the San Rafael station is considered representative of pollution levels throughout the communities of Marin County abutting San Francisco Bay (e.g., Larkspur).

The ambient air quality standards are met in the Larkspur area except for the state PM_{10} standard (Table 4.6-2). State and federal ozone standards are exceeded routinely in other, downwind portions of the San Francisco Bay Air Basin, such as Livermore.

While O_3 levels in Marin County are generally good, as shown in Table 4.6-2 below, other parts of the air basin reach ozone smog levels at a magnitude about 33% more than the federal 1-hour standard (0.12 ppm). Ozone precursor emissions (ROG and NO_X) generated by vehicle travel and other sources associated with the Specific Plan would contribute to higher levels within the air basin. To reduce high O_3 levels in downwind areas (i.e., Livermore), the air district attempts to control ozone precursor emissions throughout the Bay Area.

Table 4.6-2
Air Quality Data for San Rafael, 2000-2002

Pollutant	Standard	Statistic	2000	2001	2002
Ozone	State 1-Hour	Days Over Standard	0	0	0
		Maximum Concentration (ppm)	0.7	0.9	0.8
Ozone	Federal 8-Hour	Days Over Standard	0	0	0
		Maximum Concentration (ppm)	0.6	0.7	0.5
Particulate Matter (PM_{10}) (50 µg/m^3)	State 24-Hour	Days Over Standard (calculated)	0	**12**	0
		Maximum Concentration (µg/m^3)	40	**79**	41
		Annual Geometric Mean (µg/m^3)	**18**	**18**	**16**
Carbon Monoxide		8-Hour Average	2.3	2.4	1.7

ppm = parts per million; µg/m^3 = micrograms per cubic meter
Source: California Air Resources Board 2003
Please refer to Table 4.6-1 for explanation of state and federal standards.
Standard exceedances in BOLD

Monitors in Marin County record exceedances of state PM_{10} levels at about 33% more than the federal 1-hour standard. Marin County PM_{10} levels exceed (annual average) standards every year. In some years the 24-hour PM_{10} standard is also exceeded. There are no government-operated $PM_{2.5}$ monitors in Marin County; hence no data are presented.

Regional Air Quality Planning

The Clean Air Act of 1970 and the California Clean Air Act of 1988 require that the California Air Resources Board (CARB), based on air quality monitoring data, designate the areas where the federal or state standards are not met as "nonattainment areas." Because of the differences between the federal and state standards, federal and state nonattainment areas have different designations.

Federal Air Quality Program

Air pollutant emissions (especially O_3 precursors) generated in upwind areas can cause impacts in downwind areas. The BAAQMD is designated "moderate nonattainment" for the federal O_3 standard. The "moderate" designation means that the BAAQMD must adopt controls sufficient to meet the federal ozone standard within 6 years. This attainment designation allows the BAAQMD to adopt uniform control policies throughout the nine-county air district to meet state and federal standards. Controls will also help reduce O_3 transport from the Bay Area to downwind areas (in other air districts), such as Tracy and Stockton, which are in the San Joaquin Valley Air Basin.

Toxic Air Contaminants

Toxic Air Contaminants (TACs) are compounds known to cause cancer or acute health effects. The current list of TACs includes approximately 200 compounds. They are generally less pervasive in the urban atmosphere than the criteria pollutants, but they are linked to short-term (acute) or long-term (chronic) adverse health effects. A few TACs, such as diesel exhaust, are almost universal in urban areas and near major highways. Stationary TAC sources include industrial processes, commercial operations (e.g., gasoline stations and dry cleaners), wood smoke, and some agricultural activities (such as open burning). Unlike regulations concerning criteria air pollutants, there are no ambient air quality standards for evaluation of TACs based on the amount of emissions. Instead, TAC emissions are evaluated based on the degree of health risk that could result from exposure to these pollutants.

The state requires the local air districts to quantify and prioritize emissions from individual facilities. High-priority facilities must then perform a health risk assessment, and if specific thresholds are violated, they are required to communicate the results to the public in the form of notices and public meetings. Depending on the risk level, emitting facilities can be required to implement varying levels of risk reduction measures. According to the BAAQMD, control programs have significantly reduced many types of TACs by 60% or more. The BAAQMD's 1999 TAC Control Annual Report (BAAQMD 2000) presents a population-based estimate of excess cancer deaths. This estimate is stated as excess cancer deaths per 1 million people. For emissions from stationary sources, the estimate is 186 excess deaths per 1 million Bay Area residents.

Construction equipment and large delivery trucks serving future commercial development within the Specific Plan site would usually operate on diesel fuel. Mobile sources, such as

construction equipment, are not required to perform risk assessments, but are coming under increasing scrutiny as they contribute twice as much to the toxic burden as all other stationary sources combined (BAAQMD 2000). For diesel exhaust, the excess mortality risk is approximately 450 deaths per 1 million residents.

State Air Quality Program

Under the California Clean Air Act, the Bay Area Air Basin is classified serious nonattainment for O_3 and nonattainment for PM_{10} (respirable particulate matter). The air basin is an attainment area for all other state ambient air quality standards.

State law requires local air pollution control districts to prepare air quality attainment plans. These plans must reduce districtwide emissions of ozone precursors by 5% per year averaged over consecutive 3-year periods or, if not achievable, provide for adoption of "all feasible measures on an expeditious schedule." The California Clean Air Act also grants air districts explicit statutory authority to adopt indirect source regulations (related to land uses or facilities that attract or generate motor vehicle trips). The law also allows adoption of transportation control measures, including measures for ridesharing, flexible work hours, zero emission modes (biking and walking), or measures that reduce the number or length of vehicle trips.

The current Bay Area Clean Air Plan (CAP) was adopted on December 20, 2000. It proposes emission controls on stationary sources (factories, power plants, industrial sources, etc.) and transportation control measures to reduce emissions from motor vehicles. The 2003 CAP was being prepared at the time that this Revised Draft EIR was being written.

Sensitive Receptors

The BAAQMD CEQA Guidelines define sensitive receptors as facilities where population groups (children, the elderly, the acutely ill, and the chronically ill) are likely to be located. These land uses include residences, schools, playgrounds, child care centers, retirement homes, convalescent homes, hospitals, and medical clinics. The Specific Plan would allow residential development and there are residents living immediately adjacent to the Specific Plan area; Hall Middle School and Piper Park are located across Doherty Drive from the Specific Plan area; and facilities associated with Redwood High School are adjacent to the Specific Plan area across Larkspur Creek. More distant sensitive receptors (within a 2-mile radius) can be of concern if a development has the potential to produce offensive odors or other significant pollutants.

4.6.2 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Implementation of the Specific Plan would have a significant impact on air quality if it were to result in:

< any conflict with the applicable air quality plan,

< any obstruction of the implementation of the applicable air quality plan,

< any violation of any air quality standard,

< a substantial contribution to an existing or projected air quality violation;

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

< exposure of sensitive receptors to substantial pollutant concentrations, or

< creation of objectionable odors affecting a substantial number of people.

The BAAQMD CEQA Guidelines specify that localized CO concentrations should be estimated for projects that could result in vehicle emissions of CO that exceed 550 pounds per day (lbs/day), if project-related traffic would affect intersections or roadway links operating at LOS D, E, or F or would cause LOS to decline to D, E, or F, or if project-related traffic would increase traffic volumes on nearby roadways by 10% or more. A project contributing to CO concentrations exceeding the State Ambient Air Quality Standard of 9 ppm averaged over 8 hours and 20 ppm for 1 hour would be considered to have a significant impact.

The BAAQMD CEQA Guidelines also specify that a project that generates 15 tons per year or 80 lbs/day of ROG, NO_X, or PM_{10} would be considered to have a significant air quality impact.

ANALYTICAL METHODOLOGY

As described below, residential and commercial operations like those land uses permitted by the Specific Plan typically create air emissions in three ways:

< construction and demolition,
< attracted or created motor vehicle trips, and
< direct emissions (such as residential wood combustion).

Construction

The BAAQMD CEQA Guidelines offer guidance to help calculate and determine the impact of emissions from these sources. For construction emissions, the BAAQMD guidance does not "expect Lead Agencies to provide detailed quantification of construction emissions" (page 53). The air district instead recommends a set of dust (PM_{10}) control measures and recommends clean fuels for large equipment (e.g., earth movers). This Revised Draft EIR recommends mitigation measures in the subsections below.

Vehicle Trips

Motor vehicle emissions are typically calculated using one of several air emission models specific to vehicles in California. Specific traffic information for the Specific Plan was developed and made available. Therefore, CARB's 2002 emission factor model (EMFAC 2002) was used for registered vehicles in Marin County to calculate daily emissions in both summer and winter. If a project's emissions exceed the BAAQMD's recommended significance thresholds, then mitigation measures are recommended as available. These mitigation measures can include the development of transit stops, bike lanes, pedestrian facilities, telecommute centers, and the like. The land uses permitted within the Specific Plan area at the density and intensity permitted would not trigger significance thresholds and no mitigation is recommended here.

Direct Emissions

Sometimes called "area sources," fireplaces and wood stoves are among the main causes of direct emissions in residential areas. Because air movement is more stagnant in winter (little wind) and wood is often burned in the evening hours when local inversions occur, residential wood combustion can create a substantial level of PM_{10} in a localized area. Consequently many communities in North America have banned installation of fireplaces and wood stoves in new construction, instead favoring clean-burning technologies. Some communities have programs to encourage replacement of older, more polluting fireplaces and wood stoves, or, like the BAAQMD, have "Don't Light Tonight" campaigns when meteorologists forecast high pollution retention within an air basin. For this Revised Draft EIR, the URBEMIS 2001 air emission model was used to estimate residential wood combustion emissions on a daily basis in winter.

Appendix E represents data from the air quality analysis for the Specific Plan.

PROJECT-LEVEL IMPACTS

Impact **4.6-1**

Conflicts with the Clean Air Plan. *The 2000 CAP is based upon the development planned in the general plans of local cities and counties within the air basin. The Larkspur General Plan assumed commercial development in Subareas 1 and 2, and assumed residential development in Subarea 3. The proposed Specific Plan is consistent with the planned land uses of the Larkspur General Plan, and therefore does not conflict with the 2000 CAP. This impact is considered* ***less than significant****.*

The BAAQMD, Metropolitan Transportation Commission, and ABAG develop and update a plan to achieve federal O_3 standards called the CAP. The 2000 CAP is based upon the development planned in the general plans of local cities and counties within the air basin. Adoption of the Specific Plan would permit additional commercial uses in the western portion of the Specific Plan area, and allow residential development in Specific Plan Subarea 3 (the Niven property). The Larkspur General Plan anticipated this type of development by designating the Niven property for low-density residential development, when the property is no longer used for a plant nursery. The General Plan also requires preparation of a Specific Plan before the property is developed in any use other than a plant nursery. Because the

Specific Plan is generally consistent with the provisions of the Larkspur General Plan, and because development of the specific plan area would not result in a Larkspur population greater than that currently projected by ABAG, the Specific Plan does not conflict with the current CAP. This impact is considered less than significant.

Impact **4.6-2**

Obstruction of Implementation of the Clean Air Plan. *The Specific Plan would not hinder the BAAQMD's ability to meet the federal O_3 standard. This impact is considered* ***less than significant****.*

Currently, many people commute into and through Marin County to reach employment sites in Marin County and San Francisco. Many of these commuters live in Sonoma and Napa counties, where home prices are significantly lower than in Marin (2003 median home prices in Sonoma and Napa counties are approximately 40% lower than in Marin County). Supply and demand market forces are a large part of the reason that home prices are higher in Marin than Sonoma or Napa counties. Therefore, an increase in the number of affordable housing units provided by the specific plan available for the local workforce could result in a reduction in commuter travel, thereby promoting implementation of the CAP. This impact is considered less than significant.

Impact **4.6-3**

Violation of Air Quality Standards. *Potential future emissions from Specific Plan development can be classified into two regimes: summer and winter. Traffic generated by development under the Specific Plan would create emissions both in summer and winter. Residential wood combustion would typically occur only in winter. Summer emissions caused by motor vehicle traffic would not cause exceedances of ambient air quality standards for CO, and emissions of NO_X, ROG, and PM_{10} are below BAAQMD significance thresholds. However, in winter, potential residential wood combustion would cause generation of ROG (wood smoke also contains TAC compounds) at levels that would exceed the significance level recommended by the BAAQMD. This impact is considered* ***potentially significant****.*

With development of up to 104 residential units, a 36-room hotel, and up to nearly 51,065 square feet of new commercial/mixed use space, the uses in the Specific Plan area would generate CO, ROG, NO_X, and PM_{10} during the winter as shown in Table 4.6-3. Summertime emissions are shown in Table 4.6-4.

Table 4.6-3
Winter Project Emissions - Pounds Per Day (2015)

Pollutant Species	Wood combustion	Vehicle Emissions	BAAQMD Significance Threshold	Total (exceeds BAAQMD?)
Carbon Monoxide	360.5	165.0	550	525.5 - No
Reactive Organic Gases	152.0	19.6	80	171.6 - Yes
Oxides of Nitrogen	56.2	31.1	80	87.3 - No
Particulate Matter (PM_{10})	1.0	2.0	80	3.0 - No

Source: Emission models EMFAC2002 v2.2 9/23/2002, maintained by the California Air Resources Board, and URBEMIS 2001 v6.2.2, maintained by the South Coast Air Quality Management District and the California Air Resources Board.

Table 4.6-4 Summer Project Emissions - Pounds Per Day (2015)			
Pollutant Species	Vehicle Emissions	BAAQMD Significance Threshold	Exceeds BAAQMD
Carbon Monoxide	165.0	550	No
Reactive Organic Gases	19.6	80	No
Oxides of Nitrogen	31.1	80	No
Particulate Matter (PM_{10})	2.0	80	No
Source: Emission models EMFAC2002 v2.2 9/23/2002, maintained by the California Air Resources Board, and URBEMIS 2001 v6.2.2, maintained by the South Coast Air Quality Management District and the California Air Resources Board.			

The BAAQMD recommends evaluation of a CO Hotspot if project traffic would increase local levels by 10%, or worsen congestion as expressed by LOS D or below. Using this guidance, a CO Hotspot was performed for the study intersection with the worst LOS and delay. The intersection of East Ward Street/Magnolia Avenue would operate at LOS F during the p.m. peak hour and would have the worst delay of all study intersections (see Section 4.7, Traffic and Circulation). Based on the CO modeling (see Appendix E-4), existing traffic volume and the Specific Plan-generated traffic volume would combine to result in CO concentration of up to 7.3 ppm for 1-hour concentrations and 4.9 ppm for 8-hour concentrations (Illingworth & Rodkin, Inc. 2003). These concentrations are lower than the standard of 20 ppm for 1 hour concentrations and 9 ppm for 8-hour concentrations. As such, no violations of air quality standards would result for this intersection. Because all other study intersections would have similar or better LOS and less delay than this intersection, no exceedances of CO standards are expected for all study intersections.

However, as mentioned above, generation of ROG would exceed the significance level recommended by the BAAQMD (Table 4.6-3). Wood stoves and fireplaces installed at homes within the Specific Plan area would create significant ROG emissions during the cooler months. Emissions of all other criteria pollutants are below BAAQMD significance thresholds. Wood smoke from fireplaces and wood stoves used within the Specific Plan area could contribute to localized exceedances of PM_{10} standards, although the project's expected emissions that would be expected to be generated by development in the Specific Plan area do not exceed 80 lbs/day. Wood smoke contains many compounds identified as TACs. Many studies have determined that the benzene soluble (e.g., ROG) fraction of wood smoke is carcinogenic, mutagenic, or teratogenic. This impact is considered potentially significant.

Impact **4.6-4**

Health Threats from Potential Construction-Related Release of Asbestos and Lead. *Materials containing asbestos may have been used during construction of older buildings in the Specific Plan area, and in Subarea 3 old gasoline tanks may have leaked leaded fuel into the soil. Asbestos fibers and lead could be entrained into the atmosphere during remediation, posing a serious health threat. This impact is considered* ***potentially significant****.*

A number of buildings in the Specific Plan area date back as far as the 1920s, and materials containing asbestos may have been used in their construction. In addition, there is lead-based

paint on some of the buildings at the Niven Nursery. This issue, and the steps to ensure complete cleanup and remediation, is fully addressed in Section 4.12, Hazardous Materials, of this Revised Draft EIR. Because asbestos fibers and lead could be released into the atmosphere, this impact is considered potentially significant.

Impact **4.6-5**

Substantial Emissions of Dust and Diesel Exhaust during Construction. *Dust generated by construction equipment and vehicles could be substantial, and could contribute to ambient PM_{10}. Construction equipment could also emit substantial amounts of diesel exhaust, which has been identified as a TAC. This impact is considered* ***potentially significant****.*

Construction and grading can create substantial amounts of dust. Once existing buildings within the Specific Plan area have been demolished, dust generated by construction equipment and vehicles could be significant. Fugitive dust is emitted during grading, trenching, and paving, and from wind erosion of exposed earth surfaces. Dirt tracked out onto nearby paved roads can be re-entrained into the atmosphere by passing vehicles and contribute to ambient PM_{10}.

In the San Francisco Bay area diesel exhaust represents about two-thirds of the total excess annual cancer burden. Construction equipment diesel exhaust is classified by CARB as a TAC. Additionally, NO_X from equipment exhaust can reform chemically into fine acid particulates and further contribute to local PM_{10} and $PM_{2.5}$ levels. Construction equipment could emit substantial amounts of diesel exhaust on some days when grading or excavation takes place. This impact is considered potentially significant.

Impact **4.6-6**

Creation of Objectionable Odors Affecting a Substantial Number of People. *Development anticipated within the Specific Plan area would not be expected to generate any objectionable odors. Odors associated with residential uses (e.g., cooking odors, odors associated with lawn and yard maintenance) are not generally be regarded as objectionable by the BAAQMD. This impact is considered* ***less than significant****.*

The BAAQMD CEQA Guidelines identify the following types of operations as potential sources of odor complaints: wastewater treatment plants, sanitary landfills, transfer stations, compost facilities, petroleum refineries, asphalt batch plants, chemical manufacturing, fiberglass manufacturing, painting/coating operations (e.g., auto body shops), rendering plants, and coffee roasters. These types of uses are not permitted within the Specific Plan area. Therefore, development in the Specific Plan area would not contain these types of facilities, and the permitted uses would not create any unusual or objectionable odors. This impact is considered less than significant.

CUMULATIVE IMPACTS

According to the BAAQMD CEQA Guidelines, "Any proposed project that would individually have a significant air quality impact… would also be considered to have a significant cumulative air quality impact. For any project that does not individually have significant operational air quality impacts, the determination of significant cumulative impact should be

based on an evaluation for the consistency of the project with the local general plan *and* of the general plan with the regional air quality plan" (2000 Clean Air Plan). Typically, if a project does not require a general plan amendment, then it is considered consistent with the local general plan. Also, to avoid cumulative impacts, a proposed project should not place sensitive receptors near sources of odors, toxics, or accidental releases (e.g., from a chemical plant or refinery).

The BAAQMD further evaluates cumulative impacts by determining whether a proposed project, in combination with past, present, and reasonably foreseeable future projects, would cause a jurisdiction's population to exceed CAP and ABAG population projections. If a project would do this, then it has a significant cumulative impact.

The Specific Plan, without mitigation, would have significant air quality impacts related to wood-stove-generated air pollutants. As such, the Specific Plan would contribute to a significant cumulative impact related to air quality standards. The Specific Plan is consistent with the adopted Larkspur General Plan. Development permitted under the Specific Plan would not increase population or vehicle miles traveled beyond those already forecast by ABAG and included in the 2000 CAP.

CO modeling was performed for the intersection of intersection of East Ward Street/Magnolia Avenue, which has the worst LOS and delay of all study intersections under cumulative conditions (see Appendix E-4). The estimated CO concentrations, which were up to 10.7 ppm for 1-hour concentrations and 7.3 ppm for 8-hour concentrations, are lower than the standard of 20 ppm for 1 hour concentrations and 9 ppm for 8-hour concentrations. As such, no violations of air quality standards would result for this intersection. Because all other study intersections would have similar or better LOS and less delay than this intersection, no exceedances of CO standards are expected for all study intersections under cumulative conditions (Illingworth & Rodkin, Inc. 2003).

No development projects are known or expected to be constructed in the immediate vicinity of the Specific Plan area. Properties in the immediate vicinity have already been developed and are not likely to be redeveloped in the short term. Because no additional construction activities are expected near the Specific Plan area, Impact 4.6-5, Substantial Emissions of Dust and Diesel Exhaust during Construction, is not considered to contribute considerably to cumulative impact. Therefore, the Specific Plan would not have a significant cumulative air quality impact related to construction-related release of dust, diesel exhaust, asbestos, and lead.

4.6.3 MITIGATION MEASURES

PROJECT MITIGATION MEASURES

No mitigation measures are required for the following less-than-significant impacts.

4.6-1: Conflicts with the Clean Air Plan

4.6-2: Obstruction of Implementation of the Clean Air Plan

4.6-6: Creation of Objectionable Odors Affecting a Substantial Number of People

The following mitigation measures are recommended for potentially significant impacts.

Impact **4.6-3** mitigation

Violation of Air Quality Standards.

Permit Residential Installation of Natural Gas or Pellet Burning Fireplace Appliances Only

The City shall include the following new policy in the Specific Plan.

New Policy: The City shall prohibit residential wood burning appliances and fireplaces and shall permit only natural gas or pellet burning fireplace appliances as a condition of approval of all planned development permits for residential construction. This measure effectively eliminates more than 90% of ROG emissions, thus mitigating emissions below the level of significance. Natural gas and pellet residential heating stove emissions are almost PM_{10} free; thus, wood smoke impacts would be eliminated. This measure would also control PM_{10} emissions and avoids contributing to existing violations of the 24-hour and annual PM_{10} standards. CO and TACs from combustion would also be almost completely eliminated by this measure.

Impact **4.6-4** mitigation

Health Threats from Potential Construction-Related Release of Asbestos and Lead.

Implement Mitigation Measure 4.12-2

The developer shall implement Mitigation Measure 4.12-2, Implement a Demolition Plan, described in Section 4.12, Hazards and Hazardous Materials.

Impact **4.6-5a, b** mitigation

Substantial Emissions of Dust and Diesel Exhaust During Construction.

(a) Implement Control Measures to Control Dust that Includes PM10 from Construction Activities

The City shall include the following new policy in the Specific Plan.

New Policy: The City shall condition all future development permits to require implementation of effective and comprehensive dust control measures. Implementation of feasible controls, outlined below, can substantially reduce construction PM_{10} emissions. Construction activities are also subject to BAAQMD Regulation VIII, which requires suppressing dust emissions from all sources of dust generation using water, chemical stabilizers, and/or vegetative ground cover.

Implementing fugitive dust control measures can greatly reduce adverse impacts. According to BAAQMD, estimating the amounts of construction dust from a particular project is at best imprecise. The air district prefers to evaluate construction dust significance by project size and proximity to sensitive receptors. Potential adverse impacts then determine which control measures will be implemented. The Specific Plan area is near existing sensitive receptors (residences, schools) and would thus need the most stringent control measures recommended by the BAAQMD. These measures, stated below, would reduce construction dust to the maximum extent feasible (by 70% or more). Therefore, the construction contractor shall implement all of the following measures:

1. Water all active construction areas at least twice daily and more often during windy periods. Active areas adjacent to residences should be kept damp at all times.

2. Cover all hauling trucks or maintain at least 2 feet of freeboard. Pave, apply water at least twice daily, or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas.

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

4. Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (previously graded areas that are inactive for 10 days or more).

5. Enclose, cover, water twice daily, or apply (nontoxic) soil binders to exposed stockpiles.

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

7. Install sandbags or other erosion control measures to prevent silt runoff to public roadways.

8. Replant vegetation in disturbed areas as quickly as possible.

9. Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the construction site.

10. Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.

11. Designate an air quality coordinator for the project. Prominently post a phone number for this person on the job site, and distribute same to all nearby residents and businesses. The coordinator will respond to and remedy any complaints about dust, exhaust, or other air quality concerns. A log shall be kept of all complaints and how and when the problem was remedied.

(b) Implement All Feasible and Reasonable Control Measures to Reduce Construction Activity TACs.

The City shall include the following new text and policy in the Specific Plan.

Text: Diesel exhaust is a major source of fine particles, as well as more than 40 substances that are listed as hazardous pollutants. The BAAQMD CEQA Guidelines recognize use of alternatively fueled construction equipment as an effective mitigation. Low-emission fuels are currently available to minimize construction equipment TAC emissions. Engine tuning and control equipment retrofit would help minimize emissions of NO_X that contributes to PM_{10} and $PM_{2.5}$. 100% biodiesel fuel, called B100, reduces TAC emissions by approximately 80% to 90%. Ultra-low sulfur fossil diesel fuel (less than 15 ppm by weight) also significantly reduces PM_{10}.

Oxidation catalysts or catalytic particulate filters are now available for many types of diesel equipment. These systems require biodiesel or CARB ultra low-sulfur diesel fuel. These systems in combination with ultra-low sulfur diesel can reduce emissions of fine particulates and toxic hydrocarbons by 90 percent or more. CARB-approved commercially available fuel additives, such as PuriNOx, reduce emissions of both NO_X and PM_{10} by 20% to 40%, depending on equipment.

New Policy: The City shall require all onsite construction and grading equipment to implement the following three emission control techniques:

1. Use biodiesel fuel for all onsite diesel powered equipment. For equipment with engines built in 1994 or later, B100 shall be used. In pre-1994 engines, B-20 fuel (a mixture of 20% biodiesel and 80% fossil diesel fuel) may be used if necessary. If B20 is used, the fossil diesel component should be CARB ultra low-sulfur fuel.

OR

Use an oxidation catalyst or catalytic particulate filter on all diesel powered equipment rated above 50 horsepower.

2. Use PuriNOx additive or equivalent.

3. Tune vehicle engines to produce minimum NO_X, typically by engine retard of 4–8 degrees. This can reduce emissions by an additional 5%.

CUMULATIVE MITIGATION MEASURES

Significant cumulative impacts would be mitigated to a less-than-significant level with implementation of the above mitigation measures.

4.6.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Following implementation of the above mitigation measures, no significant impacts on air quality would remain.

4.7 TRAFFIC AND CIRCULATION

This EIR section provides a description of the existing transportation conditions of the Specific Plan and its vicinity. Included are descriptions of the existing roadway network and transportation facilities as well as current circulation elements including automobiles, pedestrians, bicycles, transit, and parking conditions. Traffic operations at 13 study intersections in the Specific Plan area are analyzed. This section also discusses the transportation impacts of development under the Specific Plan, cumulative impacts, and recommended mitigation measures to address these impacts. Exhibit 2-1 illustrates the Specific Plan area location in a regional context.

The Specific Plan area is bordered on the south by East Ward Street, on the north by Doherty Drive, and on the west by Magnolia Avenue, and extends east along Doherty Drive opposite the Piper Park access road. The Specific Plan area includes the 16.8-acre Niven property, the Nazari property, and the Larkspur Plaza shopping center, as well as the entire Doherty Drive right-of-way, from Magnolia Avenue east to the city limit (5.58 acres). The Niven property has frontage on Doherty Drive and is occupied by a commercial nursery and abandoned greenhouses. The Nazari property is occupied by retail and commercial uses and has frontage on Magnolia Avenue. The Larkspur Plaza shopping center is anchored by an Albertsons market and also contains other small retail, personal service, and food sales establishments.

4.7.1 EXISTING SETTING

BACKGROUND

The existing condition of vehicle traffic on a roadway is described by two different methods: Existing Roadway Network and Traffic Operating Condition.

An Existing Roadway Network is described in terms of Average Daily Traffic (ADT). ADT is a description of the number of vehicles on that road section for the 24-hour period measured (i.e., the number of cars seen passing by during a 24-hour period).

Traffic Operating Condition is described in terms of the ability of an intersection on the roadway to accommodate the vehicles moving through it, whether they be turning left, going straight, or turning right. This ability of the intersection is described in terms of the amount of delay that the average vehicle must experience at the intersection before it is able to move in its desired direction. The Level of Service (LOS) of an intersection is a measure of the ability of the intersection to accommodate traffic volumes; it is also a measurement of delay. Intersection LOS ranges from LOS A, which indicates free-flow conditions with little overall delay, to LOS F, which indicates congested conditions with extremely long delays.

EXISTING ROADWAY NETWORK

Regional access to Larkspur is provided primarily by U.S. Highway 101 (U.S. 101), Interstate 580 (I-580), and Sir Francis Drake Boulevard. Three major arterial roads serve Larkspur: Sir Francis Drake Boulevard, Magnolia Avenue, and Doherty Drive. Exhibit 4.7-1 illustrates the

Exhibit 4.7-1 Local Roadway Network Study Intersection Locations

area roadway network. A detailed description of these facilities and other key Specific Plan area roads is provided below.

Regional Access

U.S. 101

U.S. 101 is the major north-south freeway serving Marin County. U.S. 101 connects Marin County to San Francisco, the Peninsula, and points south. In a northerly direction, U.S. 101 accesses the Petaluma and Santa Rosa areas and points north. In the vicinity of the Specific Plan area, the highway is an eight-lane facility (four lanes in each direction), including two high-occupancy vehicle (HOV) lanes; north of Lucky Drive, the highway becomes a six-lane facility. Highway interchanges in the general vicinity of the study area are provided at Tamalpais Drive, Madera Boulevard, Lucky Drive, and Sir Francis Drake Boulevard. Estimates of ADT on U.S. 101 in Larkspur range from 176,000 vehicles south of Sir Francis Drake Boulevard to 143,000 vehicles north of Sir Francis Drake Boulevard (California Department of Transportation [Caltrans] 2002a).

I-580

North of the Specific Plan area, U.S. 101 intersects with I-580, a four-lane freeway extending east to the Richmond-San Rafael Bridge, and beyond to Contra Costa County. I-580 carries an estimated 62,000 daily vehicles at the U.S.101 junction.

Local Access

Local access to and from the Specific Plan area is typically carried on the city's three arterial roads: Sir Francis Drake Boulevard, Magnolia Avenue, and Doherty Drive. Circulation within Larkspur is constrained by Corte Madera Creek, located immediately north of the study area. Roads located in the vicinity of the Specific Plan area that cross the creek include U.S. 101 and Bon Air Road (which connects Sir Francis Drake Boulevard to Magnolia Avenue). Access across the creek is also provided at College Avenue at its location south of the College of Marin, near the western edge of Larkspur. ADT information was collected on Sir Francis Drake Boulevard, Magnolia Avenue, Doherty Drive, and Bon Air Road in May 1999 and 2003.

Sir Francis Drake Boulevard

Sir Francis Drake Boulevard is the major east-west corridor serving central Marin County and is identified as a major arterial street in the City's General Plan. Sir Francis Drake Boulevard provides a full interchange at U.S. 101, and is a primary route for vehicles traveling westbound to San Rafael and west Marin County. West of U.S. 101, the roadway provides four travel lanes (two in each direction) and carries a weekday ADT volume of 47,700 vehicles (May 2002). On Saturdays, the estimated ADT volume is 38,300 vehicles (May 2002). This roadway drops to two lanes west of College Avenue (one in each direction) into the town of San Anselmo. The Specific Plan area is linked to Sir Francis Drake Boulevard via Bon Air Road at Magnolia Avenue and from Magnolia Avenue north to College Avenue. The bottleneck created west of

College Avenue, combined with heavy traffic flows, results in significantly congested conditions during peak periods.

Magnolia Avenue

Magnolia Avenue is identified as a secondary arterial in the General Plan. It is a north-south roadway with one travel lane in each direction. To the south, the arterial street connection of Magnolia Avenue to U.S. 101 uses these city streets in Corte Madera: Corte Madera Avenue, Redwood Avenue, and Tamalpais Drive to the north. Magnolia Avenue connects to Sir Francis Drake Boulevard where it becomes College Avenue north of the Specific Plan area. Magnolia Avenue serves the downtown business district between William Avenue to the south and Doherty Drive to the north. This segment provides sidewalks and on-street parking on both sides of the street. Daily counts taken on Magnolia Avenue between East Ward Street and Doherty Drive recorded a weekday ADT volume of 12,900 vehicles and a Saturday ADT volume of 10,700 vehicles (May 2003). ADT volumes north of Bon Air Road on Magnolia Avenue during weekdays were recorded at 14,100 vehicles and at 11,600 vehicles on Saturday (May 2002).

Doherty Drive

Doherty Drive is identified as a secondary arterial in the General Plan. It is an east-west roadway between Magnolia Avenue and Lucky Drive providing one travel lane in each direction. The roadway is 40 feet wide (from curb to curb) and provides 31 parking spaces on the south side of the street. Doherty Drive provides direct access to Hall Middle School and Redwood High School and access to U.S. 101 via Lucky Drive. The segment between Magnolia Avenue and Redwood High School provides sidewalks on both sides, and carries a weekday ADT volume of 11,900 vehicles (May 2003). On Saturdays, the estimated ADT volume is 8,200 vehicles (May 2003).

Bon Air Road

Bon Air Road crosses Corte Madera Creek and links Sir Francis Drake Boulevard and Magnolia Avenue. It is a two-way facility (with generally one travel lane in each direction with added lanes south of Corte Madera Creek) that provides direct access to Marin General Hospital. Weekday ADT volumes are 13,100 vehicles west of South Eliseo Drive and 9,900 vehicles on Saturdays (May 2002).

Other Roads

Other roads in the vicinity of the study area are described below.

Larkspur Plaza

Larkspur Plaza runs northward from Doherty Drive and serves primarily as a collector street for residential uses. It is a two-way road with one travel lane in each direction, ending in a cul-de-sac. The intersection with Doherty Drive is stop sign controlled. Within the vicinity of the

Specific Plan area, there are sidewalks approximately 10 feet wide and on-street parking on the east side of the street.

Larkspur Boardwalk

Larkspur Boardwalk is a north/south, two-way road with one travel lane in each direction located off of Doherty Drive, west of and adjacent to Piper Park. At Doherty Drive this road is in close proximity to the Hall Middle School driveway and to Larkspur Plaza. Larkspur Boardwalk provides access to homes along Corte Madera Creek and a boardwalk.

Riviera Circle

Riviera Circle makes a northward loop beginning and ending on Doherty Drive. The west end of the loop road forms a leg of the unsignalized intersection at Doherty Drive and the access driveway for Redwood High School. This road serves as a neighborhood collector street and provides a crosswalk at Doherty Drive to the high school.

East Ward Street

East Ward Street is an east-west street that crosses Magnolia Avenue at a signalized intersection south of Doherty Drive. It is a two-way road with one travel lane in each direction, extending for approximately three blocks and connecting to neighborhoods east and west of Magnolia Avenue. East of Magnolia Avenue, East Ward Street becomes Meadowood Drive.

King Street

King Street is an east-west street that crosses Magnolia Avenue at an unsignalized four-way stop intersection south of East Ward Street. It is a two-way road with one travel lane in each direction, extending for approximately three blocks and connecting to neighborhoods east and west of Magnolia Avenue. East of Magnolia Avenue, King Street eventually becomes Monte Vista Avenue.

AVERAGE DAILY TRAFFIC DATA

ADT volumes for study roadways were based on separate traffic counts conducted in 1999 and 2003. Differences between the data for these two years are described below to show the change in traffic volumes over the years.

In May 2003, 24-hour machine counts were taken at two primary locations in the study area. The locations of the machine counters were:

< Magnolia Avenue—Downtown (between East Ward Street and King Street)
< Doherty Drive—vicinity of Hall Middle School

ADT volumes were recorded at Magnolia Avenue Downtown and Doherty Drive over seven consecutive days. Weekday counts from Tuesday through Thursday were averaged; the

volumes are shown in Table 4.7-1. On an average weekday, Magnolia Avenue Downtown carried approximately 12,880 vehicles while Doherty Drive had an average of 11,860 vehicles.

Saturday ADT volumes were lower than weekday volumes. Magnolia Avenue Downtown had 17% fewer vehicles on Saturday while Doherty Drive had almost 30% lower volumes. Overall, ADT volumes have decreased by just over 20% on Magnolia Avenue compared to 1999 ADT data. ADT volumes on Doherty Drive have shown a modest 4% increase during weekdays and a decrease of 9% on weekends compared to 1999 ADT volumes. The overall decrease in daily vehicle traffic is most likely attributed to overall economic conditions, which have slowed over the past few years.

Table 4.7-1
Summary and Comparison of Average Daily Traffic Volumes

Location	Weekday ADT (vehicles)	Saturday ADT (vehicles)
1999—Magnolia Downtown	15,680	12,940
2003—Magnolia Downtown	12,880	10,716
Percent Change	-22	-21
1999—Doherty Drive	11,410	8,990
2003—Doherty Drive	11,860	8,240
Percent Change	4	-9

Source: Marks Traffic Data Service 2003

TRAFFIC OPERATING CONDITIONS

Existing intersection operating conditions were evaluated for the weekday a.m. peak hour (generally 7:30 to 8:30 a.m.) and for the p.m. peak hour (generally 5:00 to 6:00 p.m.). Intersection turning movement volumes were counted in March 2003. Thirteen intersections in the vicinity were analyzed as part of this study. The location of the study intersections and existing lane configurations are illustrated in Exhibit 4.7-2. The study intersections are as follows.

Signalized study intersections:

< Bon Air Road/Magnolia Avenue
< Doherty Drive/Magnolia Avenue
< East Ward Street/Magnolia Avenue
< Fifer Avenue/Tamal Vista Boulevard
< Wornum Drive/Tamal Vista Boulevard
< Wornum Drive/Redwood Highway
< U.S. 101 northbound on-ramp/Industrial & Redwood Highway

Exhibit 4.7-2 Existing Lane Geometrics

Unsignalized study intersections:

< King Street/Magnolia Avenue
< Doherty Drive/Larkspur Plaza
< Doherty Drive/Piper Park Access
< Doherty Drive/Riviera Circle
< Lucky Drive/Doherty Drive
< Lucky Drive/Fifer Avenue

INTERSECTION ANALYSIS METHODOLOGY

At signalized intersections, the City sets LOS D as the minimum acceptable condition. For unsignalized intersections, LOS C is the minimum acceptable condition as noted in General Plan Circulation Policy d and §18.14.10 (J) of the City Municipal Code.

Signalized intersections were evaluated using the 1994 Highway Capacity Manual (HCM) (Transportation Research Board 1994) operations methodology for intersection delay, outlined in Chapter 9 of the HCM. This method determines the capacity for each lane group approaching an intersection. The average delay is first calculated for each intersection approach. Next, the weighted average of the delays for each approach is calculated to determine the average delay for the intersection, which is used to determine the overall LOS for the intersection.

Unsignalized intersections were evaluated using the methodology outlined in Chapter 10 of the 1994 HCM (Transportation Research Board 1994). This method determines average total delay per vehicle, which is used to determine the LOS. Adjustments were made to the saturation flow at particular intersections to accurately reflect the traffic conditions observed in the field in 2002 and in 2003. In other words, strict application of HCM methodology would make conditions appear better than what was observed in the field and the adjustments discussed above were made to reflect observed conditions. For example, field observations of conditions at the intersection of Magnolia Avenue and King Street during the p.m. peak hour indicated that vehicles on the northbound approach of the intersection experienced an average delay of 90 seconds per vehicle. Because the HCM methodology for unsignalized intersections does not allow for adjustments to capacity for on-street parking, high pedestrian volumes, and other factors, adjustments to the intersection analysis were required to reflect actual observed field conditions at Magnolia Avenue/King Street.

These adjustments (reduction of the peak-hour factor) were applied to the northbound approach of Magnolia Avenue/King Street during p.m. peak hour for all scenarios. The peak hour factor is related to the distribution of vehicle volumes within a 15-minute period during the course of a peak hour. The default peak hour factor value for unsignalized intersections is 0.90. Reducing the northbound approach peak hour factor to 0.75 has the effect of increasing the traffic volume at this approach. Increased traffic volumes reduce the available capacity of a lane and result in an analysis that better reflects the observed p.m. peak hour congested

conditions on the northbound approach. Appendix F-1 provides tables and figures that show the LOS descriptions for signalized and unsignalized intersections.

Table 4.7-2 shows the results of the intersection analysis for existing weekday a.m. and p.m. peak hour conditions. The table indicates that all study intersections are currently operating at acceptable levels during the a.m. peak hour, with the exception of the unsignalized intersections at Doherty Drive/Riviera Circle (LOS D).

Table 4.7-2
Existing Peak Hour Intersection Level Of Service

	A.M. Peak Hour		P.M. Peak Hour		Weekend Peak Hour	
Intersections	LOS	Delay	LOS	Delay	LOS	Delay
1. Bon Air Road/Magnolia Avenue	B	8.8	B	10.5	B	8.2
2. Doherty Drive/Magnolia Avenue	B	8.8	B	10.4	B	7.9
3. East Ward Street/Magnolia Avenue	C	15.7	D	29.9	B	9.0
4. King Street/Magnolia Avenue	C	19.5	**F**	46.2	C	15.5
5. Doherty Drive/Larkspur Plaza	C	17.8	C	15.8	C	1.3
6. Doherty Drive/Piper Park	C	0.3	C	0.4	C	*
7. Doherty Drive/Riviera Circle	**D**	23.9	**D**	29.6	C	16.6
8. Lucky Drive/Doherty Drive	B	8.7	B	6.6	B	7.0
9. Lucky Drive/Fifer Avenue	B	0.5	C	1.1	B	0.3
10. Fifer Avenue /Tamal Vista Boulevard	B	13.3	C	16.3	C	16.4
11. Wornum Drive /Tamal Vista Boulevard	B	13.1	C	20.4	B	8.4
12. Wornum Drive /Redwood Highway	B	7.3	B	9.6	B	9.0
13. 101 Northbound On-Ramp /Industrial	B	5.5	B	11.2	B	5.5

Notes: Delay is in average seconds per vehicle
LOS = Level of Service
Bold = unacceptable conditions
* weekend park counts not available; LOS C estimated based on existing through traffic volumes

Source: Wilbur Smith Associates (May 2003); based on traffic counts conducted in May 2003.

During the p.m. peak hour, Magnolia Avenue/King Street (LOS F) and Doherty Drive/Riviera Circle (LOS D) are currently operating at unacceptable levels. Appendix F-2 contains the detailed calculations of the intersection LOS analysis.

During the weekday a.m. peak hour, eight of the 13 intersections operate at LOS B, four intersections operate at LOS C, and one intersection operates at LOS D. Average delay per vehicle at the intersections ranges from 5.5 seconds per vehicle at the intersection of Industrial Way and the northbound U.S. 101 on-ramp to 23.9 seconds per vehicle at the Doherty Drive/Riviera Circle/Redwood High School intersection.

The intersection at Doherty Drive/Riviera Circle/Redwood High School experiences significant congestion in the morning peak hour because of high school related vehicle activity. Between 7:20 and 7:35 a.m. the intersection was observed to operate closer to the LOS E/F range because of students driving to school or being dropped off. The congested conditions were observed to dissipate quickly after approximately 15 minutes and the intersection was found to resume operations closer to the LOS D conditions reflected in the peak hour calculation.

During the weekday p.m. peak hour (generally 5:00 to 6:00 p.m.), five of the 13 intersections operate at LOS B and five intersections operate at LOS C. One signalized intersection operates at LOS D. In addition, one unsignalized intersection operate at LOS D and one intersection operates at LOS F; the LOS of these two intersections currently exceed the City's acceptable standards. Average delay per vehicle at the intersections ranges from 2.2 seconds per vehicle at the Doherty Drive/Larkspur Plaza intersection to 46.2 seconds per vehicle at the Magnolia Avenue/King Street intersection. Intersection peak hour turning movement volumes are shown in Exhibit 4.7-3.

There are two distinct afternoon peak periods in the Doherty Drive corridor, primarily because of activity at Hall Middle School and Redwood High School. Overall traffic volumes peak on Doherty Drive from Magnolia Avenue to Lucky Drive between 3:15 and 3:45 p.m.

This half-hour spike in traffic is the result of students departing the schools and to the start of the afternoon commute traffic traveling west on Doherty Drive from U.S. 101. The second traffic peak occurs between 5:00 and 6:00 p.m. and represents the traditional commute peak hour. Although traffic volumes at study intersections on Doherty Drive are highest during the first peak period (3:15-3:45 p.m.), this peak traffic volume is not sustained for the entire hour of 3:00 and 4:00 p.m.; as such, the LOS, which is averaged over the one-hour period, is lower than that of the traditional commute peak hour. In contrast, the late commute peak period traffic sustains high volumes consistently for the hour; for this reason, it is this traffic peak period that is analyzed for the p.m. peak hour LOS shown in Table 4.7-2.

The unsignalized four-way stop intersection of Magnolia Avenue/King Street was analyzed at LOS F during the p.m. peak hour. Vehicles on the northbound approach experienced substantial delays. During field observations, the average delay for northbound vehicles on Magnolia Boulevard was found to be up to 2 minutes per vehicle. Northbound traffic typically queues back to William Avenue and then requires between 90 seconds and 120 seconds to reach the stop sign at King Street. These conditions lasted for much of the peak hour.

Exhibit 4.7-3 Existing A.M. (P.M.) Peak-Hour Volumes

The peak hour for traffic at the Magnolia Avenue/King Street intersection was determined to occur generally between 5:00 and 6:00 p.m. However, northbound approach traffic can begin to back up on Magnolia Avenue as early as 4:00 p.m. and can continue as late as 7:00 p.m.

During the weekend peak hour (generally 1:00 to 2:00 p.m.), all study area intersections were found to operate at LOS C or better. Intersection traffic volumes during the Saturday peak hours were found to be overall 25% lower than weekday p.m. peak hour volumes.

Analysis of Saturday traffic conditions is not included in the EIR beyond existing conditions. The reason for this is the generally lower peak hour intersection volumes recorded on Saturday. The lower Saturday traffic volumes indicate that any potential need for improvements would be addressed sufficiently by the proposed weekday mitigation measures described in this chapter.

EXISTING TRANSIT NETWORK

Scheduled transit service in Larkspur is provided by Golden Gate Transit and includes local and regional bus service between the North Bay and San Francisco, and ferry service to San Francisco. Ferries depart from the Larkspur Ferry Terminal, and are serviced by ferry shuttle buses (free for ferry passengers). Ferry and other bus service in the vicinity of the Specific Plan area provided by Golden Gate Transit are as follows:

< Ferry Shuttle Bus Route: Weekday commute period service, providing direct connections to ferry arrivals/departures at the Larkspur, Sausalito, Tiburon, and San Francisco ferry terminals;

< Basic Bus Route: Daily service between San Francisco, Marin, Sonoma, and Contra Costa counties;

< Commute Bus Route: Weekday express commute period service between Sonoma, Marin, and San Francisco counties (morning routes operate southbound, evening routes operate northbound); and

< Local Bus Route: Weekday and limited weekend service within Marin County.

Bus routes within the study area are representative of each of these types of services (see Exhibit 4.7-4). In addition, the study area is served by freeway express commuter routes stopping at the U.S. 101 bus pads at Tamalpais Drive and Lucky Drive. Routes serving the Specific Plan area and the vicinity are as follows:

< Route 1, Novato-San Rafael-College of Marin Route: Provides local service in a loop west of the study area, including service on Sir Francis Drake Boulevard, Magnolia/College Avenue, and Bon Air Road, and continues east along Sir Francis Drake Boulevard to San Rafael (past U.S. 101).

Exhibit 4.7-4 Golden Gate Transit Bus Routes in Study Area

< Route 17, Neil Cummins School-Hall Middle School Route: Local bus route (service supplement) that operates along Doherty Drive and Magnolia Avenue Monday through Friday on school days only.

< Route 18, San Anselmo-College of Marin-Corte Madera-San Francisco Route: Provides commute service on Magnolia Avenue along the west side of the Specific Plan area, connecting to Sir Francis Drake Boulevard to the north and Tamalpais Drive to the south.

< Route 19, Manor-San Anselmo-Greenbrae-Larkspur Ferry Terminal Route: Provides free weekday, commute period ferry shuttle service on Sir Francis Drake Boulevard, which is to the north of the Specific Plan area.

< Route 20, Canal-San Anselmo-Corte Madera-San Francisco Route: Provides basic service on Magnolia Avenue along the west side of the Specific Plan area, connecting to Sir Francis Drake Boulevard to the north and Tamalpais Drive to the south.

< Route 21, - C.O.M.-Mill Valley Route: Also provides local service in a loop west of the Specific Plan area, including service on Sir Francis Drake Boulevard, Magnolia/College Avenue, and Bon Air Road, and continues east along Doherty Drive (passing Redwood High School), then south on Tamal Vista Boulevard.

< Route 24, Lagunitas-Manor-San Anselmo-Greenbrae-San Francisco Route: Provides commute service on Sir Francis Drake Boulevard, which is to the north of the Specific Plan area, and along U.S. 101 (bus pad).

In November 2002, Golden Gate Transit declared a fiscal emergency and approved transit service reductions targeting underutilized and inefficient routes, including Route 13 and 15 that had served riders in the vicinity of the Specific Plan area. The service reductions became effective on March 9, 2003.

PEDESTRIAN CONDITIONS

On typical weekdays and weekends, pedestrian activity in the Specific Plan area is generally moderate throughout the day. Pedestrians are able to easily walk along the adjacent sidewalks and crosswalks. During weekdays pedestrian activity is concentrated along Magnolia Avenue downtown, at the Larkspur Plaza shopping center, and on Doherty Drive at the schools during relatively brief periods in the mornings and afternoons. Weekend pedestrian activity increases somewhat along Doherty Drive in the vicinity of Piper Park and at the high school when there is a scheduled event. Weekend pedestrian flows on Magnolia Avenue between noon and 7:00 p.m. represent the highest concentration of pedestrian activity in the study area.

The sidewalks along both sides of Magnolia Avenue are typically 10 feet wide between King Street and Doherty Drive. There are a number of driveway curb cuts in this corridor

(particularly along the west face) that serve commercial operations, parking areas, and municipal uses.

Crosswalks are located at the stop sign controlled intersection of Magnolia Avenue/King Street and the signalized intersections at East Ward Street and Doherty Drive. The two signalized crosswalks provide pedestrian activated buttons. Pedestrian crossings during morning and afternoon weekday peak periods were observed to be light and crossings at the Magnolia Avenue/King Street intersection operated in a controlled and safe manner.

Sidewalk widths on Doherty Drive range from 5 feet to 10 feet wide. Sidewalks currently extend on both sides of Doherty Drive east from Magnolia Avenue to Riviera Circle. The sidewalk on the south side of Doherty Drive ends approximately 500 feet west of the Redwood High School entrance. This sidewalk connects to an access path to the parking lot at the front of Redwood High School. The south sidewalk is continued at the high school curve and extends to the rear high school parking lot. On the north side of the street the sidewalk ends at Riviera Circle. Sidewalks continue beyond the Doherty Drive curve at the rear high school parking lot driveway on both sides of Lucky Drive.

Crosswalks are located on Doherty Drive at Magnolia Avenue and mid-block near Larkspur Boardwalk; these crosswalks serve Hall Middle School. Crosswalks are also located on Doherty Drive at Riviera Circle and Lucky Drive; these crosswalks serve Redwood High School. The signalized intersection at Magnolia Avenue and Doherty Drive provides pedestrian activated buttons at all crosswalk segments; all other crosswalks in this corridor are unsignalized.

Surveys of crosswalk activity at Hall Middle School and Redwood High School were conducted during the weekday morning and afternoon peak periods in May 2003. Results of the pedestrian counts are shown in Table 4.7-3. Hall Middle School typically is in session between 8:40 a.m. and 3:10 p.m. Monday through Friday with the exception of Wednesdays when classes are held from 9:00 a.m. to 3:10 p.m. Redwood High School starts at 8:00 a.m. and typically finishes at 3:10 p.m. Table 4.7-3 shows volumes for 20-minute time periods. The volumes for the two high school crosswalks are combined. The crosswalk located at Lucky Drive and the back parking lot carries approximately 70% of the high school crosswalk activity.

Table 4.7-3
Summary of School Crosswalk Counts

Location	Morning	Afternoon
Hall Middle School	111	160
Redwood High School	150	85

Source: Wilbur Smith Associates Survey (May 2003)

The crosswalk survey did not capture students who walk to school along Doherty Drive and enter the school grounds through the parking lot, nor do the volumes indicate the students who use the paths on the south side of the school. The survey focused only on those persons crossing Doherty Drive and Lucky Drive to enter and exit the school.

The mid-block crosswalk serving Hall Middle School is controlled by an adult crossing guard in the morning before the start of school and in the afternoon for a period of approximately 20 minutes at the close of school. The survey at this crosswalk indicated that approximately 18% to 22% of the children were using bicycles. The survey also indicates that a number of the students who are dropped off in vehicles in the morning leave Hall Middle School on foot. This assumption is based on the approximately 51% increase in pedestrian student crossings in the afternoon. The afternoon count of 160 student crossings at Hall Middle School was conducted over a 20-minute period.

The high school pedestrian crossings show a significant reduction in afternoon activity. This reduction is attributed to the numerous after-school activities that would keep students on site until well after the end of the school day. It also suggests that some students who walk in the morning may leave in the afternoon with students who drive.

BICYCLE CONDITIONS

Bicycle use in the Specific Plan area was observed to be generally moderate during the weekday commute peak hour. The area is served by an existing paved multiuse path that parallels Magnolia Avenue north of Doherty Drive. The path provides connections to existing residential areas east of Magnolia Avenue and to points north of Downtown Larkspur. This path segment was observed to be lightly but consistently used throughout the weekday peak commute periods. Weekend recreational bicycle activity is higher with larger numbers of individuals and groups bicycling through the area throughout the day.

An existing signed bike route located along the west boundary of the Niven property (Subarea 3) connects to another multiuse path that travels south from the Specific Plan area parallel to and east of Magnolia Avenue to William Avenue. This path provides access to residential areas within Larkspur and links to Corte Madera and Mill Valley. This multiuse facility was observed to carry light yet consistent bicycle and pedestrian traffic during the weekday peak periods.

Doherty Drive provides two wide parking lanes on both sides of the street from near Magnolia Avenue to Redwood High School. These lanes are not signed for bicycle use but do serve as de facto bike lanes. Class 2 bicycle lanes have been created on either side of Doherty Drive at the high school curve. These lanes are narrow (4 feet) by Class 2 standards, but are delineated from the vehicle travel way by striping, markings, and signage as required for Class 2 facilities. Bicycle activity along Doherty Drive can be characterized as generally light to moderate with the exception of after-school activity, particularly at Hall Middle School. Weekend bicycle activity at Piper Park was found to be higher than observed weekday activity.

PARKING CONDITIONS

Parking use in the study area was surveyed during a weekday and a Saturday (May 2002). Wilbur Smith Associates performed a field check survey of downtown parking conditions on a weekday and Saturday in May 2003. The field survey indicated that parking utilization rates had remained generally consistent for both on-street and off-street facilities. Parking conditions for both on-street and off-street were observed and parking occupancy rates were calculated for the following locations and areas:

< On-Street Parking
- Magnolia Avenue between Doherty Drive and East Ward Street
- Doherty Drive between Magnolia Avenue and West of Bridge
- Doherty Drive East of Bridge
- Larkspur Plaza Drive between Doherty Drive to the back of the tennis club

< Off-Street Facilities
- Municipal City Lot
- Nazari Property Lot
- Rail Right-of-Way (at the rear of Nazari Lot)
- Larkspur Plaza Lot
- Piper Park Lot

Parking occupancy surveys were conducted between 11:00 a.m. and 1:00 p.m. and 4:00 p.m. and 6 p.m. during a weekday, and between 11:00 a.m. and 2:00 p.m. and 6:00 p.m. and 8:00 p.m. on a Saturday. Table 4.7-4 summarizes the findings of the Specific Plan area parking survey.

Table 4.7-4
Summary of Specific Plan Area Parking Occupancy

Location	Number of Spaces	Average Weekday Occupancy		Average Saturday Occupancy	
		Midday	Evening	Midday	Evening
Off-Street					
Municipal City Lot	28	96%	45%	68%	100%
Larkspur Plaza Lot	170	47%	42%	47%	39%
Nazari Property Lot	21	60%	29%	33%	47%
Rail Right-of-Way	10	100%	90%	80%	67%
Piper Park	110	29%	21%	82%	27%
On-Street					
Magnolia – east side	5	100%	80%	100%	100%
Magnolia – west	18	78%	67%	89%	100%
Doherty – south	6	67%	42%	100%	33%
Doherty – north	1	0%	0%	0%	0%
Larkspur Plaza Drive	29	17%	79%	72%	62%
Doherty South – East of Bridge	25	84%	12%	12%	0%

Source: Wilbur Smith Associates Survey (May 2003)

The 2003 parking survey findings are generally consistent with those observed in May 2002. The 2003 inventory includes approximately 500 feet of curb located on the south side of Doherty Drive, east of the bridge, which can accommodate up to 25 vehicles. This section of parking was 84% occupied during school hours. It was assumed that these parked vehicles indicated an overflow of students unable to park at the Redwood High School lot (e.g., high school sophomores who may not be eligible for parking permits for the Redwood High School parking lot). Weekday evening and Saturday observations of this area found a low utilization rate.

4.7.2 ENVIRONMENTAL IMPACTS

ANALYSIS SCENARIOS

The same LOS criteria described in Existing Setting above have been applied to the following analysis scenarios.

The "Existing" scenario represents current conditions at the study intersections based on traffic volumes obtained in March 2003.

The "Existing Plus Specific Plan" scenario includes the potential traffic impacts that would occur with existing traffic volumes plus maximum buildout of the Specific Plan area.

The "Existing Plus Cumulative (No Specific Plan)" scenario includes the potential traffic impacts that would occur with existing traffic volumes plus buildout of the Larkspur General Plan in the Downtown area including Subarea 1 and Subarea 2. This scenario does not include traffic from additional development that would be permitted under the Specific Plan (e.g., residential development in Subarea 3). Instead, this scenario assumes no new development would occur in Subarea 3.

The "Existing Plus Cumulative Plus Specific Plan" scenario includes the potential traffic impacts that would occur with existing traffic volumes plus maximum buildout of the Specific Plan area and buildout of the Larkspur General Plan in the Downtown area.

SPECIFIC PLAN TRIP GENERATION

Table 4.7-5 shows a summary of vehicle trip generation rates used in the assessment of the Specific Plan. The rates used are based on the ITE *Trip Generation*, 6th Edition (ITE 1997), and field surveys (June 2002) of large (4,000-plus square feet) single-family homes. The ITE publication does not differentiate between large lot and standard lot single-family uses, nor does it provide trip generation rates for cottage and mixed-use residential land uses.

In order to gauge the potential traffic impact of the large lot single-family homes (greater than 3,000 square feet) that are likely to be built where permitted due to market conditions, Wilbur Smith Associates conducted a 2-day field study of trip generation associated with single-family residential units that are 3,000 square feet or more (e.g., large homes in Corte Madera that are 4,000-plus square feet in size). The 7 study homes are located on a cul-de-sac, Verona Place,

off Paradise Road east of U.S. 101. Vehicle trips traveling to and from the cul-de-sac were recorded on two consecutive weekdays during the 7:00 a.m. to 9:00 a.m. morning peak period and the 4:00 p.m. to 6:00 p.m. evening peak period.

Table 4.7-5
Summary of Specific Plan Vehicle Trip Rates

Land Use	Vehicle Trip Generation Rates		
	A.M. Peak Hour	P.M. Peak Hour	Daily
Large Lot Single-Family (unit)	1.10	1.52	14.3
Single-Family Homes (unit)	0.75	1.01	9.57
Multifamily Homes (unit)	0.56	0.76	7.18
Cottage Homes (unit)	0.56	0.76	7.18
Specialty Retail (1,000 SF)	1.03	2.59	40.67
Office (1,000 SF)	1.56	1.49	11.01
Hotel/Inn (room)	0.56	0.61	8.23
Community Center (1,000 SF)	1.32	1.75	22.88

Source: Institute of Transportation Engineers 1997, Wilbur Smith Associates Surveys (June 2002); Wilbur Smith Associates 2003.

The trip generation survey findings showed that the larger homes generated a significantly higher number of vehicle trips compared to the standard ITE trip generation rate for single-family homes. Peak hour vehicle trip activity for the larger homes was 46% higher in the morning and 50% higher in the evening. The documented increase in a.m. and p.m. peak hour activity was calculated into peak hour and daily trip rates and applied to the Specific Plan where appropriate (e.g., single-family detached units greater than 3,000 square feet).

In addition to the higher rates for large homes, the cottage units were assessed at 75% of the standard single-family unit rate. There are no published rates for the land use cottage residential, the development density and square footage of which are in between those of typical single-family units and multi-family units. The rate developed for this use was the approximate midpoint between the standard single-family dwelling unit and the next highest residential rate, which was the residential condominium/townhouse rate.

ITE provides a trip rate for standard condominiums and townhouses. These unit types would be essentially the same size as the affordable multi-family residential units proposed in the specific Plan, and ITE's condominium/townhouse trip rate is typiucally used for apartment housing. However, because of the expectation that work-force households with more than one commuter would occupy much of the multi-family housing in the Specific Plan area, the rate developed for cottage homes was also applied to the affordable multi-family residential units.

Table 4.7-6 provides a summary of potential land use by subarea. The combination of land uses shown is the most intensive land use combination and is estimated to yield the highest daily and peak hour vehicle trip generation for development within the Specific Plan area.

The Specific Plan area consists of three separate subareas (Exhibit 2-4). Each of these subareas contains properties that were analyzed according to their maximum development potential in terms of trip generation. The office, hotel, and community center are all potential land uses under the Specific Plan, but would not generate as many vehicle trips as retail uses.

Table 4.7-6
Subarea New Land Use Summary

Principal Uses	Subarea 1	Subarea 2	Subarea 3	Net
Single Family Units < 3,000 feet	0	0	7	7
Single Family Units > 3,000 feet	0	0	28	28
Multifamily Residential Units	0	19	27	46
Cottage Units	0	0	23	23
Hotel Rooms	36	0	0	36
Retail (square feet)	46,565	4,500	0	51,065

Source: 2003 Central Larkspur Specific Plan, EDAW 2003

Subarea 1 consists of four properties: the Nazari property, the City parking lot, the American Legion hall, and Doherty Park. These properties are proposed to be designated Storefront Downtown and the maximum permitted new development would consist of a 36-room hotel and approximately 46,565 square feet of new retail space. Subarea 2 includes a gas station property and Larkspur Plaza. This subarea is designated Transitional Downtown and the maximum permitted development would consist of a 19-units of multifamily housing units and 4,500 square feet of retail space. Subarea 3 is designated Mixed Density Residential and the maximum permitted development would consists of 85 proposed residential units.

Adoption of the Specific Plan would result in the designation of commercial and residential uses, as well as new access into the Specific Plan area. Key access to Subarea 1 and Subarea 2 would be from East Ward Street and the Larkspur Plaza driveway. Subarea 3 would be developed with a mix of housing types, including large (3,000-plus square feet) single-family residential units, standard (less than 3,000 square feet) single-family residential units, as well as smaller cottage units and multi-family units. Access for this subarea would be from Doherty Drive at two locations. A new signalized intersection at Doherty Drive/Larkspur Plaza would provide primary access to Subarea 3 with a secondary stop sign controlled driveway located at Doherty Drive/Piper Park driveway.

The new signalized intersection at Doherty Drive/Larkspur Plaza and the driveway at Doherty Drive/Piper Park would be designed with the following standards specified in the Specific Plan.

Specific Plan Roadway and Intersection Policies and Standard

Policy 3. Doherty Drive/Larkspur Plaza Drive Intersection Improvement Standards. The new intersection at Larkspur Plaza Drive and Doherty Drive shall be consistent with the following standards:

Standard 2. Traffic Lights. The intersection shall be fully signalized. Signal timing shall be set to give precedence to and provide adequate crossing time for pedestrians and bicyclists during times of anticipated heavy pedestrian and bicycle movement. The signal shall be designed to allow manual override by pedestrians and bicyclists at other times. Consider installing a detector in the roadbed that is sensitive to bicyclists.

Standard 3. Changes In Roadway Paving Materials. Changes in roadway paving materials (both color and texture) should be designed and applied to increase motorist awareness of the crosswalk and decrease the speed of vehicles within the intersection (See Figure 5.3 of the Specific Plan).

Standard 4. Advance Intersection Warning. Bands of coarse-textured paving should be installed approximately 100 feet in each direction from the intersection to warn motorists of the approaching major crosswalk.

Policy 4. Doherty Drive/Piper Park Entrance Intersection. The new intersection at the entrance to Piper Park shall incorporate the same features listed in Policy 2 and Standards 2, 3, and 4, with the exception of traffic signals. The final design of traffic controls at this intersection shall be based on a warrants study.

Full buildout of the Specific Plan, at its most intensive type of land use in terms of traffic generation, would result in a total of 104 residential units, 51,065 square feet of new retail uses, and a 36 room hotel. As shown in Table 4.7-7, the full buildout of the Specific Plan area would be expected to generate 3,338 new daily vehicle trips, with 148 of these occurring during the a.m. peak hour and 256 occurring during the p.m. peak hour.

With 46,565 square feet of retail space and a 36 room hotel, Subarea 1 would generate an estimated new 2,192 daily vehicle trips. Subarea 1 accounts for 66% of the Specific Plan's new daily trip generation.

Subarea 2 would generate approximately 320 new daily trips. With 19 multifamily residential units and 4,500 square feet of new retail, Subarea 2 would create about 9% of the Specific Plan's net new daily trips.

Based on peak hour estimates, Subarea 3 would generate 64 a.m. peak hour trips and 87 p.m. peak hour trips. Subarea 3 would generate 826 new daily trips. These trips account for 25% of the total new daily trips generated by the Specific Plan.

Table 4.7-7
Summary of Daily and Peak Hour Specific Plan New Vehicle Trips at Maximum Land Use Intensity

Land Use		Units	Trip Rate			Trips		
			In	Out	Total	In	Out	Total
Subarea 1								
Hotel: (Dwelling Units)	A.M. Peak Hour	36	0.34	0.22	0.56	12	8	20
	P.M. Peak Hour	36	0.32	0.29	0.61	12	10	22
	Daily	36	4.12	4.12	8.23	148	148	296

Table 4.7-7
Summary of Daily and Peak Hour Specific Plan New Vehicle Trips at Maximum Land Use Intensity

Land Use		Units	Trip Rate			Trips		
			In	Out	Total	In	Out	Total
Retail Sales (per 1,000 square feet)	A.M. Peak Hour	46.6	0.63	0.40	1.03	29	19	48
	P.M. Peak Hour	46.6	1.11	1.48	2.59	52	69	121
	Daily	46.6	20.34	20.34	40.67	948	948	1,896
Subtotals				A.M. Peak Hour		41	27	68
				P.M. Peak Hour		64	79	143
				Daily		1,096	1,096	2,192
Subarea 2								
Multifamily Residential: (Dwelling Units)	A.M. Peak Hour	19	0.14	0.42	0.56	3	8	11
	P.M. Peak Hour	19	0.48	0.27	0.76	9	5	14
	Daily	19	3.59	3.59	7.18	68	68	136
Retail Sales (per 1,000 square feet)	A.M. Peak Hour	4.5	0.63	0.40	1.03	3	2	5
	P.M. Peak Hour	4.5	1.11	1.48	2.59	5	7	12
	Daily	4.5	20.34	20.34	40.67	92	92	184
Subtotals				A.M. Peak Hour		6	10	16
				P.M. Peak Hour		14	12	26
				Daily		160	160	320
Subarea 3								
Single-Family Home—More than 3,000 square feet: (Dwelling Units)	A.M. Peak Hour	28	0.28	0.83	1.10	8	23	31
	P.M. Peak Hour	28	0.97	0.55	1.52	27	15	42
	Daily	28	7.15	7.15	14.30	200	200	400
Single Family Home—Less than 3,000 square feet: (Dwelling Units)	A.M. Peak Hour	7	0.19	0.56	0.75	1	4	5
	P.M. Peak Hour	7	0.65	0.36	1.01	5	3	8
	Daily	7	4.79	4.79	9.57	33	33	66
Multifamily Residential: (Dwelling Units)	A.M. Peak Hour	27	0.14	0.42	0.56	4	11	15
	P.M. Peak Hour	27	0.48	0.27	0.76	13	7	20
	Daily	27	3.59	3.59	7.18	97	97	194
Cottage Homes: (Dwelling Units)	A.M. Peak Hour	23	0.14	0.42	0.56	3	10	13
	P.M. Peak Hour	23	0.48	0.27	0.76	11	6	17
	Daily	23	3.59	3.59	7.18	83	83	166
Subtotals				A.M. Peak Hour		16	48	64
				P.M. Peak Hour		56	31	87
				Daily		413	413	826
Net New Trips (Central Larkspur Specific Plan)				A.M. Peak Hour		63	85	148
				P.M. Peak Hour		134	122	256
				Daily		1,669	1,669	3,338

Source: Institute of Transportation Engineers 1997, Wilbur Smith Associates calculations (May 2003)

VEHICLE TRIP DISTRIBUTION AND ASSIGNMENT

The estimated vehicle trip distribution reflects peak hour activity and is based on existing locally observed traffic patterns and on characteristics associated with specific land uses. Specific Plan generated traffic was distributed to the local street network according to the directional percentage estimates shown in Table 4.7-8.

Table 4.7-8
Vehicle Trip Distribution Summary

Location/Direction	A.M. Peak Hour Percentage	P.M. Peak Hour Percentage
Residential		
East	73	72
South	13	17
North	14	11
Commercial/Retail		
East	40	40
South	33	27
North	27	33

Source: Wilbur Smith Associates calculations (May 2002)

Trip distribution for retail and other commercial uses are expected to be similar during the a.m. and p.m. peak hours as shown in Table 4.7-8. Travel patterns associated with residential uses reflect a dominant movement to (a.m. peak hour) and from (p.m. peak hour) the east and U.S. 101. All new traffic associated with the mixed use parcels on the western portion of the Specific Plan area were assigned to Magnolia Avenue via the signalized intersection on East Ward Street. Exhibit 4.7-5 illustrates the distribution of Specific Plan generated trips on the area roadway network at study intersections.

THRESHOLDS OF SIGNIFICANCE

Implementation of the Specific Plan would have a significant impact if it were to result in:

< an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections);

< exceedance, either individually or cumulatively, of the LOS standard of LOS D established by the City for signalized intersections within Larkspur;

< exceedance, either individually or cumulatively, of the LOS standard of LOS C established by the City for unsignalized intersections within Larkspur;

< inadequate emergency access;

< inadequate parking capacity; or

Exhibit 4.7-5 A.M (P.M.) Peak-Hour Volumes with Specific Plan Development

< a conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

These criteria are derived from Appendix G of the State CEQA Guidelines and from City Council Policy that established the minimum acceptable LOS to be at the LOS D threshold for signalized intersections and at the LOS C threshold for unsignalized intersections. The minimum LOS D operating standard is also consistent with prior traffic analyses conducted within Larkspur.

PROJECT-LEVEL IMPACTS

Share of Intersection Volumes

Table 4.7-9 identifies the percentage of traffic volume increases associated with the Specific Plan. The intersections shown are anticipated to experience unacceptable LOS under Existing Plus Specific Plan Conditions, Existing Plus Cumulative Plus Specific Plan conditions, or both, until the traffic mitigation measures identified below are completed.

Table 4.7-9
Specific Plan Share of Existing and Future Peak Hour Intersection Volumes

Intersections	Existing Plus Specific Plan	Specific Plan Volume	Specific Plan Percent	Existing Plus Cumulative Plus Specific Plan	Specific Plan Percent
a.m. Peak Hour					
3. East Ward Street/Magnolia Avenue	1,412	105	7.4	1,707	6.2
4. King Street/Magnolia Avenue	1,445	53	3.7	1,369	3.9
7. Doherty Drive/Riviera Circle	1,347	59	4.4	1,677	3.5
10. Fifer Avenue /Tamal Vista Boulevard	1,679	59	3.5	2,150	2.7
11. Wornum Drive /Tamal Vista Boulevard	1,206	21	1.7	1,623	1.3
5. Doherty Drive/Larkspur Plaza	1,217	79	6.5	1,561	5.1
6. Doherty Drive/Piper Park	1,128	63	5.6	1,450	4.3
p.m. Peak Hour					
3. East Ward Street/Magnolia Avenue	1,714	223	13.0	1,995	11.2
4. King Street/Magnolia Avenue	1,181	79	6.7	1,397	5.7
7. Doherty Drive/Riviera Circle	1,584	99	6.3	1,822	5.4
10. Fifer Avenue /Tamal Vista Boulevard	1,745	99	5.7	2,115	4.7
11. Wornum Drive /Tamal Vista Boulevard	1,650	55	3.3	2,057	2.7
5. Doherty Drive/Larkspur Plaza	1,295	125	9.7	1,551	8.1
6. Doherty Drive/Piper Park	1,153	111	9.6	1,433	7.7

Source: Wilbur Smith Associates (2003)

Impact **4.7-1**

Unacceptable Level of Service at Doherty Drive/Riviera Circle/Redwood High School Intersection. *Development under the Specific Plan would increase average vehicle delay at this unsignalized intersection where a.m. peak hour LOS is already unacceptable (LOS D) and would result in a worsening of p.m. peak hour LOS from D to E. This impact is considered* ***significant****.*

The turning movement volumes for this unsignalized intersection during a.m. and p.m. peak hours under Existing Plus Specific Plan conditions are illustrated in Exhibit 4.7-6. Table 4.7-10 shows a comparison of peak hour intersection operations under existing conditions to those under the Existing Plus Specific Plan scenario. Operations under the Existing Plus Specific Plan scenario would continue to be unacceptable (LOS D) during the a.m. peak hour at the unsignalized intersection of Doherty Drive/Riviera Circle/Redwood High School. During the p.m. peak hour, traffic generated by future development in the Specific Plan area would reduce existing unacceptable LOS D to LOS E operating conditions. The unacceptable LOS during the a.m. and p.m. peak hours is an existing condition and would be expected to occur at this intersection with or without the implementation of the Specific Plan development. The permitted development, however, would add traffic at this intersection, resulting in increases in average vehicle delay of up to 2.8 seconds and, in the p.m. peak hour, a worsening of LOS from D to E. This impact is considered significant.

Table 4.7-10
Existing Plus Specific Plan Peak-Hour Intersection Level of Service

Intersections	Existing				Existing Plus Specific Plan			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Signalized Intersection (LOS A-D are acceptable)								
1. Bon Air Road/Magnolia Avenue	B	8.8	B	10.5	B	8.7	B	10.5
2. Doherty Drive/Magnolia Avenue	B	8.8	B	10.4	B	9.3	B	12.6
3. East Ward Street/Magnolia Avenue	C	15.7	D	29.9	**E**	**41.1**	**F**	**
10. Fifer Ave/Tamal Vista Blvd.	B	13.3	C	16.3	B	13.6	C	17.9
11. Wornum Drive/Tamal Vista Blvd	B	13.1	C	20.4	B	13.5	D	25.1
12. Wornum Drive/Redwood Hwy.	B	7.3	B	9.6	B	7.4	B	9.8
13. 101 NB On-Ramp/Industrial	B	5.5	B	11.2	B	5.5	B	11.5
Unsignalized Intersection (LOS A-C are acceptable)								
4. King Street/Magnolia Avenue	C	19.5	**F**	**46.2**	**D**	**22.7**	**F**	**66.5**
5. Doherty Drive/Larkspur Plaza*	C	17.8	C	15.8	D	20.4	C	19.3
6. Doherty Drive/Piper Park	C	0.3	C	0.4	C	0.5	C	0.5
7. Doherty Drive/Riviera Circle	**D**	**23.9**	**D**	**29.6**	**D**	**26.7**	**E**	**32.2**
8. Lucky Drive/Doherty Drive	B	8.7	B	6.6	C	10.1	B	7.5
9. Lucky Drive/Fifer Avenue	B	0.5	C	1.1	B	0.5	C	1.1

Notes: Delay is in average seconds per vehicle
Bold = unacceptable conditions
LOS = Level of Service
* Intersection would be signalized under the Specific Plan.
** = Exceeds 120 seconds delay
Source: Wilbur Smith Associates (May 2003)

Exhibit 4.7-6 Existing Plus Specific Plan A.M. (P.M.) Peak-Hour Volumes

Impact **4.7-2**

Unacceptable Level of Service at East Ward Street/Magnolia Avenue Intersection. *With Specific Plan implementation this signalized intersection is projected to operate at LOS E and LOS F during the a.m. and p.m. peak hours, respectively. This impact is considered* ***significant****.*

During the weekday a.m. and p.m. peak hours, the signalized intersection at East Ward Street/Magnolia Avenue is projected to operate at an unacceptable LOS E and LOS F, respectively, upon the addition of traffic generated by future development in the Specific Plan area (Table 4.7-10). The Specific Plan would result in increases in average vehicle delay of more than 90 seconds at this intersection. This impact is considered significant.

Impact **4.7-3**

Unacceptable Level of Service at King Street/Magnolia Avenue Intersection. *With Specific Plan implementation, this unsignalized intersection is projected to worsen from LOS C to unacceptable LOS D in the A.M. peak hour, and traffic would be added during the p.m. peak hour, when the intersection already operates at unacceptable LOS F. This impact is considered* ***significant****.*

During the weekday a.m. peak hour, traffic generated by future development in the Specific Plan area would cause this unsignalized intersection to worsen from LOS C to unacceptable LOS D (Table 4.7-10), with increases in average vehicle delay of up to 20.3 seconds. During the p.m. peak hour, this intersection would continue to operate at unacceptable LOS F. Development under the Specific Plan would add traffic to this intersection during the p.m. peak hour and would further increase average vehicle delay. This impact is considered significant.

Impact **4.7-4**

Access and Circulation. *The Specific Plan contains several access and circulation elements designed to allow smooth flow of traffic through the Specific Plan area and provide for public safety. Impacts associated with access and circulation elements would be* ***less than significant****.*

The Specific Plan contains several access and circulation components, such as internal roadways and new connections to existing streets (see Figure 5-1, Transportation Policy Diagram, in the Specific Plan). Vehicle access to the west side of the Specific Plan area would continue to be primarily at East Ward Street and the Magnolia Avenue driveway serving Larkspur Plaza. East Ward Street would provide access to the existing corner public parking lot and other planned public parking areas. The Specific Plan includes policies and standards to close the Magnolia Avenue driveway currently serving the public parking lot and to narrow the existing Larkspur Plaza driveway. Table 4.7-9 shows the Existing Plus Specific Plan and future peak hour intersection volumes in the study area.

According to the Specific Plan, the vehicle access serving Subarea 3 would have the following standard requirements:

Policies and Standards for Vehicular Ingress and Egress to Specific Subareas

Policy 16. Loop Road in Subarea 3. The two access roads from Doherty Drive to Subarea 3 shall be internally connected to provide two means of ingress and egress for public safety vehicles. The precise alignment of the connecting road section(s) shall be determined when the tentative map for the property is prepared.

Policy 17. Standards For The Western Access Road From Doherty Drive to Subarea 3. The western entry road from Doherty Drive to Subarea 3 shall be consistent with the following standards:

> Standard 8. Alignment Standard For Western Access Road to Subarea 3. The access road shall be aligned along the west property line of Subarea 3. The entry road shall be aligned to allow for the following:
>
> 8.A. Sufficient space within or adjoining the right-of-way for a landscape buffer at the rear of the Larkspur Plaza commercial buildings.
>
> 8.B. Construction of a Class 1 bikeway physically separate from the roadway.
>
> 8.C. Truck access to the east end of the Albertsons building. This is needed to allow a complete relocation of the building's service docks to this location.

Policy 18. Vehicular Ingress and Egress From Ward Street to Subarea 3. The road system should be designed to discourage through-traffic between Ward Street and Doherty Drive. The following five options shall be studied by any application for development in Subarea 3, and the Planning Commission shall make the final decision of a selected option in its approval of the development application.

1. No access from Subarea 3 to Ward Street.

2. An exit-only connection from Subarea 3 to Ward Street to minimize left-turn movements at the Larkspur Plaza Drive and Magnolia/Doherty intersections.

3. A two-way connection from Subarea 3 to Ward Street with no direct connection to Doherty Drive.

4. A one-way through-connection from Ward Street to Doherty Drive.

5. A two-way through connection from Ward Street to Doherty Drive with traffic calming measures applied to allow entry and exit at Ward Street while discouraging through traffic

Roadway and Intersection Policies and Standards

Policy 5. Traffic-Calming. Residential streets in the Plan area may incorporate traffic-calming devices that discourage high-speed travel and use of the streets by unrelated through-traffic. Section 6 of the Specific Plan identifies various acceptable traffic-calming devices.

Policy 6. Street Standards for Subarea 3. The following standards shall be followed in the design of streets in Subarea 3:

> Standard 5. Standard Right-of-Way Width. The standard right-of-way width of residential streets within Subarea 3 shall be limited to 45 feet, except where a Class 1 bikeway is incorporated into the right-of-way, in which case a minimum right-of-way of 57 feet shall be required.
>
> Standard 6. Maximum Pavement Width. The maximum pavement width, measured from face-of-curb to face-of-curb shall be 26 feet.
>
> Standard 7. Sidewalks and Landscape Strips. Each right-of-way shall also include a 5-foot wide landscape strip and a 4.5-foot wide sidewalk on each side of the roadway. Exceptions may be made to the sidewalk requirement where adjoining open areas allow space for a parallel pedestrian path. Related landscape standards and guidelines are contained in Section 7 of the Specific Plan.

Vehicle access from Doherty Drive would serve the residential uses in the Specific Plan area at two locations: immediately opposite Larkspur Plaza Drive and immediately opposite the entrance to Piper Park. Both access roads would form new four-leg intersections. The new intersection at Piper Park would be stop sign controlled at the north and southbound approaches only.

The new intersection at Larkspur Plaza Drive would be signalized and coordinated with the Doherty Drive/Magnolia Avenue intersection signal to the west. The north leg of this intersection would be redesigned to consolidate exiting traffic from the Hall Middle School and two-way traffic from Larkspur Boardwalk onto Larkspur Plaza Drive. This Specific Plan access road would allow truck access to the east end of the Albertsons building.

The Specific Plan includes the reconstruction of approximately 900 feet of Doherty Drive to three lanes with one travel lane in each direction and a center turning lane serving the Specific Plan access driveways, Hall Middle School and Piper Park. The existing Doherty Drive Bridge east of the Specific Plan area is programmed for reconstruction. This improvement is not part of the Specific Plan, however, reconstruction of the bridge would improve sight distance lines for vehicles at the Doherty Drive/Piper Park entrance intersection.

The Specific Plan internal roadway system would not provide a vehicle connection between Doherty Drive and East Ward Street. This is primarily to discourage through traffic and to maintain a safe environment for pedestrians and bicyclists. A secondary purpose is to control

traffic levels on East Ward Street. As indicated in the LOS analysis of Specific Plan-generated traffic, East Ward Street would require additional capacity on three approaches under buildout conditions. A through connection between East Ward Street and Doherty Drive could attract increased passer-by vehicle activity between Doherty Drive and Magnolia Avenue through the Specific Plan area and result in operations deteriorating to unacceptable service levels at the East Ward Street/Magnolia Avenue intersection.

There would be no significant impacts associated with the Vehicle Access and Circulation Plan. The implementation of the proposed vehicle access and circulation plan would result in improvements to current conditions. Signalization of the Larkspur Plaza Drive/Doherty Drive intersection would provide a safer crossing for pedestrians, bicyclists and students. The new intersection would accommodate planned changes to improve vehicle ingress and egress patterns at Hall Middle School and for Larkspur Boardwalk. The reconstruction of the existing Larkspur Plaza and Magnolia Avenue driveway and the elimination of the public parking lot driveway on Magnolia Avenue would enhance pedestrian safety in this area.

The proposed design standards for the internal roadway network promote pedestrian safety by limiting on-street widths and avoiding through traffic routes. Internal street curb-to-curb widths are planned for 26 feet including parking lanes on one side. Other traffic calming measures such as traffic circles, and elbows and use of alternate side-to-side parking lanes have been proposed for the Specific Plan roadway network.

No mitigation measures are proposed, nor would any be needed with construction of the vehicle access and circulation plan called for in the Specific Plan policies.

Impact **4.7-5**

Pedestrian and Bicycle Circulation. *The Specific Plan includes a proposed system of integrated pedestrian and bicycle routes and paths within the Specific Plan area. Because these routes and paths would enhance rather than interfere with existing bikeways and pedestrian paths,* ***no significant impacts*** *would result.*

The Specific Plan proposes a system of integrated pedestrian and bicycle routes within the Specific Plan area that would provide safe circulation and connections to existing area facilities. The proposed pedestrian and bicycle circulation system would create links between the Specific Plan area and Downtown, Larkspur Plaza, schools, parks and transit areas.

The proposed system of bikeways and footpaths includes the following elements (see Figure 5.1 in the Specific Plan):

Larkspur Creek Pathway - A combined bikeway and footpath is proposed along the south and east sides of the Specific Plan area. On the south, the path would run along the south side of the creek. The east side path would be located on the east side of the creek. This path would link to the existing pathway serving the Heather Gardens neighborhood. A combined bikeway and footpath would also be located on the western side of the north/south reach of the creek.

Magnolia Avenue to Larkspur Plaza - A pedestrian path linking the Larkspur Plaza to the Downtown area via the railroad plaza area is proposed. The intent of this link is to encourage people parked at Larkspur Plaza to walk rather than drive to other downtown destinations.

Central Pathway - The Specific Plan includes a continuous pedestrian route extending from Magnolia Avenue to the bikeway along the west side of Larkspur Creek. This path would serve the planned residential community with a direct route to the railroad plaza area and the Downtown area.

North-South Regional Bikeway - The Specific Plan includes upgrades to the existing segment of the bikeway north of East Ward Street, which connects to the Class I bikeway along Magnolia Avenue in the vicinity of the Creekside development, for the purpose of improving safety for bicyclists and pedestrians. In addition, the Specific Plan includes a new Class 1 bikeway to be developed in Subarea 3; the alignment of this bikeway, which would connect the bikeway segment on the former Northwest Railroad right-of-way north of East Ward Street with the existing Class 1 bikeway along Magnolia Avenue at a point north of the Specific Plan area, would run through the northwest corner of Subarea 3 and connect with the Class II bikeway along Larkspur Plaza Drive and through the Creekside development.

Doherty Drive Bikeway - A Class I bikeway is proposed along the south side of Doherty Drive extending from the bikeway at Larkspur Plaza Drive to Redwood High School (approximately 2,100 feet).

There would be no significant impacts associated with pedestrian/bicycle access and circulation plans. Implementation of the proposed pedestrian and bicycle routes would result in an improvement of existing conditions. The development of foot and bicycle paths within the Specific Plan area and along Doherty Drive that make north-south and east-west connections to existing non-motorized facilities and activity centers is essential. The Specific Plan area, due to location and topography, will play a key role in the integration of existing pedestrian and bicycle facilities and in the upgrading of non-motorized circulation and access safety in the vicinity.

Section 4.1, Land Use and Planning, of this EIR document includes analysis of the consistency of the proposed bikeway alignment with the Bicycle/Pedestrian Circulation Plan in the General Plan. Section 4.5, Biological Resources, includes analysis of the effects of the pathways on biological resources in and adjacent to Larkspur Creek. Because the proposed bikeways and pedestrian paths would increase connectivity between existing paths, enhance bicycle and pedestrian safety, not interfere with existing pedestrian and bicycle traffic, no traffic and circulation impacts would result from the pedestrian and bicycle access and circulation plan.

Impact **4.7-6**

Increase in Parking Demand. *New development in Subarea 1 and Subarea 2 would increase the demand for parking spaces in the Downtown area. Given the Specific Plan policies that require the provision of adequate number of parking spaces for new developments, this impact would be* ***less than significant****.*

Table 4.7-11 shows the proposed Specific Plan area parking standards based on land use type. Residential parking would be provided as shown on a per unit basis. Additional parking in the Subarea 3 residential development would be supplied on-street. With the implementation of the standards, the residential parking supply for Subarea 3 would meet or exceed expected demand.

Table 4.7-11
Central Larkspur Specific Plan Area Parking Standards

Retail, Personal, Business Service	2.6 spaces/1,000 sq. ft.
Hotel	1 space per room (1)
Restaurant	4.4 spaces per/1,000 sq. ft.
Office	2.5 spaces per/1,000 sq. ft.
Multi-family Residential	1 space per unit
Cottage Home	1.2 space per unit (2)
Single-Family Detached	3 spaces per unit (3)

Notes: (1) Tandem spaces permitted.
(2) 0.20 spaces provided in separate common lot
(3) 1 tandem space per unit including driveway with minimum length of 18 feet.
Source: Central Larkspur Specific Plan Area Parking Standards (2003a)

Table 4.7-12 shows the potential new parking supply that would be developed for Subarea 1 and Subarea 2, based on the parking standards shown in Table 4.7-11. The total of 218 spaces represents an unadjusted maximum figure. The parking supply that would eventually be developed in the Specific Plan area would be adjusted to account for shared parking opportunities and the mix of land uses.

Table 4.7-12
Summary of Specific Plan Parking Supply Standards

Land Use	Size	Supply Rate	Number of Spaces
Subarea 1			
Hotel Rooms	36 rooms	1 per room	36
Retail	58,100 sq. ft.	2.6 spaces per 1,000 sq. ft.	151
Subtotal			179
Subarea 2			
Residential	19 units	1 per unit	19
Retail	4,500 sq. ft.	2.6 spaces per 1,000 sq. ft.	12
Subtotal			31
Total			**218**

Source: Central Larkspur Specific Plan Area Parking Standards (2003a)

Based on parking surveys conducted by WSA in downtown Larkspur in May of 2002 and June of 2003, the estimated peak parking demand for future development in Subarea 1 and 2 is

approximately 120 spaces. This estimate is based on current demand at the Nazari site, Larkspur Plaza and the Municipal Lot.

The survey of existing study area parking conditions (see Setting section) indicates that parking utilization at the public lot (28 spaces) is near or at capacity during the weekend evening and during midday weekdays. Overall parking utilization for Subarea 1 and for Subarea 2 during the same time periods however, is underutilized averaging 50% occupancy. On-street parking utilization along both sides of Magnolia Avenue is high, with 100% occupancy Saturday midday and evenings and 70% during weekday midday and evenings.

Chapter 5 of The Central Larkspur Specific Plan identifies a number of potential parking facilities that would serve the development in the Specific Plan area, including the following:

< Expansion of the existing municipal lot from the current 28 spaces to 40 spaces (Policy 27. Existing City Lot)

< Additional surface parking in former railroad right-of-way in Subarea 1 (Policy 28. Former Railroad Right-of-Way)

< Private parking under a building(s) fronting on Magnolia Avenue (Policy 29. Magnolia Avenue Frontage)

< A 50-space public lot in Subarea 3 (Policy 30. New Downtown Parking Lot)

< Potential additional surface parking in Albertsons site (Policy 31. Albertsons Site)

The potential loss of on-street parking on East Ward Street and Magnolia Avenue as a result of traffic impact mitigation measures must be factored into the ultimate supply requirements.

Given the Specific Plan policies on parking requirements and the adequacy of the identified potential parking facilities, no impacts would be expected and no mitigation measures are proposed.

Impact **4.7-7**

Construction-Related Traffic. *During the construction phase of future development projects, roadway closure and construction vehicle trips would potentially cause traffic interruption and may result in unsafe conditions for drivers, passengers, bikers, and pedestrians. While the City Code requires traffic control during construction activities, it does not define the specific measures that would ensure human safety and convenience. This is a* ***potentially significant*** *impact.*

Specific information on construction activities that may occur within the Specific Plan area is currently not available. Construction-related activities would typically occur Monday through Friday from 7:00 a.m. to 5:00 p.m. Specifications would include restrictions on noise and dust, and construction activities would be strictly monitored due to the proximity of schools and businesses in the area. Construction staging and storage of equipment and materials would likely occur on the construction sites. It is not anticipated that any traffic lanes or sidewalks on either Magnolia Avenue or Doherty Drive would need to be closed during the construction duration. However, if construction activities were to result in the extended, temporary closure

of sidewalks and/or vehicle travel lanes, contractors in the Specific Plan area would be required to notify the City Department of Public Works (DPW) Director. A sidewalk or roadway lane closure plan would need to be coordinated through and approved by the City prior to the closure in order to ensure safe and uninterrupted circulation in the vicinity of the construction site.

During the construction period, there would be a flow of construction-related trucks into and out of the construction site. The impact of construction truck traffic would be a temporary lessening of the capacities of streets due to the slower movement and larger turning radii of trucks. This would affect both traffic and Golden Gate Transit operations. The majority of construction-related deliveries are anticipated to be from the north or south of the Specific Plan area, traveling on U.S. 101. For access to and from the construction site from U.S. 101, trucks would likely be routed to Doherty Drive from Lucky Drive via Fifer Avenue or Tamal Vista Boulevard via Wornum Drive. While this route provides the shortest travel time to and from the Specific Plan area, it requires trucks to negotiate sharp turns at the intersection of Wornum Drive/Tamal Vista Boulevard and Fifer Avenue/Lucky Drive. This route would take construction trucks directly by Redwood High School and Hall Middle School.

The peak number of construction workers in the Specific Plan area is currently unknown, and trip distribution and mode split data are not available. In terms of traffic conditions, the worst-case scenario would be if all workers drove alone to the Specific Plan area. In addition, these workers could cause a temporary parking demand. During most phases of construction, it is anticipated that construction-related parking could be accommodated within the Specific Plan area. In addition, a portion of the construction workers may take transit or carpool to access the Specific Plan area. The City's Grading Ordinance requires provision of traffic control on affected streets to minimize public inconvenience and traffic disruption (City Code §15.20.170 Traffic Control). However, the Grading Ordinance does not define the specific measures that would ensure human safety and convenience. Without effective traffic control measures designed to ensure both human safety and traffic convenience, this impact would be potentially significant.

CUMULATIVE IMPACTS

No significant cumulative impacts related to access and circulation, pedestrians and bicycle circulation, and parking are expected. As discussed above, the Specific Plan would not result in significant impacts related to these issues, and the General Plan and the Larkspur Municipal Code require all projects to provide adequate parking and site access that preclude significant impacts related to these issues.

Potentially significant cumulative impact related to construction-related traffic interruptions may result because traffic control measures designed to ensure human safety and traffic convenience may not be implemented. As such, construction activities throughout the City may occur during the same time periods and cause traffic interruptions.

Potentially significant cumulative impacts related to LOS of roadway intersections may result. Future traffic volumes at the study intersections were determined by evaluating output from the *1998 Larkspur Citywide Traffic Study*. This study developed future p.m. peak hour intersection turning movement volumes based on the General Plan buildout estimates for the Downtown area. Existing volumes at the study intersections were compared to volumes projected by the citywide traffic study, and were adjusted as necessary within the study area to ensure consistency with existing trends. Peak hour trips associated with the Downtown Area Specific Plan parcels were identified in the citywide study and adjusted in order to avoid a double count of Specific Plan-generated trips.

The adjusted *Citywide Traffic Study* cumulative intersection volumes served as the basis for the Existing Plus Cumulative (No Build) scenario. This scenario includes the potential traffic impacts that would occur with existing traffic volumes plus build-out of the Larkspur General Plan in the downtown area. The Existing Plus Cumulative (No Build) scenario includes traffic that would be generated from the Specific Plan Area (Sub area's 1 and 2) with development of uses identified in the General Plan. This development includes up to 28 units of multi-family residential and 24,961 square feet of retail use in Subarea 1. Subarea 2 includes 4,500 square feet of retail use. Specific Plan trip estimates developed for the EIR were distributed to the network as described and overlaid onto the Existing Plus Cumulative (No Build) trip volumes to develop trip volumes for Existing Plus Cumulative Plus Specific Plan scenarios.

The citywide study developed only p.m. peak hour cumulative traffic volumes. The a.m. peak hour cumulative volumes analyzed in the EIR were developed based on existing traffic patterns at study intersections and on comparative ratios between a.m. and p.m. peak hour volumes at individual study intersection approaches. Study intersection volumes for a.m. and p.m. peak hour Existing Plus Cumulative (No Build) and Existing Plus Cumulative Plus Specific Plan conditions are illustrated on Exhibits 4.7-7 and 4.7-8, respectively.

Existing Plus Cumulative Plus Specific Plan Conditions

Under Existing Plus Cumulative Plus Specific Plan conditions, the three intersections identified as operating unacceptably under Existing Plus Specific Plan conditions would continue to operate unacceptably but with increases in average vehicle delay. The three intersections include:

< East Ward Street/Magnolia Avenue
< King Street/Magnolia Avenue
< Doherty Drive/Riviera Circle

In addition to these intersections, the Specific Plan would contribute to unacceptable operating conditions at Fifer Avenue/Tamal Vista Boulevard and Wornum Drive/Tamal Vista Boulevard during the p.m. peak hour. The unsignalized intersection of Doherty Drive/Piper Park would operate at unacceptable LOS D and during the a.m. and p.m. peak hours. Under Existing Plus Cumulative (No Build) conditions, the unsignalized intersection at Doherty Drive/Larkspur Plaza would be expected to operate at unacceptable LOS F and during the

Exhibit 4.7-7 Existing Plus Cumulative A.M. (P.M.) No Project Peak-Hour Volumes

Exhibit 4.7-8 Existing Plus Cumulative Plus Specific Plan A.M. (P.M.) Peak-Hour Volumes

a.m. peak hour and LOS E during the p.m. peak hour; with Specific Plan implementation, this intersection would be improved, including signalization, and would operate at acceptable LOS B. Table 4.7-13 shows a comparison of cumulative peak hour intersection operations with and without Specific Plan traffic.

Table 4.7-13
Existing Plus Cumulative (No Specific Plan) and Existing Plus Cumulative Plus Specific Plan Conditions Intersection Level of Service

Intersections	Existing Plus Cumulative (No Specific Plan)				Existing Plus Cumulative Plus Specific Plan			
	a.m. Peak Hour		p.m. Peak Hour		a.m. Peak Hour		p.m. Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Signalized Intersection (LOS A-D are acceptable)								
1. Bon Air Road/Magnolia Avenue	B	9.3	B	11.4	B	9.3	B	11.6
2. Doherty Drive/Magnolia Avenue	B	12.1	B	14.4	B	12.7	C	18.0
3. East Ward Street/Magnolia Avenue	**F**	**	**F**	**	**F**	**	**F**	**
10. Fifer Avenue /Tamal Vista Boulevard	C	23.5	**E**	**57.1**	B	6.4	B	10.3
11. Wornum Drive /Tamal Vista Boulevard***	C	25.1	**F**	**70.5**	D	26.3	**F**	**81.2**
12. Wornum Drive/Redwood Highway	B	8.4	B	12.6	B	8.5	B	12.8
13. 101 NB On-Ramp/Industrial	B	5.6	C	17.8	B	5.6	C	18.1
Unsignalized Intersection (LOS A-C are acceptable)								
4. King Street/Magnolia Avenue	**E**	**30.9**	**F**	**	**E**	**34.5**	**F**	**
5. Doherty Drive/Larkspur Plaza*	**F**	**52.2**	**E**	**43.2**	B*	6.9	B*	9.1
6. Doherty Drive/Piper Park****	**D**	**24.1**	C	19.6	**D**	**25.8**	**D**	**21.8**
7. Doherty Drive/Riviera Circle	**E**	**36.6**	**E**	**41.1**	**E**	**40.0**	**E**	**44.9**
8. Lucky Drive/Doherty Drive	C	12.8	B	9.2	C	14.6	B	9.5
9. Lucky Drive/Fifer Avenue	C	12.1	C	14.1	C	12.2	C	15.5

Notes: Delay is in average seconds per vehicle
LOS = Level of Service
* Assumes intersection would be signalized with implementation of Specific Plan.
** Exceeds 120 seconds delay
*** The improvement ot the intersection of Wornum Drive/Tamal Vista Boulevard has been under construction and may be completed by the end of 2003.
**** Assumes no signalization improvements under either scenario.
Bold = unacceptable operations
NA = Not available
Source: Wilbur Smith Associates (May 2003)

Impact **4.7-8**

Unacceptable Cumulative Level of Service at Doherty Drive/Riviera Circle/Redwood High School Intersection. *Traffic generated by the Specific Plan would contribute to unacceptable operating conditions (LOS E) at this unsignalized intersection during the a.m. and p.m. peak hour. The intersection would operate at LOS E with or without the project, but would be exacerbated by Specific Plan development. This impact is considered* ***significant****.*

During the a.m. peak hour, the Doherty Drive/Riviera Circle/Redwood High School unsignalized intersection is projected to worsen and operate at unacceptable LOS E under cumulative conditions with increases in average vehicle delay of more than 3.8 seconds at this intersection. This condition would be expected to occur with or without traffic generated by development that may occur within the Specific Plan area. Traffic generated by development in the Specific Plan area, however, would add additional traffic at this intersection, resulting in increases in average vehicle delay. During both the a.m. and p.m. peak hour, cumulative traffic would result in unacceptable LOS E conditions. This unacceptable level would remain with or without the Specific Plan. This impact is considered significant.

Impact **4.7-9**

Unacceptable Cumulative Level of Service at East Ward Street/Magnolia Avenue Intersection. *Development in the Specific Plan area would contribute additional traffic volume to an intersection that would operate at unacceptable LOS F with or without the Specific Plan. This impact is considered* ***significant.***

During both the weekday a.m. and p.m. peak hours, this signalized intersection is projected to operate at an unacceptable LOS F under conditions with or without Specific Plan-generated traffic, with increases in average vehicle delay. This impact is considered significant.

Impact **4.7-10**

Unacceptable Cumulative Level of Service at King Street/Magnolia Avenue Intersection. *Development in the Specific Plan area would contribute additional traffic volume to an intersection that would operate at unacceptable LOS with or without the Specific Plan. This impact is considered* ***significant****.*

During the weekday a.m. peak hour this unsignalized intersection would worsen from unacceptable LOS D to LOS E under Existing Plus Cumulative Plus Specific Plan conditions, with increases in average vehicle delay of more than 3.6 seconds. During the p.m. peak hour, this intersection would continue to operate at unacceptable LOS F. This impact is considered significant.

Impact **4.7-11**

Unacceptable Cumulative Level of Service at Wornum Drive/Tamal Vista Boulevard Intersection. *With or without the development that may occur in the Specific Plan area, this intersection is projected to operate at unacceptable LOS F during the p.m. peak hour. This impact is considered* ***significant****.*

During the p.m. peak hour this signalized intersection would operate at unacceptable LOS F with and without traffic generated by the development that may occur in the Specific Plan. The Specific Plan would result in increases in average vehicle delay of up to 10.7 seconds at this intersection. This impact is considered significant.

Impact **4.7-12**

Unacceptable Cumulative Level of Service at the Fifer Avenue/Tamal Vista Boulevard Intersection. *Development in the Specific Plan area would contribute additional traffic volume to an intersection that would operate at unacceptable LOS E without the Specific Plan and at unacceptable LOS F with the Specific Plan. This impact is considered* ***significant.***

This signalized intersection is projected to operate at unacceptable LOS E without the Specific Plan and LOS F with the Specific Plan during the p.m. peak hour. The Specific Plan would result in increases in average vehicle delay of up to 17.3 seconds at this intersection. This impact is considered significant.

Impact **4.7-13**

Unacceptable Cumulative Level of Service at Doherty Drive/Piper Park Intersection. *With development that may occur in the Specific Plan area, this unsignalized intersection would operate at unacceptable LOS during the a.m. and p.m. peak hours. This impact is considered* ***significant****.*

During the weekday a.m. peak hour, this unsignalized intersection is projected to operate at an unacceptable LOS D with or without Specific Plan-generated traffic. The Specific Plan would result in increases in average vehicle delay of up to 2.2 seconds at this intersection. The p.m. peak hour would worsen from LOS C to unacceptable LOS D with the Specific Plan. This impact is considered significant.

4.7.3 MITIGATION MEASURES

PROJECT-LEVEL MITIGATION MEASURES

No mitigation measures are required for the following less-than-significant impacts.

4.7-4: Access and Circulation

4.7-5: Pedestrian and Bicycle Circulation

4.7-6: Increase in Parking Demand

The following mitigation measures are recommended for significant impacts.

Impact **4.7-1** mitigation

Unacceptable Level of Service at Doherty Drive/Riviera Circle/Redwood High School Intersection.

Install Traffic Signal at Doherty Drive/Riviera Circle/Redwood High School.

Installation of a traffic signal will establish an acceptable LOS to the Doherty Drive/Riviera Circle/Redwood High School intersection. A traffic signal shall be installed at this intersection. The City has a Traffic Impact Fee (TIF), §18.15 of the City Municipal Code. Installation of a traffic signal at the Doherty Drive/Riviera Circle/Redwood High School intersection is a project presently included within the City's TIF. Payment of the fee is required of all new development and is assessed by the City upon the issuance of a building permit. With implementation of this measure, the intersection would be expected to operate at acceptable LOS B during the a.m. and p.m. peak hour.

Impact 4.7-2 mitigation

Unacceptable Level of Service at East Ward Street/Magnolia Avenue Intersection.

Remove Parking and Add Southbound and Westbound Left Turn Lanes at East Ward Street/Magnolia Avenue.

Additional capacity shall be created at the East Ward Street/Magnolia Avenue intersection by removing approximately four parking spaces from the west curb face of Magnolia Avenue directly north of East Ward Street. Removal of these spaces would allow for the striping of a southbound left turn bay. In addition, approximately four parking spaces shall be removed from the south curb face of East Ward Street east of Magnolia Avenue to create space for a westbound left turn bay. Removal of parking and addition of the left turn lanes is a project presently included within the TIF. Payment of the fee is required of all new development and is assessed upon the issuance of a building permit. There can be a delay between the payment of required fees and the construction and completion of an identified improvement. The City shall monitor new construction to assure that traffic improvements are installed in a timely manner to mitigate impacts.

Under Existing Plus Specific Plan conditions and upon completion of the proposed mitigation measure, the intersection would operate acceptably at LOS C during the a.m. and p.m. peak hours.

Impact 4.7-3 mitigation

Unacceptable Level of Service at King Street/Magnolia Avenue Intersection.

Install Traffic Signal at King Street/Magnolia Avenue.

A traffic signal shall be installed at the King Street/Magnolia Avenue intersection. Installation of this traffic signal is a project presently included within the TIF. Payment of the fee is required of all new development and is assessed by the City upon the issuance of a building permit. Upon installation of the traffic signal, the King Street/Magnolia Avenue intersection is projected to operate acceptably at LOS B during the a.m. peak hour and LOS C during the p.m. peak hour. The City shall monitor new construction to assure that the traffic signal is installed in a timely manner to mitigate the impact.

Impact 4.7-7 mitigation

Construction-Related Traffic.

Prepare and Implement Detailed Construction Traffic Control Plan.

The City shall include the following new policy in the Specific Plan:

New Policy: Construction contractor(s) in the Specific Plan area shall be required to prepare a detailed construction management plan(s) prior to beginning work within the Specific Plan area. The plans shall provide information related to duration of the construction, size of work force, average

daily truck deliveries, proposed truck routes to and from the construction site, and hours/days of operation. The plans shall include traffic control measures specific to each construction site and vicinity; such measures may include the following:

< Preparation and filing of a detailed construction management plan by the contractor.

< Provision of on-site staging area for all equipment and material deliveries

< Provision of on-site parking for construction work force.

< To the extent possible, control of delivery truck activity to off-peak periods.

< Use of a flag person as needed during the heaviest construction periods.

CUMULATIVE MITIGATION MEASURES

Impact **4.7-8** mitigation

Unacceptable Cumulative Level of Service at Doherty drive/Riviera Circle/Redwood High School Intersection.

Implement Mitigation Measure 4.7-1, Install Traffic Signal at Doherty Drive/Riviera Circle/Redwood High School.

Mitigation Measure 4.7-1 shall be implemented at Doherty Drive/Riviera Circle/Redwood High School intersection as described above under Project-level Mitigation Measures. Under the Existing Plus Cumulative Plus Specific Plan conditions and upon completion of the proposed mitigation measures, the intersection would operate at LOS C and B, respectively, during the A.M. and P.M. peak hours. This mitigation measure would reduce the impact to a level that is less than significant.

Impact **4.7-9** mitigation

Unacceptable Cumulative Level of Service at East Ward Street/Magnolia Avenue Intersection.

Expand Mitigation Measure 4.7-2 to Add an Additional Northbound Left Turn Lane at King Street/Magnolia Avenue.

A northbound left turn lane shall be created at this intersection with the removal of approximately two to three parking spaces from the east curb face of Magnolia Avenue located directly south of East Ward Street. Under Existing Plus Cumulative Plus Specific Plan conditions and upon completion of the proposed mitigation measure the intersection would operate acceptably at LOS C during the a.m. and p.m. peak hours. This mitigation would reduce the impacts to levels that are less than significant.

Impact 4.7-10 mitigation

Unacceptable Cumulative Level of Service at King Street/Magnolia Avenue Intersection.

Implement Mitigation Measure 4.7-3, Install Traffic Signal at King Street/Magnolia Avenue.

Mitigation Measure 4.7-3, which is applicable to the intersection of King Street/Magnolia Avenue, shall be implemented as described above under Project-level Mitigation Measures. Under the Existing Plus Cumulative Plus Specific Plan conditions and upon completion of the proposed mitigation measures, the intersection would operate at LOS B and C, respectively, during the A.M. and P.M. peak hours. This mitigation measure would reduce the impact to a level that is less than significant.

Impact 4.7-11 mitigation

Unacceptable Cumulative Level of Service at Wornum Drive/Tamal Vista Boulevard Intersection.

Reconfigure Northbound Approach to Provide Dedicated Right Turn and Through Lane at Wornum Drive/Tamal Vista Boulevard.

The City shall coordinate with the City of Corte Madera to ensure the completion of a dedicated northbound right turn lane by widening the northbound approach on Tamal Vista Boulevard. Implementation of this mitigation measure may make it necessary to restrict left turn movements in and out of the North Sandpiper Circle/Tamal Vista Boulevard intersection. Upon implementation of this mitigation measure, the intersection is projected to operate acceptably at LOS C during the a.m. and p.m. peak hours. This mitigation would reduce the impacts to levels that are less than significant.

Impact 4.7-12 mitigation

Unacceptable Cumulative Level of Service at Fifer Avenue/Tamal Vista Boulevard Intersection.

Optimize and Coordinate Signals at Fifer Avenue/Tamal Vista Boulevard.

This T-intersection fully utilizes the existing right-of-way, and therefore the opportunity for widening and other physical changes is constrained. The City shall coordinate with the City of Corte Madera to ensure a change in the current traffic signal phasing and timing at this intersection in order to provide more green light time to the heaviest projected traffic movements. Currently, the northbound and southbound traffic travel concurrently after the northbound left turns are completed. In the proposed phasing plan the northbound and southbound traffic would travel exclusively of each other (split-phase) giving additional time to eastbound right turns (320 plus a.m. and p.m. peak hour vehicles). Implementation of this measure will require coordination with the signalized intersection to the south at Wornum Drive/Tamal Vista Boulevard. Upon implementation of this mitigation measure, the intersection is projected to operate acceptably at LOS C during the a.m. peak hour and LOS D during the

p.m. peak hours. This mitigation would reduce the impacts to levels that are less than significant.

Impact **4.7-13** mitigation

Unacceptable Cumulative Level of Service at Doherty Drive/Piper Park Intersection.

Install Traffic Signal at Doherty Drive/Piper Park.

Installation of a traffic signal at this intersection would result in an acceptable level of service operations following development in the Specific Plan area. With implementation of this measure, the intersection would be expected to operate at acceptable LOS B during the a.m. and p.m. peak hour. This mitigation would reduce the impacts to levels that are less than significant.

However, Mitigation Measure 4.7-13 would not likely be implemented at this location based on a number of objective criteria and engineering best practice measures. The intersection fails to meet the City threshold of LOS C or better for unsignalized intersections, based solely on the delay that would be experienced by the southbound approach vehicles. This is less than 20 vehicles per peak hour under all analysis scenarios.

Many unsignalized intersections in both urban and suburban settings operate with failing minor approach streets. The criteria used to decide the appropriateness of a traffic signal covers a wide range of safety and quantitative data. One measure is found in the Caltrans publication, Traffic Manual–Traffic Signals & Lighting, Chapter 9, July 1996. The manual provides 11 Traffic Signal Warrants based on minimum vehicle volumes, pedestrian volumes, location (school area) and intersection accident history among others.

A review of the Caltrans warrants indicates that the intersection at Doherty Drive/Piper Park would not meet the peak hour volume warrant (Warrant 1) and would not likely meet any of the other 10 warrants.

4.7.3 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Following implementation of the above mitigation measures, no significant impacts on traffic and circulation would remain (see Table 4.7-14). If, for the reason cited above, the City chooses not to implement mitigation at the Doherty Drive/Piper Park Intersection, this impact would be significant and unavoidable.

Table 4.7-14
Level of Service After Mitigation

Intersections	Existing Plus Specific Plan (no mitigation)				Existing Plus Specific Plan (with mitigation)			
	a.m. Peak Hour		p.m. Peak Hour		a.m. Peak Hour		p.m. Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
3. East Ward Street/Magnolia Avenue	**E**	**41.1**	**F**	**	B	13.2	C	15.8
4. King Street/Magnolia Avenue	**D**	**22.7**	**F**	**66.5**	B	8.2	C	17.2
7. Doherty Drive/Riviera Circle	**D**	**26.7**	**E**	**32.2**	B	7.0	A	4.6
Intersections	Existing Plus Cumulative Plus Specific Plan (no mitigation)				Existing Plus Cumulative Plus Specific Plan (with mitigation)			
	a.m. Peak Hour		p.m. Peak Hour		a.m. Peak Hour		p.m. Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
3. East Ward Street/Magnolia Avenue	**F**	**	**F**	**	C	24.3	C	22.1
4. King Street/Magnolia Avenue	**E**	**30.9**	**F**	**	B	10.1	C	24.7
6. Doherty Drive/Piper Park	**D**	**24.1**	C	19.6	A	0.3	A	1.7
7. Doherty Drive/Riviera Circle	**E**	**36.6**	**E**	**41.1**	C	22.9	B	6.1
10. Fifer Avenue /Tamal Vista Boulevard	C	23.5	**E**	**57.1**	C	16.4	C	21.2
11. Wornum Drive /Tamal Vista Boulevard	D	26.3	**F**	**81.2**	B	6.4	B	10.3

Notes: Delay is in average seconds per vehicle
LOS = Level of Service
** = Exceeds 120 seconds delay
Bold = unacceptable operations
Source: Wilbur Smith Associates (May 2003)

4.8 NOISE

Environmental noise impacts resulting from implementation of the Specific Plan are evaluated in this section. Potential noise impacts associated with implementation of the Specific Plan include the compatibility of the proposed permitted uses with the onsite noise environment, the potential for increased noise levels in existing noise sensitive areas surrounding the Specific Plan area, and the potential for increased traffic noise and vibration along the streets serving the Specific Plan area.

4.8.1 EXISTING SETTING

BACKGROUND INFORMATION ON NOISE

Noise may be defined as unwanted sound, which is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its pitch or its loudness. Pitch is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. Loudness is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave. In addition to the concepts of pitch and loudness, there are several noise measurement scales that are used to describe noise in a particular location. A decibel (dB) is a unit of measurement that indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a tenfold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10-decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities (see Table 4.8-1).

There are several methods of characterizing sound. The most common in California is the A-weighted sound level (dBA). This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 4.8-2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be used. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events or arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources such as roadways and airports. The accuracy of the predicted models depends upon the distance of

the receptor from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Table 4.8-1
Definitions of Acoustical Terms

Term	Definitions
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency (Hertz [Hz])	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level (dBA)	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted, unless reported otherwise.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Equivalent Noise Level (L_{eq})	The average A-weighted noise level during the measurement period.
Community Noise Equivalent Level (CNEL)	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7 p.m. to 10 p.m. and after addition of 10 decibels to sound levels measured at night between 10 p.m. and 7 a.m.
Day/Night Noise Level (L_{dn})	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured at night between 10 p.m. and 7 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted noise levels during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.
Source: Illingworth & Rodkin, Inc., Acoustical Engineers, 2003	

Table 4.8-2 Typical Sound Levels Measured in the Environment and Industry			
At a Given Distance from Noise Source	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Impression
	140		
Civil Defense Siren (100')	130		
Jet Takeoff (200')	120		Pain Threshold
	110	Rock Music Concert	
Diesel Pile Driver (100')	100		Very Loud
	90	Boiler Room	
Freight Cars (50')		Printing Press Plant	
Pneumatic Drill (50')	80		
Freeway (100')		In Kitchen with Garbage Disposal Running	
Vacuum Cleaner (10')	70		Moderately Loud
	60	Data Processing Center	
Light Traffic (100')	50	Department Store	
Large Transformer (200')			
	40	Private Business Office	Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing
	0		
Source: Illingworth & Rodkin, Inc., Acoustical Engineers, 2003			

Because sensitivity to noise increases during the evening and at night (excessive noise interferes with the ability to sleep), 24-hour descriptions have been developed that incorporate artificial noise penalties added to quiet-time noise events. The CNEL is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to the evening (7 p.m.–10 p.m.) and a 10 dB addition to nocturnal (10 p.m.–7 a.m.) noise levels. The L_{dn} is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this 3-hour period are grouped into the daytime period.

VIBRATION

Ground vibration from passing vehicles on surface roadways consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is the peak particle velocity (PPV) and another is the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or

negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. While the RMS vibration velocity amplitudes have been used by some regulatory agencies (particularly the Federal Transportation Authority) to evaluate human response to transportation-related groundborne vibration, Caltrans, citing internal experience and other studies, has adopted a PPV descriptor with units of millimeters per second (mm/sec) or inches per second (in/sec) to evaluate transportation-generated vibration for building damage and human complaints (Caltrans 2002b).

Building damage and people's response to ground vibration caused by surface transportation sources has been best correlated to the vertical velocity component of ground motion. The Transport and Road Research Laboratory in England has studied the reactions of people to and the effects on buildings produced by continuous transportation-related vibration levels (vibration produced by traffic is considered continuous in these studies). The conclusions reached are reproduced in Table 4.8-3.

Table 4.8-3
Reaction of People to and Damage to Buildings from Continuous Vibration Levels

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.006 to 0.019	Threshold of perception; possibility of intrusion	Damage of any type unlikely
0.08	Vibration readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Continuous vibration begins to annoy people	Virtually no risk of architectural damage to normal buildings
0.20	Vibration annoying to people in buildings	Risk of architectural damage to normal dwellings such as plastered walls or ceilings
0.4 to 0.6	Vibration considered unpleasant by people subjected to continuous vibration	Architectural damage and possibly minor structural damage

Source: Whiffen and Leonard 1971

The annoyance levels shown in Table 4.8-3 should be interpreted with care because vibrations may be found to be annoying at much lower levels than those shown, depending on the level of activity or inactivity of the individual. Elderly, retired people or others staying mostly at home, people reading or studying in a quiet environment, and people involved in vibration-sensitive activities are examples of people potentially annoyed by vibration at very low levels. To these and other sensitive individuals, even vibrations at the threshold of perception can be annoying.

Frequently, low-level traffic vibrations can cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. This rattling sound can give rise to vibration complaints even though there is very little risk of actual structural damage. In high-noise environments, which are more prevalent where groundborne vibration approaches perceptible

levels, this rattling phenomenon may also be produced by loud airborne environmental noise, causing induced vibration in exterior doors and windows.

REGIONAL SETTING

Regional noise sources that influence the ambient noise environment in the Specific Plan area include traffic noise from U.S. 101, general aviation activity from nearby airfields, and jet aircraft overflights associated with air traffic to Oakland, San Jose, and San Francisco International Airports. These sources contribute to background noise levels in the Specific Plan area; they are not significant when compared to local sources of noise.

LOCAL SETTING

The major noise sources in the vicinity of the Specific Plan area are traffic along Doherty Drive and Magnolia Avenue. Secondary noise sources include mechanical equipment on the western portion of the Specific Plan area, including ventilation equipment and loading dock noise associated with Albertsons market and exhaust fans and other mechanical equipment mounted on the rooftops of restaurants. Audible on the Specific Plan area, but not a significant noise generator, is the sound of children playing at Redwood High School and Hall Middle School, and on the Piper Park playing fields.

Noise Contours

The Noise Element of the Larkspur General Plan includes noise projections for the year 1995. The 60 L_{dn} noise contour from Magnolia Avenue is confined to the commercial area adjacent to Magnolia Avenue. The 60 L_{dn} contour from Doherty Drive extends into Subareas 2 and 3. The General Plan noise contours show that the 1995 60 L_{dn} contour is about 210 feet from the center of Doherty Drive. To confirm these data, a 24-hour measurement was conducted along Doherty Drive at the bridge across Larkspur Creek (Location LT1 in Exhibit 4.8-1). The measurement was made at a distance of 39 feet from the center of Doherty Drive. The L_{dn} measured on Tuesday–Wednesday, November 23–24, 1999, was 69 dBA. Because noise levels recede proportionally with distance from the road, one can calculate the existing noise level at greater distances. Based on the noise measurement data, an L_{dn} of 60 dBA would be reached at a distance of 160 feet from the center of Doherty Drive. This means the noise levels are slightly (2 dBA) lower in Subareas 2 and 3 than projected in the Noise Element of the Larkspur General Plan.

Noise levels are lower in portions of Subarea 3 that are located farther from Doherty Drive and Magnolia Avenue. Short-term (10- to 20-minute duration) measurements were conducted on the afternoon of November 24, 1999, at four locations shown in Exhibit 4.8-1. Short-term measurements were made at these locations because of the presence of a constant equipment noise source (locations S1 and S2), or the relative quiet of the immediate area of Subarea 3 with the major noise source being distant traffic (locations S3 and S4). Locations S1 and S2 were located at the fence line adjacent to the commercial area of Subarea 2. Location S1 was directly

Exhibit 4.8-1

behind the Easy Street Café, and the major noise source was an exhaust fan. The noise level was measured at 56 dBA. Assuming that this exhaust fan operates from 6 a.m. until 11 p.m., the L_{dn} at this location would be 58 dBA. Location S2 was adjacent to the Albertsons loading dock area. During the time the measurements were taken, there were no trucks or activity at the loading dock area. The major noise source was mechanical equipment on the Albertsons roof, with an average measured noise level of 51 dBA. Typically, maximum instantaneous noise levels generated by trucks being unloaded and loaded, and then pulling out of the loading area, would be expected to range from 75 to 80 dBA at a similar distance. During loading operations the L_{dn}, which is averaged over a 24-hour period, at this location would be expected to be approximately 57 dBA.

Location S3 was located at the south-central edge of the Specific Plan area near the creek. At this location the major noise source was traffic on Meadowood Drive. The L_{eq} was measured at 44 dBA. The L_{dn} at this location is about 50 dBA. In the absence of traffic noise emanating from Meadowood Drive, the background noise levels are very quiet and more typical of a rural area than a suburban area. Noise levels at Location S4 at the southeastern corner of the Specific Plan area were dominated by distant traffic on U.S. 101 and birds. The average noise level measured in the afternoon at this location was 50 dBA, and the L_{dn} at this location is about 55 dBA.

Noise and Vibration from Doherty Drive Traffic

During the scoping session for the previous Draft EIR residents living along Doherty Drive in the vicinity of the "S" curve near Redwood High School raised concerns regarding noise and vibration caused by traffic on Doherty Drive. In response to the residents' concerns, the City requested an evaluation of the potential for increased noise and vibration levels outside of the homes at this location. Because field measurements constitute the most accurate method of accounting for the many variables that can influence traffic-induced vibration, (e.g., soil content, soil conditions) noise and vibration measurements (LT2 through LT4) were conducted at three residences (690 Riviera Circle, 76 Via La Brisa, and 71 Riviera Circle). Groundborne and structureborne vibration measurements were made at these properties. Twenty-four-hour exterior noise measurements were conducted between May 7, 2002, and May 9, 2002. (See Appendix G for photographs of the measurement equipment in place at these properties.)

Noise Measurements

In summary, the noise environments at all the residences along Doherty Drive were found to vary significantly as a result of the traffic flow characteristics on the adjacent portion of Doherty Drive. Another notable variation in the measured sound levels was caused by the noise shielding provided by the existing property line fences, which were higher and more effective at both 76 Via La Brisa and 71 Riviera Circle than at 690 Riviera Circle (Table 4.8-4). Noise measurement locations and site characteristics are as follows:

< *690 Riviera Circle (LT2):* The noise measurement was made in a tree in the yard at approximately 6 feet above grade and 25 feet from the centerline of Doherty Drive between 11 a.m. on May 7 and 11 a.m. on May 8, 2002. Traffic passing on Doherty Drive was stopping and starting at the adjacent four-way stop intersection at Riviera Circle and Doherty Drive. The property line fence between the yard and Doherty Drive was constructed of wood to a height of approximately 5 feet above rear yard grade. The tops of trucks and large vehicles on the roadway were visible over the top of this fence.

< *76 Via La Brisa (LT3):* The noise measurement was made in a tree at approximately 10 feet above grade at the setback of the home's facade, which is approximately 35 feet from the centerline of Doherty Drive, between 1 p.m. on May 8 and 1 p.m. on May 9, 2002. Traffic passing on Doherty Drive generally traveled at constant speeds. The property line fence between the yard and Doherty Drive was constructed of wood to a height of approximately 6 to 7 feet above rear yard grade with a high degree of foliage cover.

< *71 Riviera Circle (LT4):* The noise measurement was made on a patio support post approximately 10 feet above grade approximately 35 feet from the centerline of Doherty Drive, between 12 noon on May 8 and 12 noon on May 9, 2002. Traffic passing on Doherty Drive generally traveled at constant speeds, but was observed to back up occasionally because of crossing traffic from Redwood High School. The property line fence between the yard and Doherty Drive was constructed of wood to a height of approximately 9 feet above rear yard grade.

The results of the noise measurements at these locations are presented in Table 4.8-4.

Table 4.8-4
Results of Noise Measurements at 690 Riviera Circle, 76 Via La Brisa, and 71 Riviera Circle

Measurement (in dBA)	Address/Measurement Location		
	690 Riviera Circle (LT2)	76 Via La Brisa (LT3)	71 Riviera Circle (LT4)
Daytime Average L_{eq} Range	60–67	51–56	50–57
Average Daytime L_{eq}	64	55	55
Nighttime Average L_{eq} Range	46–63	40–52	38–52
Average Nighttime L_{eq}	56	48	47
Maximum Hourly Noise Level Range	68–81	68–77	57–87
Average Maximum Noise Level	77	67	71
Average Day-Night L_{dn}	65	56	56

Vibration Measurements

To measure groundborne and structureborne vibration levels, continuous overnight unmanned measurements were made at 690 and 71 Riviera Circle and short-term manned vibration measurements were made at 76 Via La Brisa. At each of the locations accelerometers were firmly affixed to concrete walkways to measure ground vibration. At 690 Riviera Circle

(LT2) the structure level accelerometer was firmly affixed to the ledge of a window seat in the interior of the home. At 76 Via La Brisa (LT3) and 71 Riviera Circle (LT4) the structure level accelerometer was firmly affixed to exterior decking within 1 foot of the connection to the home's structure. (See Appendix G for photographs of the measurement locations.)

The instrumentation used to conduct the vibration measurements was a Larson Davis Laboratories Human Vibration Meter model 100 (HVM100) equipped with a seismic grade, low noise accelerometer (PCB, Model 393B31, 10 V/g). This system is capable of measuring accurately very low vibration levels (down to 1 μg). To enable continuous overnight unmanned measurements at 690 and 71 Riviera Circle, the vibration meter was set up to measure both PPV levels and 10-second RMS velocity levels. For the short-term vibration measurements at 76 Via La Brisa the RMS averaging time was changed to 1 second.

Continuous vibration measurements were made at 690 Riviera Circle over a 24-hour period between 11 a.m. on May 7 and 11 a.m. on May 8, 2002 and at 71 Riviera Circle over a continuous 24-hour period between 12 noon on May 8 and 12 noon on May 9, 2002. During these periods simultaneous noise measurements were made with exceedance levels set at 75 dBA to establish loud noise events such as trucks passing by on Doherty Drive.

Short-term, manned, spot vibration measurements were made at 76 Via La Brisa on the afternoon of May 9, 2002, during individual truck and bus pass-bys. The results of the vibration measurements at these locations are presented in Table 4.8-5.

Table 4.8-5
Results of Vibration Measurements at 690 Riviera Circle, 76 Via La Brisa, and 71 Riviera Circle

Measurement	Address/Measurement Location		
	690 Riviera Circle (LT2)	76 Via La Brisa (LT3)	71 Riviera Circle (LT4)
Sound Levels of Passing Trucks (dBA)	76-81	68-77	73-78
Maximum Exterior Groundborne PPV Vibration Levels (in/sec)	0.031	0.006	0.038
Maximum Structureborne PPV Vibration Levels (in/sec)	0.027	0.005	0.031
Traffic Events Producing Noise Levels Exceeding 75 dBA	70+	2	6
Groundborne or Structureborne PPV Measurements Reaching Readily Perceptible Levels	None	None expected[1]	None
General PPV Levels (in/sec)	< 0.01	< 0.01	< 0.01

Note: [1] Based on short-term, manned, spot noise and vibration measurements and on comparison with continuous noise and vibration measurements.
Source: Illingworth & Rodkin, Inc., Acoustical Engineers

Conclusions

The following conclusions can be drawn from the noise and ground vibration information collected at the existing residences along Doherty Drive:

1. Noise levels appear to have been reduced significantly outside of the two homes where higher fences have been constructed (76 Via La Brisa and 71 Riviera Circle). Higher fences appear to be effective in reducing noise levels; however, even with fences in place, the L_{dn} was measured at 56 dBA, or 1 dBA over the City's goal for outdoor noise levels.

2. Because of the relatively low groundborne and structureborne vibration levels measured, the perceived vibrations in the homes are most likely caused by high noise levels produced by passing trucks or high-volume car stereos inducing light elements into secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. This rattling sound can give rise to vibration complaints even though there is very little risk of actual structural damage. The peak ground vibration levels measured are in the category where vibration can be intrusive, but would not be expected to cause building damage of any type.

These conclusions were confirmed by a vibration study conducted for Doherty Drive in 2000 by Municon Consultants as cited by Miller Pacific Engineering Group (see Appendix C-3). This study also concluded that vibration along Doherty Drive near Redwood High School is within perceptible range for people but well below the threshold for causing damage to structures. This study further states that vibrations are somewhat reduced when smooth pavements replace rough asphalt.

REGULATORY SETTING

The Noise Element of the Larkspur General Plan identifies noise and land use compatibility standards for various land uses and contains goals and policies to control noise levels in Larkspur. The stated goal in the Noise Element of the General Plan is to reduce the adverse effects of noise on persons living or working in Larkspur. The Noise Element sets forth a standard for an outdoor noise level not in excess of an L_{dn} of 55 dBA and an indoor noise level not in excess of 45 dBA for residential development. For nonresidential projects, the noise and land use compatibility standards for outdoor noise exposure are shown in Exhibit 4.8-2.

The Noise Element also requires that projects in the city be evaluated for their potential to create noise impacts. However, the Noise Element does not contain quantitative standards for judging how much of an increase in noise would be deemed significant. According to the EPA, a change in noise level of at least 5 dB is required before any noticeable change in community response would be expected (EPA 1971). For the purposes of this EIR, an ambient noise level increase of 5 dBA or more would be considered a substantial increase.

Exhibit 4.8-2

4.8.2 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Implementation of the Specific Plan would have a significant impact if it were to result in:

< exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

< exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;

< a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

< a substantial temporary or periodic increase in ambient noise levels in the vicinity above levels existing without the project;

< exposure of people residing or working in the project area to excessive noise levels, for a project located within an airport land use plan, or where such a plan has not been adopted, located within 2 miles of a public airport or public use airport;

< exposure of people residing or working in the project area to excessive noise levels, for a project within the vicinity of a private airstrip.

The only criteria applicable to the Specific Plan are the first four, as the Specific Plan area is not located in close proximity to either a private or public airport. Vibration impacts are considered significant if ground vibration levels as a result of the Specific Plan would exceed a PPV of 0.08 in/sec, a level at which structural damage would not occur. Projected traffic noise levels were modeled based on data and traffic scenarios from the traffic study conducted for the Specific Plan; definitions of traffic scenarios, such as Existing, Existing Plus Specific Plan, Existing Plus Cumulative (No Build), and Existing Plus Cumulative Plus Specific Plan, are in Section 4.7, Traffic and Circulation, of this EIR.

PROJECT-LEVEL IMPACTS

Impact **4.8-1**

Incompatibility of Noise Sensitive Land Uses with Existing Noise Environment.
Depending on the actual development, residential land uses could be incompatible with the existing noise environment. This impact is considered ***potentially significant****.*

The Specific Plan would permit the development of multifamily residential uses in all three subareas and single-family residential uses in Subarea 3. Depending on the type and location of development within the Specific Plan Area, residential and other noise sensitive land uses could be incompatible with the existing noise environment. This impact is considered potentially significant.

Impact **4.8-2**

Increased Noise Levels during Construction. *Noise levels from construction activities could occasionally be annoying and interfere with outdoor activity. This impact is considered* ***potentially significant****.*

At times construction in the Specific Plan area would cause noise levels at adjacent residential development to increase. During the time when construction takes place within 1,000 feet of residences, noise levels could occasionally be annoying and interfere with outdoor activity. This impact is considered potentially significant.

Impact **4.8-3**

Increase in Traffic Noise. *Noise levels would generally increase by less than 1 dBA along Magnolia Avenue, Doherty Drive, and other Specific Plan area roadways as a result of traffic generated by Specific Plan development. Noise levels at residential uses along Doherty Drive and Magnolia Avenue currently exceed an Ldn of 55 dBA, which is considered the "normally acceptable" limit for noise at residential uses within Larkspur. However, implementation of the Specific Plan, by itself, would not substantially increase noise levels and would not cause the noise levels to exceed this threshold of significance. This impact is considered* ***less than significant****.*

Section 4.7, Traffic and Circulation, of this Draft EIR indicates that traffic volumes would increase as a result of implementation of the Specific Plan. To determine the increase in noise levels along roadways in the Specific Plan area, the increase from existing to existing-plus-Specific Plan a.m. and p.m. peak-hour traffic volumes was analyzed. Traffic volumes would increase by 0–12%, except on Meadowood Drive east of Magnolia Avenue. Average noise levels produced by traffic generally increase at a rate of 3 dB per doubling of volumes or 10 x log(n), where n equals the percentage increase in the volume of traffic, with the same or similar makeup of vehicles on a roadway (i.e., percentage of autos, trucks, buses, etc.). Table 4.8-6 provides a summary of percentage increase and dB increase on project roadway segments.

Considering that the makeup of the traffic would remain essentially constant, a 0–12% increase in traffic volumes would result in an increase in average traffic noise levels of 0.5 dB or less. Traffic on Meadowood Drive east of Magnolia Avenue is projected to increase by up to 142% of existing volumes under the existing-plus-Specific Plan scenario. This would produce an increase in the average traffic noise level of nearly 4 dB, which is not considered to be an audible noise level increase in terms of community noise perception. Furthermore, Meadowood Drive currently has low traffic volumes, and this increase in traffic noise would not cause noise levels to exceed an L_{dn} of 55 dBA.

A pair of conclusions may be reached by this analysis. At homes along Doherty Drive, Magnolia Avenue, and others in the Specific Plan area, noise levels would continue to exceed the City's noise and land use compatibility guidelines. However, implementation of the Specific Plan, by itself, would not cause the existing noise levels to substantially increase or to exceed the thresholds of significance discussed above. For this reason, this impact is considered less than significant.

Table 4.8-6 Traffic and Noise Level Increases from Existing Scenario to Existing Plus Specific Plan Scenario				
Roadway Segment	A.M. Peak Hour		P.M. Peak Hour	
	Percentage Increase in Traffic	Noise Level Increase (dB)	Percentage Increase in Traffic	Noise Level Increase (dB)
Magnolia Avenue Northwest of Bon Air Road	4%	0.2	7%	0.3
Magnolia Avenue Doherty Drive to Bon Air Road	4%	0.2	6%	0.2
Magnolia Avenue Ward Street/Meadowood to Doherty Drive	6%	0.3	12%	0.5
Magnolia Avenue King Street/Monte Vista to Ward Street/Meadowood Drive	4%	0.2	7%	0.3
Magnolia Avenue South of King Street/Monte Vista Avenue	5%	0.2	8%	0.3
Doherty Drive Magnolia Avenue to Larkspur Plaza	6%	0.3	9%	0.4
Doherty Drive Larkspur Plaza to Piper Park	6%	0.2	9%	0.4
Doherty Drive Piper Park to Rivera Circle	5%	0.2	9%	0.4
Doherty Drive Riviera Circle to East Riviera Circle	6%	0.2	8%	0.3
Doherty Drive East Riviera Circle to Lucky Drive	6%	0.3	9%	0.4
Lucky Drive East Riviera Circle to Fifer Avenue	5%	0.2	8%	0.3
Lucky Drive North of Fifer Avenue	5%	0.2	8%	0.3
Fifer Avenue Lucky Drive to Tamal Vista Boulevard	4%	0.2	8%	0.3
Fifer Avenue Tamal Vista Boulevard to U.S. 101	5%	0.2	5%	0.2
Tamal Vista Boulevard Fifer to Wornum Drive	2%	0.1	4%	0.2
Tamal Vista Boulevard South of Wornum Drive	0%	0.0	0%	0.0
Bon Air Road North of Magnolia Avenue	0%	0.0	0%	0.0
East Ward Street West of Magnolia Avenue	0%	0.0	0%	0.0
Meadowood Drive East of Magnolia Avenue	75%	2.4	142%	3.8
King Street West of Magnolia Avenue	0%	0.0	0%	0.0
Monte Vista East of Magnolia Avenue	0%	0.0	0%	0.0
Larkspur Plaza North of Doherty Drive	0%	0.0	0%	0.0
Riviera Circle North of Doherty Drive	0%	0.0	0%	0.0
Wornum Drive East of Tamal Vista Boulevard	2%	0.1	5%	0.2
Source: Illingworth & Rodkin, Inc., Acoustical Engineers, 2003				

Impact **4.8-4**

Potential Increase in Vibration. *The maximum PPV measured at any of the three homes evaluated was 0.038 in/sec, well below the applicable threshold of significance. The traffic generated by development within the Specific Plan area is not expected to significantly increase the existing level of vibration produced at homes in the plan area. This impact is considered* ***less than significant****.*

The maximum PPV level measured at any of the three homes evaluated was 0.038 in/sec. This was well below the threshold of significance used in this analysis (a maximum PPV of 0.08 in/sec). The groundborne and structureborne PPV vibration levels used to evaluate transportation-generated vibration for building damage and human complaints are the

maximum levels, rather than average levels. These levels are dependent on vibration levels produced by individual vehicular pass-bys; therefore, the increase or decrease in these levels cannot be calculated directly based on increases in traffic volumes, as can average noise levels (see previous discussion). However, individual pass-bys of potentially vibration-inducing vehicles, such as delivery trucks and heavy equipment used during construction of the various future projects that may be routed to Doherty Drive, can be additive, producing higher groundborne vibration levels if they occur simultaneously.

To determine how many vibration events at the maximum measured level of 0.038 in/sec would have to occur at the same time to reach the 0.08 in/sec threshold of significance, the measured PPV level was converted to energy terms (decibels). (When groundborne velocity is expressed in a dB scale, the reference velocity is set at 1 x 10-6 in/sec, which equals 0 VdB, and 1 in/sec equals 120 VdB. Although not a universally accepted notation, the abbreviation "VdB" is commonly used for vibration decibels to reduce confusion with sound decibels.) The decibel equivalent levels for simultaneous vibration producing events at 0.038 in/sec (92 VdB) were then logarithmically added. (Decibels, which are logarithmic quantities, do not follow the normal [algebraic] rules of addition and subtraction. Instead decibels are first converted to energy equivalents and these energy equivalents are then added or subtracted and then converted back to a decibel value.) The summed decibel levels were then converted back to PPV units (in/sec) to determine how many simultaneous events would need to occur to reach the threshold of significance.

The results of this analysis showed that a minimum of four vibration-producing events, such as the passage of four heavy trucks, would have to occur simultaneously to cause groundborne vibration levels to reach the significance threshold at the homes along Doherty Drive. Such an occurrence is not expected on Doherty Drive, particularly due to the physical restrictions imposed by Doherty Drive's two-lane configuration and alignment. Because of their lighter weight, individual vehicles smaller than heavy trucks do not typically cause groundborne vibrations at locations along the roadway. As such, impacts related to groundborne vibration would be less than significant.

CUMULATIVE IMPACTS

Based on the level of development proposed and a review of traffic volume information contained in Section 4.7, Traffic and Circulation, of this Revised Draft EIR, cumulative traffic volumes would increase as a result of implementation of the Specific Plan. An analysis of the Traffic and Noise Level Increases from Existing Plus Cumulative (No Specific Plan) Scenario to Existing Plus Cumulative Plus Specific Plan Scenario (refer to Table 4.8-7) shows that traffic volumes would increase by 0–10%, except on Meadowood Drive east of Magnolia Avenue. Considering that the makeup of the traffic would remain essentially constant, a 0–10% increase in traffic volumes would result in an increase in average traffic noise levels of less than 0.5 dB. Existing Plus Cumulative Plus Specific Plan traffic volume on Meadowood Drive, east of Magnolia Avenue, is projected to increase by up to 132% over Existing Plus Cumulative (No Specific Plan) volumes. This would produce an increase in average traffic noise levels of nearly 4 dB, which is not considered a substantial increase. However, under the Existing Plus

Cumulative (No Specific Plan) scenario, Meadowood Drive would have low traffic volumes, and this increase in traffic noise would not be expected to cause noise levels to exceed an L_{dn} of 55 dBA.

Table 4.8-7
Traffic and Noise Level Increases from Existing Plus Cumulative (No Specific Plan) Scenario to Existing Plus Cumulative Plus Specific Plan Scenario

Roadway Segment	A.M. Peak Hour		P.M. Peak Hour	
	Percentage Increase in Traffic	Noise Level Increase (dB)	Percentage Increase in Traffic	Noise Level Increase (dB)
Magnolia Avenue Northwest of Bon Air Road	4%	0.2	7%	0.3
Magnolia Avenue Doherty Drive to Bon Air Road	3%	0.1	5%	0.2
Magnolia Avenue Ward Street/Meadowood to Doherty Drive	5%	0.2	10%	0.5
Magnolia Avenue King Street/Monte Vista to Ward Street/Meadowood Drive	3%	0.1	6%	0.3
Magnolia Avenue South of King Street/Monte Vista Avenue	4%	0.2	6%	0.3
Doherty Drive Magnolia Avenue to Larkspur Plaza	5%	0.2	8%	0.4
Doherty Drive Larkspur Plaza to Piper Park	4%	0.2	7%	0.4
Doherty Drive Piper Park to Rivera Circle	4%	0.2	7%	0.4
Doherty Drive Riviera Circle to East Riviera Circle	4%	0.2	8%	0.3
Doherty Drive East Riviera Circle to Lucky Drive	5%	0.2	7%	0.4
Lucky Drive East Riviera Circle to Fifer Avenue	4%	0.2	7%	0.3
Lucky Drive North of Fifer Avenue	4%	0.2	6%	0.3
Fifer Avenue Lucky Drive to Tamal Vista Boulevard	4%	0.2	7%	0.3
Fifer Avenue Tamal Vista Boulevard to U.S. 101	3%	0.1	4%	0.2
Tamal Vista Boulevard Fifer to Wornum Drive	1%	0.1	3%	0.2
Tamal Vista Boulevard South of Wornum Drive	0%	0.0	0%	0.0
Bon Air Road North of Magnolia Avenue	0%	0.0	0%	0.0
East Ward Street West of Magnolia Avenue	0%	0.0	0%	0.0
Meadowood Drive East of Magnolia Avenue	71%	2.3	132%	3.8
King Street West of Magnolia Avenue	0%	0.0	0%	0.0
Monte Vista East of Magnolia Avenue	0%	0.0	0%	0.0
Larkspur Plaza North of Doherty Drive	0%	0.0	0%	0.0
Riviera Circle North of Doherty Drive	0%	0.0	0%	0.0
Wornum Drive East of Tamal Vista Boulevard	2%	0.1	4%	0.2

Source: Illingworth & Rodkin, Inc., Acoustical Engineers, 2003

At homes along Doherty Drive, Magnolia Avenue, and others in the Specific Plan area, noise levels would continue to exceed the City's noise and land use compatibility guidelines.

Implementation of the Specific Plan, by itself, would not cause the noise levels to exceed the thresholds of significance discussed above. Because Specific Plan-generated traffic noise increase would not be perceptible under cumulative conditions where existing traffic noise already exceed the City's standards, this cumulative impact is less than significant.

Due to the two-lane configuration and alignment of Doherty Drive, the simultaneous occurrence of four vibration-producing events would not be expected under the cumulative conditions. As such, cumulative impacts related to groundborne vibration would be less than significant.

4.8.3 MITIGATION MEASURES

PROJECT MITIGATION MEASURES

No mitigation measures are required for the following less-than-significant impacts.

4.8-3: Increase in Traffic Noise

4.8-4: Potential Increase in Vibration

The following mitigation measures are recommended for potentially significant impacts.

Impact **4.8-1** mitigation

Incompatibility of Noise Sensitive Land Uses with Existing Noise Environment.

(a) Conduct Acoustical Evaluation.

The City shall include the following new policy in the Specific Plan.

New Policy: Site plans for all development projects within the Specific Plan area shall be evaluated by an acoustical engineer to ensure that residential outdoor use areas are protected to a level not in excess of an L_{dn} of 55 dBA. The acoustical evaluation shall be reviewed by the City. Measures that could be used to achieve reduction in noise are increasing the distance between the outdoor use areas and any noise sources (for example, the Albertsons loading dock), using the buildings themselves to shield outdoor spaces, and constructing sound walls, earth berms, or combined sound walls and earth berms adjacent to noise sources.

(b) Provide Mechanical Ventilation.

The City shall include the following new policy in the Specific Plan.

New Policy: Mechanical ventilation, which may include air condition or fans, shall be required where the outdoor noise level at the exterior of new residential uses exceeds an L_{dn} of 60 dBA.

Impact 4.8-2 mitigation

Increased Noise Levels during Construction.

Minimize Amount and Duration of Noise Intrusion During Construction and Take Measures to Correct Problems.

The City shall include the following new policy in the Specific Plan.

New Policy: The developer shall take the following measures to minimize noise intrusion during construction in the Specific Plan area:

1. Limit construction to the hours of 7 a.m. to 6 p.m. on weekdays, and 9 a.m. to 5 p.m. on Saturdays, Sundays, or legal holidays in accordance with Chapter 9.54 of the Larkspur Municipal Code.
2. Ensure that all equipment driven by internal combustion engines are equipped with mufflers that are in good condition and appropriate for the equipment.
3. Use "quiet" models of air compressors and other stationary noise sources where technology exists.
4. Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a remediation or construction project area.
5. Prohibit unnecessary idling of internal combustion engines.
6. Designate a "noise disturbance coordinator" responsible for responding to any local complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaints (e.g., starting too early, bad muffler) and institute reasonable measures warranted to correct the problem. Post the telephone number for the disturbance coordinator at a location clearly and easily visible to the public on the construction site.

4.8.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Following implementation of the above mitigation measures, project-level and cumulative impacts would be less than significant.

4.9 PUBLIC SERVICES AND UTILITIES

This section addresses the potential effects of implementation of the Specific Plan on availability and adequacy of public services and utility service in Larkspur. The public services addressed in this analysis include schools, parks and recreational facilities, police protection, and fire protection. Utilities addressed in this analysis include water, wastewater treatment, storm drainage, and solid waste disposal. The information presented in this section is based on communication with personnel from local school districts and utilities and from the Twin Cities Police Department, as well as review of existing documents and Internet sites regarding levels of service (Eischens, J., pers. comm., 2003).

4.9.1 ENVIRONMENTAL SETTING

SCHOOLS

Public elementary school students residing in Larkspur attend Neil Cummins Elementary School. The school, which provides education for students in grades kindergarten (K) through 5th grade, is located at 58 Mohawk Avenue in Corte Madera, about 1.5 miles from the Specific Plan area. Students in grades 6 through 8 in the Larkspur area attend the 9.7-acre Hall Middle School, which is located directly north of the Specific Plan area at 200 Doherty Drive. The Larkspur School District operates both of these schools.

Public school students in grades 9 through 12 attend Redwood High School at 395 Doherty Drive. The Tamalpais Union High School District operates this high school. The 60-acre high school campus is located east of the Specific Plan area, separated by Larkspur Creek and high school district facilities. The 2002-2003 enrollment and the capacity of each of the area schools is shown in Table 4.9-1.

Table 4.9-1
School Capacity and Enrollment, 2002-2003 School Year

School	Grades	Enrollment	Capacity	Difference
Neil Cummins Elementary School	K-5	634	701*	-60
Henry C. Hall Middle School	6-8	316	391*	-75
Redwood High School	9-12	1,446	1,900	-454

* School district-estimated capacity numbers.
Sources: Toukonen, pers. comm., 2003; Winkler, pers. comm., 2003

PARKS AND RECREATIONAL FACILITIES

One neighborhood park, Doherty Park, is located within Subarea 1 west of the Larkspur Plaza shopping center. The small triangular-shaped 9,674-square-foot neighborhood park offers a green area, picnic tables, and benches for area visitors and residents.

Piper Park, a 22-acre community park located across Doherty Drive from Subarea 3, offers a variety of active and passive recreational opportunities. Thirty picnic tables and 14 barbeque grills are available, as are restrooms, a walking path, a community garden, drinking fountains, playground equipment, and an enclosed dog run (Canine Commons). Activity areas include four tennis courts, two softball fields, one soccer field, two sand volleyball courts, and two horseshoe pits. A fishing dock is also located within the park.

Adjacent schools also provide recreational facilities for the public, although access is limited to after-school hours. There is a basketball court and asphalt and turf play area at Hall Middle School. Redwood High School has a gymnasium, two baseball fields, a swimming pool, a court games facility, tennis courts, and other athletic facilities on 17 acres that are available for public use under certain conditions. Seventeen acres with a baseball field, three softball fields, and a soccer field are conditionally available for public use (Hahn, Jim, pers. comm. 2003).

Also within the vicinity of the Specific Plan area is Dolliver Park on Magnolia Avenue, with play equipment, restrooms, and a picnic area, and Hamilton Park on South Eliseo Drive, with a sitting and picnic area.

The City currently maintains 51.3 acres of public parkland, consisting of Piper Park and 11 mini-parks, or approximately 4.2 acres per 1,000 residents.

There are a number of existing and planned bicycle/pedestrian routes in the city. The Bicycle/Pedestrian Circulation Plan in the Larkspur General Plan indicates that a planned Class 1 path would run along the southern boundary of the Specific Plan area on Ward Street and adjacent to Larkspur Creek. Class 2 lanes are also planned on either side of Doherty Drive.

POLICE PROTECTION

The Twin Cities Police Department Field Operations Division (Larkspur Facility—Station One) is located on 1.5 acres directly across Doherty Drive from the Specific Plan area in the southern portion of Piper Park at 250 Doherty Drive. The facility houses the Chief of Police, Field Operation Commander, and Public Safety Dispatch. The station is maintained 24 hours a day with limited counter service between 5:00 p.m. and 8:30 a.m.

The Support Services Division of the Twin Cities Police Department is located at 342 Tamalpais Avenue, approximately 1.4 miles from the Field Operations Division. The Support Services Division facility houses the Investigations and Juvenile sections, and the Support Services Captain.

The police department employs 35 sworn personnel (including the police chief, three captains, two detectives, one juvenile officer, and one training support supervisor) and 11 nonsworn personnel (three community service officers, one dispatch supervisor, five dispatchers, one communications specialist, and one chief's secretary); it also maintains 24 vehicles (10 marked patrol units, nine unmarked patrol units, two community service officer units, and three

motorcycles). During each of two 12-hour shifts per day, the police department maintains a minimum staffing level of one sergeant and three beat officers. At full staffing there would be one watch commander and five beat officers per shift. At the time of preparation of this Revised Draft EIR, however, the department was not fully staffed; the department was under a hiring freeze for two vacant beat officer positions and one community service officer position, and another sergeant position was anticipated to be frozen upon the expected departure of the incumbent sergeant in December 2003 (Horn, pers. comm., 2003).

FIRE PROTECTION

The Specific Plan area is located within 0.25 mile of Larkspur Fire Station No. 1, which is located at 400 Magnolia Avenue at the corner of King Street. Larkspur Fire Station No. 2 is located in Greenbrae at 15 Berry Way, across Corte Madera Creek at Sir Francis Drake Boulevard and Eliseo Drive. The Larkspur Fire Department has a professional staff of 18 (one fire chief, one deputy fire chief/fire marshal, six captains, and 10 firefighters/engineers). About 20 volunteer firefighters augment the professional staff, primarily on nonemergency tasks. At Fire Station No. 1, which is equipped with two front-line fire engines and a support van, there are at least two firefighters on duty during every shift. At Fire Station No. 2, which is equipped with a front-line fire engine, a reserve fire engine, and a water tanker, there are three firefighters on duty during each shift. The fire department also maintains two staff cars. Mutual Aid Agreements are in force between the Larkspur Fire Department and fire departments in other Marin County jurisdictions.

WATER RESOURCES

Water in the Specific Plan area is provided by the Marin Municipal Water District (MMWD), which obtains water from seven reservoirs on Mt. Tamalpais in West Marin and through the transfer of water from Sonoma County Water Agency (SCWA). MMWD imports water from the Russian River, and receives approximately 75% of its water supply from local reservoirs and 25% through contracts with SCWA.

MMWD plans for long-term supplies based on the buildout of the general plans of the cities it serves. Based on the General Plan land use designation, over 21 afa of water are currently reserved for future development in Subarea 3, and additional water would be available if necessary (Conklin, pers. comm., 2003). Also, MMWD has additional water for potential development in Subareas 1 and 2.

MMWD's operational yield (the amount of water that can be supplied in all but the driest years) is 29,500 acre-feet annually (afa), while the average annual use within the district is 28,622 afa (MMWD 2003). MMWD's current Water Supply Master Plan requires that MMWD provide a minimum storage of 10,000 af in local reservoirs to serve as an emergency reserve during drought years. However, in 2000 MMWD identified an annual deficit in water supplies of 1,650 af. Without a new supply source, MMWD expects this annual shortfall to increase to 8,800 af by 2025. According to the MMWD Urban Water Management Plan 2000, SCWA is projected not to be able to deliver above its current supply level until at least 2005. In

addition, in 2000 the MMWD Board of Directors opted not to improve its pipeline to the Russian River because of concern about long-term reliability of this water source and the potential impact of increased Russian and Eel River diversions on salmon and steelhead populations (McGuire, pers. comm., 2003). MMWD is exploring opportunities to partner with the Las Gallinas Valley Sanitary District for water recycling and exploring a new water supply source based on desalination of water from San Francisco Bay. (McGuire, pers. comm., 2003.)

A 24-inch major supply line runs through the Specific Plan area within the former railroad right-of-way. Existing lines in the area consist of an 8-inch main in Magnolia Avenue, an 8-inch main in Doherty Drive, a 6-inch line in Ward Street, an 8-inch main in Meadowood Drive, and an 8-inch loop in the Larkspur Plaza shopping center.

WASTEWATER TREATMENT

Ross Valley Sanitary District No. 1 is responsible for wastewater collection in the Specific Plan area. A 10-inch-diameter sanitary sewer main is located under Doherty Drive and Magnolia Avenue and currently serves the Specific Plan area, and a pump station is located directly across Doherty Drive from Subarea 3, near Hall Middle School. The pump station experiences operational problems during peak demand times because of the buildup in pressure in the force mains served by the station and will require upgrading to accommodate future wastewater discharges. The sanitation district has not yet determined the full extent of the needed improvements to the pump station, but improvements could include upgrades to the generator, pump, and electrical system, and changes to the structure of the pump house and well.

The Central Marin Sanitation Agency (CMSA), located on Sir Francis Drake Boulevard, in San Rafael, provides wastewater treatment for Larkspur, Corte Madera, San Rafael, and Ross Valley. The CMSA wastewater treatment plant has a treatment capacity of 10 million gallons of wastewater per day in dry weather and up to 30 million gallons secondary (biologically) treated wastewater per day in wet weather; the plant's rated peak wet-weather capacity is 90 million gallons per day of blended primary and secondary treatment processed wastewater (Central Marin Sanitation Agency 2003). Any wastewater in excess of 30 million gallons per day receives primary (mechanical) and disinfection treatment before discharge into San Francisco Bay. Currently the average flow during dry weather conditions is 8 million gallons per day. Wet weather flows can exceed 100 million gallons per day (Rose, pers. comm., 2003).

STORM DRAINAGE

Stormwater runoff generated in the Specific Plan area currently drains to a 42-inch storm drain located under East Ward Street that outfalls to Larkspur Creek and by a 24-inch storm drain located along the north side of Doherty Drive, with 12-, 24-, and 36-inch connections to the Specific Plan area. An open channel storm drain is also located along the north side of East Ward Street. This channel collects stormwater from properties south of East Ward Street beyond the Specific Plan area via two 12-inch storm drains under East Ward Street and a 32-inch storm drain under East Ward Street that carries runoff from Subarea 1.

SOLID WASTE DISPOSAL

Marin Sanitary Service, by contract with the City of Larkspur, is responsible for the collection, recycling, and disposal of solid waste and implementing state mandates, including Assembly Bill (AB) 939 regarding recycling of landfill waste. Marin Sanitary Service is in compliance with AB 939's 50% recycling requirement, as it recycles 65% of waste it collects. In 2002, 50% of the waste generated from the city of Larkspur was recycled. (Sarkela, pers. comm., 2003). After newspaper, cardboard, glass, and metals have been removed from the waste stream at the Marin Resource Recovery Center, solid waste is hauled to the Redwood Sanitary Landfill for disposal. The Redwood Sanitary Landfill, located in the unincorporated area near Novato, receives virtually all of the solid waste generated by the cities in Marin County (King, pers. comm., 2003).

4.9.2 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Implementation of the Specific Plan would have a significant impact on public services if it were to result in:

< substantial adverse physical impacts associated with the construction or expansion of school facilities;

< the construction or expansion of recreational facilities that might have an adverse physical effect on the environment;

< an increase in the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated;

< substantial adverse physical impacts associated with the construction or expansion of police facilities;

< substantial adverse physical impacts associated with the construction or expansion of fire protection facilities;

< the need for new or expanded entitlements to water supply resources;

< the construction of new or expanded wastewater treatment facilities that could cause significant environmental effects;

< exceedance of wastewater treatment requirements of the RWQCB;

< a determination by the wastewater treatment provider that serves (or may serve) the area that it would not have adequate capacity to serve the anticipated demand in addition to the provider's existing commitments;

< the construction of new stormwater drainage facilities (or the expansion of existing facilities) that could cause significant environmental effects;

< development that could not be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs;

< noncompliance with federal, state, and local statutes and regulations related to solid waste; or

< substantial adverse physical impacts associated with the construction or expansion of other public facilities.

PROJECT-LEVEL IMPACTS

Impact **4.9-1**

Potential for Exceedance of School Student Capacity. *The maximum residential development permitted in the Specific Plan area is anticipated to add 50 elementary and middle school students, and 26 high school students. The resulting enrollment in local schools would be less than the estimated student capacity. This impact is considered* ***less than significant****.*

The residential development that could be permitted within the Specific Plan area could be anticipated to add students to Neil Cummins Elementary School, Henry Hall Middle School, and Redwood High School. For 1997-98, the most recent school year for which student yield rate information is available, the Larkspur School District calculated student yields for grades K-8 ranging from 0.13 to 0.38 student per residential unit, depending on neighborhood (Lapkoff & Gobalet Demographic Research 1998). For purposes of this EIR analysis, a conservative approach was taken and the 0.38-student yield rate was used. Tamalpais Union High School District does not collect impact fees (additional school capacity comes from improvement of existing schools); therefore, the district does not have established student yield rates that can be used to estimate the number of high school students that would be generated per residential unit. For purposes of this EIR analysis, however, the district estimated that one student in grades 9-12 is generated per five households (Toukonen, pers. comm., 2003); therefore, the estimated student yield rate for Redwood High School is 0.20. The maximum number of units that could be constructed in the Specific Plan area is 58 single-family and 74 multifamily residential units. Table 4.9-2 shows the total number of students anticipated to be generated under the Specific Plan given the district's student yield rates.

The Larkspur School District estimated that an additional 60 students would be able to attend Neil Cummins Elementary School and 75 students would be able to attend Hall Middle School (Winkler, pers. comm., 2003). As shown in Table 4.9-2, the maximum residential development permitted in the Specific Plan area is anticipated to add up to 50 elementary and middle school students. The resulting enrollment would be less than the estimated student capacity. Therefore, no physical impacts associated with the construction or expansion of school facilities in the Larkspur School District would occur as a result of development under the Specific Plan.

Students in the Specific Plan area would attend Redwood High School. Approximately 26 students in grades 9 through 12 could be generated by the Specific Plan. Given current enrollment trends and the capacity limit of 454 additional students, the Tamalpais Union High School District expects to be able to accommodate these 26 students within existing facilities,

without the need for additional classroom space (Toukonen, pers. comm.(1), 2003). This impact is considered less than significant.

Table 4.9-2
Student Generation per Residential Unit

Grade	No. of Units			Student Yield Rate	Total Number of Students [2]
	Single-Family [1]	Multifamily	Total Units		
K-8	58	74	132	0.38 [3]	50
9-12	58	74	132	0.20 [4]	26
Total	-	-	-	-	76

[1] Includes both single-family dwellings and cottage homes.
[2] Totals rounded to the nearest whole number.
[3] K-8 factor represents a conservative approach, as student yields ranged from 0.13 to 0.38 for the 1997-98 school year, the most recent student yields available.
[4] 9-12 student yield represents an estimate.
Sources: Lapkoff & Gobalet Demographic Research 1998; Toukonen, pers. comm., 2003; EDAW 2003

Impact **4.9-2**

Increase in Use of Parks and Other Recreational Facilities. *Although the Specific Plan calls for a public park in Subarea 3, addition of new residents in the Specific Plan area could result in an incremental increase in the use of existing parks and other recreational facilities. Property owners within the Specific Plan area, like other local property owners, would provide a portion of the total funds needed for ongoing park maintenance through payment of annual taxes. This impact is considered* ***less than significant****.*

Specific Plan Land Use Policy 35 (Public Park) calls for a public park in Specific Plan Subarea 3, the size of which would be determined based on the City's park and recreation land and fees regulations (Chapter 17.13 of the Larkspur Municipal Code). Chapter 17.13 of the Larkspur Municipal Code requires park dedication only at locations designated in the General Plan for public parks; however, the location of the park proposed for Subarea 3 has not been designated in the General Plan. Nonetheless, the proposed park would meet the Municipal Code's size requirements, and would meet the community's recreational needs. No public expenditures are expected to be involved unless the amount of land required for dedication exceeds the approximately 0.9 acre required by these regulations. The developer(s) of Subarea 3 would be responsible for dedicating an improved site, under the provisions of Chapter 17.13, §§2 and 3 (which include street and utility connections, fencing, and other improvements essential to the City's acceptance of land for recreational purposes). The developer would also be responsible for the payment of park improvement fees to cover the cost of landscaping and the installation of recreational equipment.

Even if a new park were built within the Specific Plan area, new residents would probably also use other local parks and recreational facilities nearby—particularly Piper Park and the facilities at Redwood High School, which are within easy walking distance. Construction at or expansion of existing parks and recreational facilities would not be needed as a result of this incremental increase in park/recreational facility use. However, the increase in use would

contribute to routine wear and tear on the playing fields and recreational equipment. It would be difficult to determine exactly how much wear and tear could actually be attributed directly to residents from the Specific Plan area, because most local parks and recreational facilities are widely used by large numbers of local residents and others within the region. The ongoing maintenance of local parks and recreational facilities is funded through the City's Public Works budget; property owners in the Specific Plan area would provide a portion of the total funds needed for this task through the payment of annual taxes, as would all other local property owners (Wilkinson, pers. comm., 2002). This impact is considered less than significant.

Impact **4.9-3**

Increased Demand for Police Services. *Development of the Specific Plan area would result in an incremental increase in the local demand for police services, which could result in a need for additional police officers, support staff, and related equipment. However, no new police facilities or facility expansion that could affect the physical environment would be needed. This impact is considered* ***less than significant****.*

The development of the Specific Plan area would result in an incremental increase in the local demand for police services. When combined with the demand associated with anticipated population growth and other potential development projects within the Larkspur–Corte Madera area, this could mean that additional police officers, support staff, and related equipment would be required to effectively maintain existing service levels and response times. However, as described in Section 4.2 Population and Housing, the population increase with the Specific Plan would be small; therefore, the Specific Plan-related demand for police services would not necessitate the construction of any new police facilities (or the expansion of any existing police facilities) that could entail changes in the physical environment. The Twin Cities Police Department is in the process of preparing a bond measure to place on the ballot to provide funds for the construction of a new police station at the site of the existing station in Piper Park. If local voters approve the bond measure, construction of a new police station would then take place, with or without future development in the Specific Plan area (Horn, pers. comm.(1), 2003). This impact is considered less than significant.

Impact **4.9-4**

Increased Demand for Fire Protection and Emergency Medical Response Services. *Development of the Specific Plan area would result in an incremental increase in demand for fire protection and emergency medical response services, which could result in a need for additional firefighters, support staff, and related equipment. However, no new fire protection facilities or facility expansion that could affect the physical environment would be needed. This impact is considered* ***less than significant****.*

Development of the Specific Plan area would result in an incremental increase in the local demand for fire protection and emergency medical response services, which could require additional firefighters, support staff, and related equipment to effectively maintain existing service levels and response times. However, as described in Section 4.2 Population and Housing, the population increase with the Specific Plan would be small; according to the Larkspur Fire Department, the Specific Plan-related demand for fire protection and emergency services would not necessitate the construction of any new fire protection facilities or the expansion of any existing fire protection facilities that could result in changes in the

physical environment (Sinnott, pers. comm., 2002). This impact is considered less than significant.

Impact **4.9-5**

Increased Demand for Water Supply, Conveyance, Water Storage, or Water Treatment Services. *The existing water lines serving the Specific Plan area have sufficient capacity to serve the maximum level of development permitted under the Specific Plan. The 32.2 afa of water needed to serve the development in the Specific Plan area has been included in MMWD's water planning efforts and is reserved for the Specific Plan area. As such, sufficient water system capacity and water supply are expected for the Specific Plan area, and impacts would be considered* ***less than significant****.*

The existing water lines serving the Specific Plan area have sufficient capacity to serve the maximum level of development permitted under the Specific Plan. The existing facilities include a 6-inch line under East Ward Street, an 8-inch main under Magnolia Avenue, an 8-inch main under Meadowood Drive, an 8-inch main under Doherty Drive, and an 8-inch loop under the Larkspur Plaza shopping center. The Specific Plan identifies the following conditions for development in the Specific Plan area:

< Water conservation measures shall be included in the conditions of approval for development proposals.

< New development shall comply with MMWD Ordinance No. 385.

MMWD water-use estimates for residential and commercial uses were used to estimate water required to serve the development that may occur in the Specific Plan area. Estimates provided are 0.26 afa for apartments and townhouses; 0.33 afa for single-family dwellings; 0.11 afa per 1,000 square feet for small retail; 0.10 afa per 1,000 square feet for community center; and 0.15 to 0.168 afa per room for motel/hotel, depending on whether the motel/hotel includes a restaurant, bar, and laundry (McGuire, pers. comm., 2003). (The highest water-use estimate for the motel/hotel use was assumed.) Based on these estimates, the new development that may occur in the Specific Plan area is expected to require up to approximately 41.2 afa of water. According to MMWD, over 21 afa of water are currently reserved for future development in Subarea 3, and additional water supply is available if necessary (Conkling, pers. comm. 2003). Also, MMWD has additional water for development in Subareas 1 and 2. MMWD currently does not have any programs in effect to limit water supply to the Specific Plan area (Eischens, pers. comm. 2003). Prior to the approval of all development projects within the Specific Plan area, a "will-serve" letter from MMWD, stating that MMWD would be able to provide water to the proposed development, would be required by the City, and this would ensure that development would generate water demand beyond the water supply capacity of MMWD. As such, no water supply insufficiency impacts would be expected.

Impact **4.9-6**

Increased Demand for Wastewater Treatment Services. *CMSA has the capacity to serve the anticipated development of the Specific Plan area without expanding existing facilities. The Ross Valley Sanitary District will review development plans submitted for individual parcels within the Specific Plan area, and will identify specific facilities that may be*

necessary to provide sufficient conveyance capacity to support the Specific Plan. This impact is considered ***less than significant****.*

CMSA treats approximately 8 million gallons of wastewater per day during dry weather, which is 2 million gallons under the capacity level. Based on a general wastewater generation factor of 200 gallons per person per day, future development in the Specific Plan area, with an estimated increase of 264 new residents, may generate approximately 52,800 gallons per day. Therefore, CMSA currently has the capacity to serve the anticipated development in the Specific Plan area without expanding its existing facilities (Rose, pers. comm., 2002). CMSA has indicated that it can serve future development in the Specific Plan area but would require consultation with and confirmation from CMSA at the time future developments are proposed (Dow, pers. comm. 2003).

Improvements to Ross Valley Sanitary District's generator, pump, and electrical system and changes to the pump house would be required before future wastewater conveyance could be provided. When development plans are submitted for individual parcels within the Specific Plan area, the district will review them to determine whether the existing conveyance system capacity constraints would limit its ability to provide sewer service, and will identify specific upgrades that may be necessary to provide sufficient capacity to support the individual development projects in the Specific Plan area (Hogue, pers. comm., 2002). This impact is considered less than significant.

Impact **4.9-7**

Need for Improvements to Stormwater Collection System. *Various improvements to the stormwater collection system may be necessary to provide adequate storm drainage within the Specific Plan area. The Specific Plan incorporates several policies regarding control of stormwater runoff and includes upgrades to culverts and BMPs to reduce the overall quantity of stormwater. This impact is considered* ***less than significant****.*

The Specific Plan incorporates several policies related to the control of stormwater runoff:

< Provide necessary onsite storm drainage facilities to protect property and public safety (Utilities Policy 8 [Storm Drainage Service]).

< A detailed drainage plan shall be required for the development of Subarea 3 (Utilities Policy 10 [Drainage Plan, Subarea 3]).

< Minimize discharge of surface pollutants to Larkspur Creek and Corte Madera Creek and to offsite drainage facilities by implementing site planning and design techniques that may include but are not limited to the following:

- Infiltration systems such as basins and grassy swales, to filter pollutants through the soil.
- Stormwater retention and detention systems to reduce downstream peak flows, capture fine sediments and to allow wetland vegetation to uptake dissolved nutrients.
- Biofilters, including vegetated slopes and channels.

- Design approaches such as pervious concrete and porous asphalt, narrow streets to reduce impervious surfaces, and brick pavers on sand (Utilities Policy 11 [Pollutants]).

< Improvements should include onsite grass/vegetated swales and detention areas along the west, south and east edges of Subarea 3 to filter, receive, and detain stormwater before discharge into Larkspur Creek (Utilities Policy 12 [Subarea 3, Drainage Improvements]).

However, as described in Impact 4.4-3, Exceedance of Capacity of Existing Onsite or Adjacent Drainage System, improvements to the stormwater collection system may be necessary to provide adequate storm drainage within the Specific Plan area. Future development in the Specific Plan area that drains to these facilities could exacerbate existing deficiencies. The Specific Plan includes several components to improve drainage conditions. These are:

< upgrading the 32-inch-diameter East Ward Street culvert to 42 inches (see "Stormwater Drainage" in Chapter 6, Utilities, of the Specific Plan);

< upgrading the culvert at the northeastern corner of Subarea 3 under Doherty Drive to 42 inches (see "Stormwater Drainage in Specific Plan Chapter 6); and

< implementing various BMPs designed to reduce the runoff of contaminants from the Specific Plan area during storms, which would also reduce the overall quantity of stormwater and its impact on site drainage facilities (Utilities Policy 11 [Pollutants]).

According to the City, and as mentioned in Impact 4.4-3, required design of facilities would need to pass the 25-year flood event (Hill, pers. comm., 2002). Future development in the Specific Plan area must comply with this existing requirement. As such, this impact is considered less than significant.

Impact **4.9-8**

Increase in Solid Waste Disposal. *Anticipated uses in the Specific Plan area are typical of urban areas, and would not violate any statutes or regulations related to solid waste. Landfill space and material recovery capacity are expected to remain sufficient through at least the year 2043. This impact is considered* ***less than significant****.*

Anticipated uses in the Specific Plan area are typical of urban areas, and would not violate any federal, state, or local statutes or regulations related to solid waste. Marin Sanitary Service has indicated that it can serve future development in the Specific Plan area without the need to expand its Marine Resource Recovery Center. The Redwood Sanitary Landfill has contracted with disposal companies for providing landfill space until the year 2043; at that point, if space still exists at the landfill, they will continue to contract with disposal companies (King, pers. comm., 2003). Therefore, this impact is considered less than significant.

CUMULATIVE IMPACTS

The city of Larkspur is approximately 2,065 acres in size and is predominantly built out. As discussed in Existing Setting in Section 4.2, Population and Housing, less than 252 acres

remain undeveloped; of which only 138 difficult-to-develop acres are actually available for future development. Public services and utilities are developed and upgraded in anticipation of buildout of the city in accordance with the General Plan. Several projects are currently proposed within the city in addition to the Specific Plan; however, these projects include a total of only about 50 residential units. The Specific Plan represents the largest area of new development in the city.

There is adequate capacity in the local schools to accommodate up to 76 students potentially generated by development in the Specific Plan area as well as the approximately 29 students that could be generated by known projects in the area (50 single-family units); therefore, no physical impacts associated with the construction or expansion of school facilities in the Larkspur School District or Tamalpais Union High School District would be anticipated to occur as a result of development under the Specific Plan and cumulative development.

The addition of new residents in the area could result in an incremental increase in the use of existing parks and the need for additional facilities. Property owners provide a portion of the total funds needed for ongoing park maintenance through payment of annual taxes. The developer(s) of residential projects would be responsible for either dedicating land or contributing in-lieu fees for parks, as well as for paying improvement fees for parks.

Development would result in an incremental increase in the local demand for police, fire, and emergency medical services, which could result in a need for additional police officers, support staff, and related equipment. However, as described in Section 4.2, Population and Housing, the population increase with the Specific Plan would be small and would be accommodated by existing facilities or their replacements; therefore, no new police facilities that could affect the physical environment would be needed.

New development under the Specific Plan would require a minimum of approximately 41.2 afa of potable water annually; water supply for development consistent with the General Plan has been reserved and included in MMWD's water supply planning efforts and MMWD has indicated that additional water supply would be available. As such, the Specific Plan would not contribute to water shortage as future developments, consistent with the General Plan, are constructed and operated. MMWD would continue to expand its water conservation program and secure additional water supplies to meet future demand (McGuire, pers. comm. 2003). The existing water line has enough capacity to serve the project and no adjacent development to be served by this water line is expected.

CMSA provides wastewater treatment and currently has the capacity to serve anticipated development in the area without expanding its existing facilities. The Ross Valley Sanitary District would review development plans submitted for individual parcels within the area, and would identify specific measures that may be necessary to provide sufficient conveyance capacity.

Site-specific improvements to the stormwater collection system may be necessary to provide adequate storm drainage to new development in the area. The City Public Works Department

reviews plans for individual development projects to ensure that the improvements, which may include storm drain upgrades and detention basins, are adequate to carry the stormwater generated by that development. Development within the Specific Plan area would incrementally contribute to the need to upgrade portions of the regional storm drainage system.

Anticipated development in the City of Larkspur is typical of urban areas, and would not be expected to violate any statutes or regulations related to solid waste. Landfill space is expected to remain sufficient through at least the year 2043.

The Specific Plan contribution to cumulative impacts on public services and utilities would not be cumulatively considerable.

4.9.3 MITIGATION MEASURES

PROJECT MITIGATION MEASURES

No mitigation measures are required for the following less-than-significant impacts.

4.9-1: Potential for Exceedance of School Student Capacity

4.9-2: Increase in Use of Parks and Other Recreational Facilities

4.9-3: Increased Demand for Police Services

4.9-4: Increased Demand for Fire Protection and Emergency Medical Response Services

4.9-5: Increased Demand for Water Supply, Conveyance, Water Storage, or Water Treatment Services

4.9-6: Increased Demand for Wastewater Treatment Services

4.9-7: Need for Improvements to Stormwater collection System

4.9-8: Increase in Solid Waste Disposal

CUMULATIVE MITIGATION MEASURES

No mitigation measures are required. There would be no significant cumulative impact related to public services and utilities.

4.9.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

No significant impacts on public services and utilities would result from implementation of the Specific Plan.

4.10 VISUAL QUALITY AND AESTHETICS

This section addresses the visual quality and aesthetics issues related to the implementation of the Specific Plan. The existing visual environment is described first, followed by a discussion of Specific Plan policies and the aesthetic effects of the project, and mitigation measures for any identified significant impacts. The information presented in this section is based on observation of the Specific Plan area and on review of City documents.

4.10.1 EXISTING SETTING

REGIONAL SETTING

The city of Larkspur is situated in the southern portion of Marin County, below Mt. Tamalpais and about 14 miles north of San Francisco. The Southern Heights Ridge separates the city from San Rafael, to the north, and the Corte Madera Ridge separates Larkspur from Mill Valley, to the south. Corte Madera Ridge, the city's southern and western boundary, lies on the northeastern slopes of Mt. Tamalpais, to the west of the city. U.S. 101, one of the gateways to the city and San Francisco Bay, is located on the east side of the city; the city has about 0.5 mile of bay frontage, from the Larkspur Landing ferry terminal to Remillard Park. Corte Madera Creek, the major open-space resource in Larkspur's flatlands, divides north Larkspur from south Larkspur. (City of Larkspur 1990.)

LOCAL SETTING

The Specific Plan area is a flat, low-lying area adjacent to the existing historic downtown of Larkspur. To the north and west, it is bordered by two major travel routes: Doherty Drive and Magnolia Avenue. To the south and east it is bordered by Larkspur Creek, a narrow tidal slough contained within a straightened human-made channel. The eastern two-thirds of the Specific Plan area consists of disturbed open land, abandoned structures, and the remaining greenhouses of the Niven Nursery. The western third of the Specific Plan area is a patchwork of largely outdated commercial structures at the edge of downtown Larkspur.

The Specific Plan area has several significant visual attributes:

- views of Mt. Tamalpais from various locations throughout the Specific Plan area (Exhibits 4.10-1 and 4.10-2);
- views of Larkspur Creek and creekside vegetation (Exhibit 4.5-2 in Section 4.5, Biological Resources);
- the railroad station and warming house (Exhibit 4.10-3); and
- views across Magnolia Avenue to several buildings outside the Specific Plan area that are historically significant—the art deco Lark Theater, the Blue Rock Inn, and two adjacent buildings that date back more than a century (Exhibit 2-3).

< Exhibit 4.10-1

Exhibit 4.10-2

Exhibit 4.10-3

Views of the service buildings and yards of the Tamalpais Union High School District across Larkspur Creek to the east of the Specific Plan area are generally regarded as unattractive (Exhibit 2-3).

REGULATORY SETTING

Federal Agency Methods for Evaluating Visual Resources

Federal agencies that have well-established methods for evaluating visual resources and project-related effects on those resources include the U.S. Forest Service (USFS) and the Federal Highway Administration (FHWA). Visual impact assessment involves consideration of several elements, including the visual resources of the region and the immediate area, important viewing locations (e.g., roads) and the general visibility of potentially distracting elements, and viewer groups and their sensitivities. The visual character and quality of the region and a particular area are assessed based on three criteria:

< Vividness: The visual power or memorability of landscape components as they combine in striking or distinctive visual patterns.

< Intactness: The visual integrity of the natural and human-built landscape and its freedom from encroaching elements; this factor can be present in well-kept urban and rural landscapes as well as natural settings.

< Unity: The visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the artificial landscape.

The appearance of the landscape is assessed using these criteria and descriptions of the dominance of elements of form, line, color, and texture. These elements are the basic components used to describe the visual character and quality (USFS 1974, FHWA 1983).

Another important element of visual impact assessment is viewer sensitivity or concern. Viewer sensitivity is gauged based on the visibility of resources in the landscape, the proximity of viewers to the visual resource, the elevational position of viewers relative to the visual resource, the frequency and duration of views, the number of viewers, and the type and expectations of individuals and viewer groups.

The criteria for identifying the importance of views are related in part to the position of the viewer relative to the resource. An area of the landscape that is visible from a particular location (e.g., an overlook) or series of points (e.g., a road or trail) is defined as a viewshed. To identify the importance of views, a viewshed may be divided into distance zones (i.e., foreground, middleground, and background). Generally, the closer a resource is to the viewer, the more dominant it is and the greater is its importance to the viewer. Although distance zones in viewsheds may vary between different geographic regions or types of terrain, a commonly used set of criteria identifies the foreground distance zones as 0.25–0.5 mile from the viewer, the middleground zone as extending from the foreground zone to 3–5 miles from

the viewer, and the background zone as extending outward beyond the middleground zone (USFS 1974).

Visual sensitivity also depends on the number and type of viewers and the frequency and duration of views. Generally, visual sensitivity increases with an increase in total number of viewers, the frequency of viewing (e.g., daily or seasonally), and the duration of views (i.e., how long a scene is viewed). Also, visual sensitivity is higher for views seen by people who are driving for pleasure; people engaged in recreational activities such as hiking, biking, or camping; and residents. Sensitivity tends to be lower for views seen by people driving to and from work or as part of their work (USFS 1974, FHWA 1983). Views from recreational trails and areas, scenic highways, and scenic overlooks are generally assessed as having high visual sensitivity.

4.10.2 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Implementation of the Specific Plan would have a significant impact if it were to result in:

< a substantial adverse effect on a scenic vista;

< substantial damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;

< substantial degradation of the existing visual character or quality of the site and its surroundings; or

< the creation of a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

PROJECT-LEVEL IMPACTS

Impact **4.10-1**

Potential Interference with Scenic Vistas. *There are no formally identified scenic vistas within the Specific Plan area. Residential development on the Niven property has the potential for some obstruction of views of Mt. Tamalpais, but the obstruction would not be substantial, and this area would be newly accessible to the public. Overall, the Specific Plan would retain a view corridor and would not substantially block mountain views from offsite public spaces. This impact is considered* ***less than significant****.*

The Specific Plan area is not located within an area that has been formally identified as having a scenic vista. The area is relatively flat, and although Mt. Tamalpais is visible from a number of locations, these views of the mountain are partially obstructed and are not specifically regarded as "scenic vistas." The Niven property (Subarea 3), which does have scenic views of the mountain, does not currently have any public spaces. Residential development in Subarea 3 has the potential for some obstruction of views of Mt. Tamalpais (e.g., from public streets that would be developed); however, the obstruction would not be substantial, and views from this area would be newly accessible to the public as new development occurs. Development in the area as a whole would not eliminate all views of the mountain (e.g., by pedestrians on Magnolia

Avenue), and the Specific Plan would retain a view corridor between the west façade of the railroad station building and Magnolia Avenue, and provide views of the railroad plaza area from the north, east, south, and west. In addition, Specific Plan General Design Policy 5 (Views) states that development within the Specific Plan area would "Protect and enhance views of the railroad buildings, Larkspur Creek, and Mt. Tamalpais as a means of visually linking the Plan subareas with each other and the larger community." Moreover, development would not substantially block views of the mountain from public spaces beyond the Specific Plan area. This impact is considered less than significant.

Impact **4.10-2**

Potential Damage to Scenic Resources. *Under the Specific Plan policies, conservation of the two historic railroad structures would be an integral element of future development; heritage trees would be integrated with pedestrian and bicycle routes, and the scenic values of Larkspur Creek would be enhanced. This impact is considered* ***less than significant****.*

The proposed development of the Specific Plan area is intended to minimize potential effects on scenic resources (e.g., existing trees, the railroad station and warming house, and Larkspur Creek). Several General Design Policies from Chapter 7, Community Design, of the Specific Plan are intended to ensure that these scenic resources in the Specific Plan area are protected:

> **Policy 9. Creek Resources.** Protect and enhance the natural resource and scenic values of Larkspur Creek and make the creekside corridor accessible for passive use by the entire community.
>
> **Policy 10. Open Space Network.** Integrate the area's major natural elements (the creek, creekside vegetation, and heritage trees) with a system of pedestrian and bicycle routes to define the entire area visually and tie the individual parcels together into a site-wide open space network.
>
> **Policy 11. Historic Railroad Buildings.** Retain the former railroad station and warming house buildings and provide an appropriate setting for them that allows them to serve as a focus for future development and a readily apparent link to the city's origin.

Other policies and standards for Specific Plan area parcels are intended to provide additional protection. Policies 32 (Railroad Plaza) and 33 (Railroad Plaza Design) state that a centrally located and publicly oriented open space would be provided adjoining the retained railroad buildings, which would be designed to serve as both a focus and amenity for adjacent commercial and residential uses and a setting for community-oriented activities and events. Policy 34 (Plaza Landscaping) states that the landscape design of this plaza should acknowledge and commemorate the original alignment of the railroad right-of-way.

The Specific Plan also indicates, in Standard 18 (Railroad Station and Warming House), that the original character-defining features of the railroad station and warming house buildings should be documented, to the extent possible, and restored using the following sequence of actions:

1. Protect and maintain those features that are extant and in good condition.

2. Repair those features that have been damaged or covered by other construction using the least amount of intervention possible. Do not replace building features that can be repaired.

3. Replace missing historic features using the following order of priorities:

   < Recover, if possible.

   < If unrecoverable, reproduce using photographs or other documentation.

   < If documentation is inadequate, design a new feature that is compatible with the remaining character-defining elements of the building. The new feature should be clearly differentiated to avoid creating a false historical appearance.

Specific Plan Policy 48 (Open Space Corridor Design) states that an open-space corridor would be maintained along Larkspur Creek to protect water quality, natural habitat and scenic values and may be improved to provide public access to and passive use of retained open space. In addition, as mentioned above and indicated in Mitigation Measure 4.5-2, Protect Sensitive Salt Marsh Habitat Associated with Larkspur Creek, no bikeways or footpaths would be constructed within the Larkspur Creek buffer area, and permanent fencing designed to discourage people and their pets from entering restored habitat in the buffer area would be installed. The new policies proposed by Mitigation Measure 4.5-2 are not necessary to reduce the potential damage to scenic resources to a less-than-significant level, but they would reinforce policies in the plan that will act to protect scenic resources. Under Policy 66 (Heritage Trees) and Standard 68 (Trees to be Retained), several heritage trees located along the western edge of Subarea 3, adjoining the former railroad right-of-way, would be retained and incorporated into the design of the redeveloped areas. These large trees are:

< the Oregon white oak (*Quercus garryana*) located immediately southeast of the warming house,

< the Valley/white oak (*Quercus lobata*) located approximately 80 feet south of the warming house,

< the small grove of redwood trees (*Sequoia sempervirens*) between the warming house and East Ward Street, and

< the Valley/white oak located in the southwest corner of Subarea 3 adjoining East Ward Street.

The Specific Plan contains policies that would retain the two historic railroad structures in an appropriate setting as the focus of future development in that portion of the Specific Plan area, employ views of the railroad buildings as a means of visually linking the Specific Plan area with

the larger community context, integrate heritage trees with a system of pedestrian and bicycle routes, and protect and enhance the scenic values of Larkspur Creek. This impact is considered less than significant.

Impact **4.10-3**

Potential Degradation of Visual Character. *In most of the Specific Plan area development would result in a change in visual character but no degradation. Numerous Specific Plan policies related to building design and design elements, storefront downtown standards, building location and height, pedestrian-oriented frontage, neighborhood design, and other elements would ensure continued protection of the visual quality of central Larkspur. This impact is considered* ***less than significant****.*

In most of the Specific Plan area, development would result in a change in visual character but no degradation. Several General Design Policies from Chapter 7, Community Design, of the Specific Plan are intended to preserve the visual character of the Specific Plan area:

> **Policy 3. Focal Point.** Coordinate the design of the contiguous portions of Subareas 1, 2, and 3 to create a sense of place and a focal point for Downtown.
>
> **Policy 4. Linkages to the Surrounding Area.** Functionally and visually link major areas and destinations within the Plan area to Downtown, Piper Park, Hall Middle School, Redwood High School, and neighboring residential areas.
>
> **Policy 7. Building Design.** The design of buildings should incorporate the best architectural traditions of Larkspur in terms of scale, building materials, and forms in a manner that expresses the evident historic progression within the community.
>
> **Policy 8. Landscape Character.** Provide an informal, naturalistic landscape throughout the Plan area consistent with the prevailing landscape character of Larkspur.

In addition, specific policies and standards for the Specific Plan subareas are intended to preserve the area's visual character. Design policies and standards for Subarea 1, and other discussion contained in the Specific Plan for this subarea, are summarized below.

< The former railroad right-of-way would retain the context of a railroad line including, where possible, elements of a passenger platform and evidence of the track alignment. (Policy 12 [Railroad Right-of-Way])

< Buildings in Subarea 1 would be located so as to extend and maintain the continuity of the Downtown storefront pattern along Magnolia Avenue. (Policy 16 [Downtown Storefront Pattern])

< Elsewhere in Subarea 1, where buildings adjoin community-serving outdoor spaces or pedestrian routes, they would be located so as to provide spatial definition, human scale, and visual interest. (Policy 17 [Buildings without Magnolia Avenue Frontage])

< Building heights along Magnolia Avenue would be similar to those along the existing Downtown frontage of Magnolia Avenue; the modulation and articulation of buildings to replicate the scale and variation of existing Downtown facades would be promoted. (Policy 19 [Height and Scale])

< A height allowance of 26 feet would be permitted; in certain cases, the Planning Commission may allow additional height up to 36 feet. (Policy 20 [Height Allowances])

< Pedestrian-scale details would be incorporated in the ground-level facades. (Standard 9 [Pedestrian-Scale Details])

< Where parking is located within a structure and adjacent to a designated pedestrian-oriented frontage, such parking would be encased by pedestrian-oriented uses or screened so that it does not interrupt or detract from the appearance of the designated frontages. (Standard 10 [Structured Parking Screening])

< New buildings in Subarea 1 would be compatible with the historic materials, features, size, scale, and proportions of the older structures in the Downtown area, but would not attempt to replicate a specific historic style. (Policy 25 [Architectural Standards for Historic Context] and Standard 13 [Replication Discouraged])

< Open space would be provided adjacent to the two preserved railroad buildings, at a size and design to accommodate community-oriented activities. (Policy 32 [Railroad Plaza])

< The City intends to retain public parking at the site of the existing City parking lot in Subarea 1; this would allow continued views of the American Legion hall from Magnolia Avenue. An exception to this could arise if the sale, lease, or exchange of the property facilitates construction of other desired public facilities such as a library or expanded public parking serving Downtown. Any structure to be built on this parcel would be complementary in height and massing to the existing structures on the facing three corners of the Magnolia Avenue/East Ward Street intersection, and would need to be set back slightly at the corner to form a small plaza space. (Policy 35 [Standard for Northeast Corner of Magnolia Avenue and Ward Street] and Standard 19 [Northeast Corner of Magnolia Avenue and Ward Street])

< The three structures located on the American Legion hall parcel would be retained in their current use under the Specific Plan. In the event that the existing buildings are demolished or removed, new construction would be required to maintain a scale and appearance consistent with existing and planned neighboring buildings and grounds. (Policy 36 [New Construction on the American Legion Property])

< Doherty Park would be preserved in its current configuration, and the existing multipurpose pedestrian/bike path may be improved and realigned. (Policy 37 [Doherty Park Design])

Several protective policies and standards are also included in the Specific Plan for Subareas 2 and 3. Any alterations or additions to the Albertsons building in the Larkspur Plaza shopping center (Subarea 2) would be required to integrate the south-facing building elevation with the adjacent pedestrian/bicycle path and park development, and would need to protect future residents of the area from noise, unwanted light, and other potential nuisances that may be caused by any new service and loading facilities.

The Specific Plan encourages the retention of the existing service station at the corner of Magnolia Avenue and Doherty Drive (Subarea 2). However, if any changes were made to the service station or if it were converted to other purposes, building and landscape design would have to be integrated with the design of the adjacent Magnolia Avenue frontage, existing vehicle access would have to be modified to simplify and clarify traffic movements and minimize conflicting movements at the Magnolia Avenue/Doherty Drive intersection, and the architecture and landscaping of all structures and open areas would have to provide an attractive, well-defined entrance to Downtown Larkspur (Design Policy 43 and Standards 23 and 24).

The Niven property (Subarea 3), where residential development would occur, is currently dominated by abandoned greenhouses that are in a dilapidated condition. Specific Plan design policies for Subarea 3 would provide for a neighborhood design that is unique, yet compatible with surrounding residential neighborhoods. Most specifically, Policy 46 (Residential Architecture) calls for design of residences of varying size and architecture with a scale and appearance consistent with that of the city's older neighborhoods such as Baltimore Park, Monte Vista Avenue, and Heather Gardens. Policy 51 (Diversity in Size and Appearance, Single Family and Cottage Homes), notes that siting of homes in Subarea 3 shall provide a visually diverse appearance on individual street segments and among clusters of homes. The layout of streets and the design and landscaping of new homes would create a distinctive neighborhood appearance and pedestrian-oriented living environment.

Comments were received on the previous Draft EIR expressing concern about the design and location for a proposed 36-room hotel along Magnolia Avenue in Subarea 1. A 36-room hotel is one of many possible uses in this Specific Plan subarea, including retail and office. The hotel use would be subject to the same building design standards as other commercial development in the area: General Design Policy 7 (Building Design) and Subarea 1 Design Policies 15 (Storefront Downtown Standards) and 16 (Downtown Storefront Pattern). The hotel would also be subject to other policies on building location, building heights, pedestrian-oriented frontage, and architectural design. Because the hotel use, like any other commercial development in the area, would be required to conform with these protective policies, the visual character of Central Larkspur would not be degraded. This impact is considered less than significant.

Impact **4.10-4**

Potential Changes in Views Associated with New Sources of Light or Glare.
New structures constructed on the site of currently unused greenhouses and vehicles parked in parking areas would represent new sources of light and glare. However, specific plan policies require street lighting to be installed in a manner to prevent light from spilling over onto facing residences. In addition, surrounding land uses currently generate light and glare, so the additional light and glare generated would not be more substantial than or inconsistent with existing sources. This impact is considered ***less than significant****.*

Development of the Specific Plan area as proposed would result in the construction of new structures and parking areas on land that currently supports unused greenhouses and other commercial buildings. The proposed structures, and the vehicles that would be parked in the parking areas, would represent new sources of light and glare within the Specific Plan area. As indicated above, the Specific Plan incorporates policies and standards intended to reduce the effects associated with the development-related increase in street lighting within the Specific Plan area. Street lights would not exceed a height of 14 feet, would be spaced approximately 60 feet apart on alternating sides of the street, and would use traditional-style lampposts with simple acorn-style globes outfitted with cutoff lenses to prevent light from spilling over onto facing residences (Standard 56 [Street Lights]). In addition, Specific Plan Design Standard 11 (Structured Parking Lighting) states that all interior illumination sources in parking areas would be screened so that they would not be directly visible from the exterior. Because the Specific Plan area is located in the midst of existing land uses that currently generate light and glare, the amount of light and glare that would be added to the ambient environment with development of the Specific Plan area would not be regarded as substantial. This impact is considered less than significant.

CUMULATIVE IMPACTS

Larkspur and the surrounding area are predominantly built out, with little developable land remaining. There are currently no other development projects in the vicinity of the Specific Plan area that would result in a cumulative impact on visual resources. Therefore, there would be no cumulative impacts on visual quality and aesthetics as a result of implementation of the Specific Plan.

4.10.3 MITIGATION MEASURES

PROJECT MITIGATION MEASURES

No mitigation measures are required for the following less-than-significant impacts.

4.10-1: Potential Interference with Scenic Vistas

4.10-2: Potential Damage to Scenic Resources

4.10-3: Potential Degradation of Visual Character

4.10-4: Potential Changes in Views Associated with New Sources of Light or Glare

CUMULATIVE MITIGATION MEASURES

There would be no cumulative impacts on visual quality as a result of implementation of the Specific Plan; therefore, no mitigation measures are required.

4.10.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

No significant project or cumulative impacts on visual quality and aesthetics would result from implementation of the Specific Plan.

4.11 HISTORICAL, CULTURAL, AND ARCHAEOLOGICAL RESOURCES

Construction in the Specific Plan area would affect a number of known cultural resources. A prehistoric mound, CA-MRN-68, was located near the East Ward Street entrance to the Niven Nursery, although it has been flattened by agricultural activities. The Bickerstaff ranch, an 1852 adobe, may have been constructed atop the mound.

Other historic resources within the Specific Plan area include some early Niven Nursery structures, and buildings and railroad artifacts associated with the Northwestern Pacific Railroad station. The railroad structures and railbed are contributing elements of the Downtown Larkspur National Register Historic District.

4.11.1 EXISTING SETTING

REGIONAL SETTING

The archaeology of central California has been analyzed in terms of separate cultural periods that change based on subsistence systems, burial practices, and trade networks. In the early 1970s, Fredrickson (1973, 1974) proposed a sequence of cultural patterns for the central districts of the North Coast Ranges, including the Specific Plan area. These different cultural patterns could be characterized by:

< similar technological skills and devices (specific cultural items);

< similar economic modes (production, distribution, consumption), including especially participation in trade networks and practices surrounding wealth; and

< similar mortuary and ceremonial practices (Fredrickson 1973).

The following is a summary of these temporal periods with descriptions of the associated cultural patterns that have been identified for the project region. The summaries incorporate recent revisions that are summarized from the recent work of White and Fredrickson (1992).

Paleo-Indian Period (10,000 B.C. to 6000 B.C.)

This period saw the first spread of humans into California with most known sites being situated along lakeshores. A developed mano/metate technology may have been present at this time, although evidence regarding this technology is scarce. Tribes were not heavily dependent upon trade networks, and trading activities occurred on an ad hoc, individual basis. Characteristic artifacts noted in the assemblages include fluted projectile points and flaked crescents.

Lower Archaic Period (6000 B.C. to 3000 B.C.)

The beginning of this period coincided with a climatic shift to more arid conditions. Subsistence appears to have been focused more on plant foods, although hunting clearly still provided important food and raw material sources. Settlement appeared to be semi-sedentary

with little emphasis on material wealth. Most tools were manufactured of local materials, and exchange remained on an ad hoc basis. Distinctive artifact types include large projectile points, milling slabs, and handstones.

Middle Archaic Period (3000 B.C. to 1000 B.C.)

This period starts at the end of mid-Holocene climatic conditions when weather patterns became similar to present-day conditions. Discernable cultural change was likely brought about in response to these changes in climate and accompanying variation in floral and faunal resources. Economic systems likely included the introduction of acorn processing technology. Hunting remained an important source of food, although reliance on plant foods appears to have dominated the subsistence system. There was an overall growth in population and a general expansion in land use. Important artifacts characteristic of this period include the introduction of the bowl mortar and pestle and the continued use of large projectile points.

Upper Archaic Period (1000 B.C. to A.D. 500)

A marked expansion of sociopolitical complexity marks this period. There was a greater complexity of trade systems with evidence for regular, sustained exchanges between groups. Shell beads gained in significance as possible indicators of personal status and as important trade items. This period retained large projectile points, but the milling stone and handstone were replaced throughout most of California by the bowl mortar and pestle.

Emergent Period (A.D. 500 to 1800)

This period is distinguished by the advent of several technological and social changes. The bow and arrow were introduced. Territorial boundaries between groups became well established and were documented in early historic accounts. The exchange of goods between groups became more regular. The clamshell disk bead became a monetary unit of exchange and increasing quantities of goods were transported over greater distances.

Cultural traits that distinguish this period include distinctive burial practices. Artifact assemblages include clam and *Olivella* shell disk beads, magnesite cylinders, and *Haliotis* (abalone) ornaments, as well as bird bone whistles and tubes and flanged soapstone pipes. The mortar and pestle are the predominant milling implements and small arrow points replaced the larger projectile point forms.

Understanding of these periods, their associated artifact types, and the reasons for cultural change during the prehistoric era sets a framework for the interpretation of prehistoric cultural resources found within the Specific Plan area.

CULTURAL SETTING

The Specific Plan area is located in a part of Marin County that is known to have been occupied, at least intermittently, for the past 6,000 years or more based upon evidence gathered from archaeological sites in the region (Fredrickson 1973). The ethnographic

inhabitants of the area were the Coast Miwok Indian group who are known to have established villages in the vicinity of the Specific Plan area (Kroeber 1925). This region historically comprised ranching, orchards, and similar land uses. During this historic period, much of the historic bay marshland was filled.

Coast Miwok territory included Marin County up to the interface with the Kashaya Pomo, Southern Pomo, and Wappo in Sonoma County (Kelly 1978). Most likely, Native Americans encountered by Drake and Cermeño during their voyages would have been Coast Miwok. There are few other records of these peoples until the latter portions of the 18th century, when the enforced missionization of many of the Coast Miwok took its toll on the culture. At the beginning of the American period (ca. 1850), there were approximately 250 Coast Miwok left. By the 1930s, there were reportedly three individuals who retained predominantly Coast Miwok heritage (Kelly 1978).

Archaeological Resources

One prehistoric site was identified within the Specific Plan area, CA-MRN-68, originally recorded by N.C. Nelson in 1907. During a field inspection of the Niven property (Subarea 3) in 1995, Miley Holman (Holman & Associates) found evidence of material similar to that which Nelson noted in 1907, with small, finely fractured shellfish remains seen throughout the area extending from the entrance to the property on East Ward Street along the western border of the property. Holman reported that the shellmound as discovered by Nelson had been substantially leveled by agricultural uses of the land, and had been scattered over the landscape and into the marsh to the north and east of the original homestead at the site. None of the visible deposits of what appeared to be aboriginal soils (midden) seemed to be associated with an intact deposit of material; however, actual intact midden areas could exist in areas covered by pavement in and around the original location of CA-MRN-68, and perhaps buried under the floors of the standing greenhouses.

In addition, several historic resources were noted during the various site surveys. The Bickerstaff ranch and adobe, built on a knoll in the Specific Plan area in 1852, has been razed; however, deposits and features associated with the complex may still be found within the Specific Plan area. The Niven Nursery itself, dating from the early 1920s (and particularly buildings in the west nursery area dating from 1921 to the 1930s) may be eligible for listing on the NRHP under several criteria. The Northwestern Pacific Railroad station and tracks, located on the southwestern portion of the Specific Plan area, have been found to be contributing elements to the Downtown Larkspur National Register Historic District. As these structures are on the NRHP, they are automatically eligible for listing on the California Register of Historical Resources (CRHR) as well.

Results of Record Search

In 1995, Holman conducted an updated literature review and record search at the Northwest Information Center of the California Historical Resources Information System, located at Sonoma State University, to obtain information about recorded archaeological resources in and

around the Specific Plan area. This was repeated by William Self Associates in 1999. In both of these cases, one prehistoric site was identified on the property (CA-MRN-68), originally recorded by N. C. Nelson in 1907. In neither case did the record search indicate that there had been any formal cultural resources survey of the site. The record searches included a review of all recorded historic and prehistoric archaeological sites within a 0.5-mile radius of the Specific Plan area as well as a review of all known cultural resource surveys and excavation reports.

No previous archaeological surveys have been recorded within the Niven property (Subarea 3), although several surveys have been performed within 0.5-mile of the Specific Plan area. Those surveys were performed for an AT&T fiber optic cable project (Origer 1991, S#13217); a water pipeline project (Roop 1991, S#16949); a Piper Park project (Jackson 1976, S#17567); and the Elm Avenue project (Morre 1996, S#18590). No new cultural sites were discovered near the Specific Plan area as a result of these surveys. However, Nels Nelson recorded a Native American burial ground (CA-MRN-67) just south of the Specific Plan area in 1907. CA-MRN-67 was situated on what was, before the Niven Nursery, the Hoster dairy farm pasture. The pastureland abutted Corte Madera Creek and marsh.

Results of Field Survey

Holman conducted a field reconnaissance of the Specific Plan area in 1995 (Holman & Associates 1995). At the time, Holman noted shell midden scattered along the western portion of the property, as well as imported fill materials and evidence of soil disturbances. Holman also noted the historic structures from the Niven Nursery.

William Self Associates principal, William Self, conducted a reconnaissance survey of the Specific Plan area on October 5, 1999 (William Self Associates 1999). Numerous pre-1940 nursery greenhouses, outbuildings, office and residences, as well as more modern structures and both hardscape and landscaping, were noted in much of the Specific Plan area. An area of several acres in the eastern portion of Subarea 3 was noted as having been subject to filling and grading over many years, as well as plowing. Several pieces of marine oyster shell (Ostrea) were evident in the soil, as were two pieces of nondiagnostic historic ceramic. These materials were believed to be representative of imported fill material, not an in-place cultural deposit. Self suggested that, given the history of earth movement on the property, it was unlikely that these surface manifestations could yield significant information. However, he noted that the possibility remained that a portion of the shell midden from CA-MRN-68 might be intact below the ground surface.

A geotechnical study (Harza Engineering Company 1998a) revealed that the majority of the Niven property (Subarea 3) is covered with 4 to 9 feet of fill. There is no mention in that study of the presence of shell or "midden." However, the borings represent only a very small sample of the total property, and it is possible that they could have failed to record extant shell midden deposits, as that was not the purpose of the borings. If subsurface cultural materials exist, they are most likely capped by fill.

A limited testing program was completed by Holman & Associates (2003). This included 29 auger borings between the nursery buildings, concentrating on the former location of the Bickerstaff complex and the East Ward Street entrance to the property. Two large areas of intact midden were found, near the eastern and southwestern portions of the property. These deposits may well extend beneath existing structures. More diffuse, disturbed midden was also found scattered across the Specific Plan area. More extensive testing, to be done by Holman & Associates at the request of the City, will take place before the Final EIR is completed to refine information regarding spatial extent, content, and NRHP or CRHR eligibility of the deposits.

Historic Resources

In March 1998, Holman indicated (Holman & Associates 1998) that the site of the 1846 encampment of Captain John C. Fremont and his troops following the battle at Olompali may have been located just outside the Niven property (or, perhaps, the encampment extended into it). Historic deposits associated with this encampment may still exist within the Specific Plan area, despite subsequent alteration of the land. Holman also indicated that various 19th century historical deposits associated with the Bickerstaff ranch and adobe (built in 1852 on a knoll that was said to have been the site of a shellmound, razed in 1922) are likely to be found in hollow fill type deposits contained in privies, wells, and cisterns present at the Niven property (Subarea 3); these historic archaeological deposits would possess a significant record of early domestic/agricultural life spanning a considerable period from the early 1850s through the early 1900s.

In his report on the field investigation of the Niven site (Subarea 3) conducted in 1995, Holman indicated that the property contained the remainder of the original farmhouse complex at its entrance and retained intact almost all of the Niven Nursery complex dating from the early 1920s. In Holman's opinion, development-related activity that might have adverse effects on the nursery complex would be considered potentially significant under CEQA criteria.

In April 2000, Ward Hill, an architectural historian, completed his evaluation of the Niven Nursery site (Subarea 3) under the criteria of the CRHR. He conducted a detailed survey of the Niven Nursery on March 17, 2000, and archival research and oral history on the property during that month. His report concludes that the original nursery company buildings in the west nursery area dating from 1921 to the 1930s appear to be eligible for the CRHR under Criteria A, B, and C. The contributing buildings in the west nursery include greenhouses 2, 3, 4, 5, 7, 8, and 9 and the Niven House, all of which appear to retain a good level of historic integrity. These buildings appear to be eligible under Criterion A because they are associated with an important early business in Larkspur, and under Criterion B because of their important association with George Niven, founder of the nursery, who was a significant figure in the flower industry. The greenhouses also appear to be eligible under Criterion C because they are likely rare, surviving examples of greenhouses dating from the 1920s or 1930s.

The buildings that once housed the Northwestern Pacific Railroad station and warming house located in the southwestern portion of the Specific Plan area were built in 1929, and were used

to support railroad operations until the station was closed in 1941. Although these two buildings have been identified as contributors to the Historic District, the Video Monde building and the nearby warehouse are not contributing buildings to the Historic District. Originally the station master's residence, the building that is now the American Legion hall, was built sometime before 1909. The former railroad yard building in this group is a one-story wooden structure.

Interview with George Heierle

Mr. Heierle is a longtime employee of and one-time resident at the Niven Nursery. He arrived at the nursery with his family in 1926. The following is a summary of questions and answers from an interview on August 15, 2000:

< *Do you remember where the Bickerstaff House was located?* Representatives of the City Heritage Preservation Committee were concerned that the historic Bickerstaff House may have been located on the property. Although the exact location of the house (destroyed in 1922) is unknown, the committee was concerned about the possibility that remains of the house may exist on the property.

Mr. Heierle remembered that the hill on which the Bickerstaff House had stood was partially bulldozed in 1937 or 1938. The dirt from the top of the hill was pushed toward the bay to help fill in the marshy land in the northeastern portion of the property. The original location of the hill, now leveled, served as the base for a series of greenhouses used for the production of roses beginning shortly after the conclusion of World War II.

There are no intact remains directly associated with the Bickerstaff House on the Niven property. William Self Associates concluded that there is no likelihood that in-place remains exist on the property that could add to the understanding of this resource.

< *Do you remember where the Indian site was located? What remains were found?* Representatives of the City Heritage Preservation Committee were concerned that an intact prehistoric Native American site might lie beneath the surface of the property.

Mr. Heierle indicated that many people had found Native American artifacts such as "arrowheads" on the property since 1926. He said that occasionally he would see pockets of shell or charcoal around the property, presumably shell midden, although he was unable to indicate specific locations of concentrations of shell midden. At no point during the interview did Mr. Heierle mention having seen human remains.

< *Can you describe the history of earth moving at the nursery? What happened to each of these sites?*

As mentioned previously, Mr. Heierle remembered that the hill on which the Bickerstaff House had stood was partially bulldozed in 1937 or 1938. The dirt from the top of the hill was pushed toward the bay to help fill in the marshy land in the northeastern portion of the property. The original location of the hill, now leveled, served as the base for a series of

greenhouses used for the production of roses beginning shortly after the conclusion of World War II.

REGULATORY SETTING

CEQA offers guidelines regarding impacts on historic and prehistoric archaeological resources. CEQA states that if a project would result in significant impacts on important historical resources, then alternative plans or mitigation measures must be considered. However, only significant historical resources need to be addressed.

The State CEQA Guidelines define a significant historical resource as "a resource listed or eligible for listing on the California Register of Historical Resources" ([CEQA] §5024.1), "a resource included in a local registry of historic resources," or a resource deemed historically significant by the lead agency (CEQA Guidelines §15064.5(a)). A historical resource may be eligible for inclusion on the CRHR if it:

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

< is associated with the lives of persons important in our past;

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

< has yielded, or may be likely to yield, information important in prehistory or history.

In addition, the State CEQA Guidelines require consideration of unique archaeological sites (Guidelines §15064.5(c)). If an archaeological site does not meet the criteria for a historical resource, but does meet the definition of a unique archeological resource as outlined in CEQA §21083.2, it may be treated as a significant resource.

4.11.2 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Implementation of the Specific Plan would have a significant impact if it were to result in:

< the direct or indirect destruction of a unique paleontological resource;

< the physical demolition, destruction, relocation, or alteration of a unique archaeological resource;

< the physical demolition, destruction, relocation, or alteration of a historical resource or its immediate surroundings to the extent that those physical characteristics that convey the historical significance and justify the identification of the historic resource (or the eligibility for such identification) would be materially altered;

< the direct or indirect destruction of a unique geological feature; or

< the disturbance of any human remains, including those interred outside of formal cemeteries.

PROJECT-LEVEL IMPACTS

Impact **4.11-1**

Potential Direct or Indirect Destruction of Unique Paleontological Resources. *No unique paleontological resources have been identified within the Specific Plan area. This impact is considered* ***less than significant****.*

Paleontological resources, also known as fossils, are the remains or traces of prehistoric plants and animals. No unique paleontological resources have been identified within the Specific Plan area, and implementation of the Specific Plan would not be expected to result in either the direct or indirect destruction of any unique paleontological resources. This impact is considered less than significant.

Impact **4.11-2**

Potential Damage to or Destruction of Archaeological Resources. *Construction-related activities may damage or destroy intact portions of prehistoric site CA-MRN-68, other unknown Native American archaeological resources, and/or unknown historic resources (e.g., features related to the Bickerstaff ranch and adobe, and the 1846 encampment of Captain John C. Fremont). This impact is considered* ***potentially significant****.*

Intact portions of prehistoric site CA-MRN-68 have been identified within the Specific Plan area. Construction-related activities, including excavation, trenching, or grading, may damage or destroy portions of this site or other features related to the Bickerstaff ranch and adobe, as well as Native American archaeological resources. It is also possible that other, currently unknown archaeological resources may be uncovered during project construction, including the 1846 encampment of Captain John C. Fremont and his troops following the battle at Olompali. This impact is considered potentially significant.

Impact **4.11-3**

Alteration of or Other Effects on Known Historical Resources. *Construction may include demolition or alteration of extant structures or destruction of historic features, and construction and development could result in structures built within the right-of-way of the historic railroad. This impact is considered* ***significant****.*

A number of historic resources have been noted within the Specific Plan area, including portions of the Niven Nursery from the 1920s–1930s that may be eligible for listing on the CRHR, and the Northwestern Pacific Railroad station and warming house, as well as the railroad right-of-way. The Specific Plan (Land Use Standard 7 [Railroad Plaza]) indicates that a centrally located and publicly oriented open space should be provided adjoining the railroad station and warming house, to be designed as both a focus and amenity for adjacent commercial and residential uses and as a setting for community-oriented activities and events. In addition, Specific Plan Community Design Standard 18 (Railroad Station and Warming House) indicates that the original character-defining features of the railroad station and warming house buildings should be documented, to the extent possible, and restored using the following sequence of action:

1. Protect and maintain those features that are extant and in good condition.

2. Repair those features that have been damaged or covered by other construction using the least amount of intervention possible. Do not replace building features that can be repaired.

3. Replace missing historic features using the following order of priorities:

   < Recover, if possible.

   < If unrecoverable, reproduce using photographs or other documentation.

   < If documentation is inadequate, design a new feature that is compatible with the remaining character-defining elements of the building. The new feature should be clearly differentiated to avoid creating a false historical appearance.

Specific Plan Land Use Policy 17 (Existing Uses Encouraged) and Community Design Policy 36 (New Construction on the American Legion Property) indicate that the existing structures on the American Legion hall parcel in Subarea 1 (two of which date from the early 1900s) should be retained in their current uses, but that in the event that the existing buildings are demolished or removed, new construction shall maintain a scale and appearance consistent with existing and planned neighboring buildings and grounds. In addition, Specific Plan Land Use Policy 11 (Railroad Buildings) and Community Design Policies 12 (Railroad Right-of-Way) and 31 (Railroad Right-of-Way Bikeway and Parking) indicate that construction should be limited in the railroad right-of-way.

Construction activities may include demolition or alteration of extant structures, destruction of historic features, or placement of structures in the railroad right-of-way. However, Land Use Standard 7 (Railroad Plaza) requires adequate open-space be retained adjacent to the railroad buildings to provide an appropriate setting for these historic structures. Nonetheless, the Specific Plan would permit the development of Subarea 3 and thus necessitating the demolition of some or all of the existing buildings associated with the Niven Nursery. This impact is considered significant.

Impact **4.11-4**

Potential Direct or Indirect Destruction of Unique Geologic Features. *No unique geologic features have been identified within the Specific Plan area. This impact is considered* ***less than significant****.*

No unique geologic features have been identified within the Specific Plan area, and implementation of the Specific Plan would not be expected to result in either the direct or indirect destruction of any unique geologic features. This impact is considered less than significant.

Impact **4.11-5**

Possible Discovery of Human Remains. *Construction activities may result in the inadvertent discovery of human remains, possibly associated with CA-MRN-68. This impact is considered* ***potentially significant****.*

Implementation of the Specific Plan would not result in the disturbance of any known human remains. However, it is possible that during remediation activity in Subarea 3 or construction activity associated with the implementation of the Specific Plan, human remains could be uncovered. This impact is considered potentially significant.

CUMULATIVE IMPACTS

Cultural resources are a site-specific resource in Marin County. Cumulative growth in Marin County, and in the city of Larkspur, would result in cumulative impacts on cultural resources and consequent loss of those resources throughout the region. The Specific Plan, as currently designed, would result in the loss of prehistoric site CA-MRN-68, the Niven Nursery, and potentially as-yet-undiscovered features related to the Bickerstaff ranch and adobe or the Fremont encampment. This is a significant and unavoidable cumulative impact.

4.11.3 MITIGATION MEASURES

PROJECT MITIGATION MEASURES

No mitigation measures are required for the following less-than-significant impacts.

4.11-1: Potential Direct or Indirect Destruction of Unique Paleontological Resources

4.11-4: Potential Direct or Indirect Destruction of Unique Geologic Features

The following mitigation measures are recommended for potentially significant impacts.

Impact **4.11-2a, b** mitigation

Potential Damage to or Destruction of Archaeological Resources.

(a) Implement Archaeological Testing Program

The City shall include the following new policy in the Specific Plan.

New Policy: An archaeological subsurface testing program to delineate and define the elements of CA-MRN-68 shall be implemented before the beginning of construction. The archaeologist will make a preliminary assessment of NRHP and CRHR eligibility based on the results of the testing. If CA-MRN-68 is found to be potentially eligible for listing, then destruction of this site must be avoided.

(b) Monitor Construction

The City shall include the following new policy in the Specific Plan.

New Policy: A professional archaeologist, who meets the Secretary of the Interior's Standards and Guidelines, and a Native American observer (identified through the Native American Heritage Commission) shall be present to monitor ground disturbing activities within the Specific Plan area. In the event that any archaeological resources are uncovered within the Specific Plan area during future remediation or construction activity associated with the implementation of the Specific Plan, there shall be no further excavation or disturbance of the site or any nearby area until the archaeologist has evaluated the find and appropriate site-specific mitigation has been identified to protect, preserve, remove, or restore the artifacts uncovered.

Impact **4.11-3** mitigation

Alteration of or Other Effects on Historical Resources.

Document Historic Structures

The City shall include the following new policy in the Specific Plan.

New Policy: The Niven Nursery structures that appear to be eligible for listing in the CRHR shall be documented according to Historic American Buildings Survey (HABS) standards. This task shall be performed by a qualified Architectural Historian who meets the Secretary of the Interior's Standards and Guidelines, and shall be accomplished by those proposing development of Subarea 3 and approved by the City Planning Department before any demolition permit for that property is issued.

As indicated in the State CEQA Guidelines (Guidelines §15126.4(b)(2)), "In some circumstances, documentation of an historic resource, by way of historic narrative, photographs or architectural drawings, as mitigation for the effects of demolition of the resource will not mitigate the effects to a point where clearly no significant effect on the environment would occur." Although documentation would mitigate the demolition of these structures to some extent, it would not reduce the effects of demolition to a less-than-significant level, and demolition of these structures would remain a significant and unavoidable impact associated with implementation of the Specific Plan.

Impact **4.11-5** mitigation

Possible Discovery of Human Remains.

Stop Potentially Damaging Work if Human Remains are Uncovered During Construction, Assess the Significance of the Find, and Pursue Appropriate Management

The City shall include the following new policy in the Specific Plan.

New Policy: California law recognizes the need to protect Native American human burials, skeletal remains, and items associated with Native American burials from vandalism and inadvertent destruction. The procedures for the

treatment of Native American human remains are contained in California Health and Safety Code §7050.5 and §7052 and CEQA §5097.

In accordance with the California Health and Safety Code, if human remains are uncovered during construction at the project site, the construction contractor shall immediately halt potentially damaging excavation and notify the City or the City's designated representative. The City shall immediately notify the coroner. The California Health and Safety Code states that if human remains are found in any location other than a dedicated cemetery, excavation must to be halted in the immediate area, and the county coroner is to be notified to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (California Health and Safety Code §7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission by phone within 24 hours of making that determination (California Health and Safety Code §7050[c]). The responsibilities of the City for acting upon notification of a discovery of Native American human remains are identified in CEQA §5097.9.

Although recovery of remains would mitigate their being disturbed to some extent, it would not reduce the effects of the disturbance to a less than significant level. If found, disturbance of human remains would remain a significant and unavoidable impact associated with implementation of the Specific Plan.

CUMULATIVE MITIGATION MEASURES

As mentioned above, cultural resources are a site-specific resource in Marin County. Cumulative growth in Marin County, and in the city of Larkspur, would result in cumulative impacts on cultural resources and consequent loss of those resources throughout the region. Proposed mitigation measures described above would reduce the impacts to the extent feasible, primarily by maximizing data collection before site destruction. However, the impact caused by the loss of these sites is considered significant and unavoidable.

4.11.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Following implementation of the above mitigation measures, Impacts 4.11-2 and 4.11-3 would remain significant and unavoidable. If human remains are found during construction, and development of the site cannot be avoided, then Impact 4.11-5 would also remain significant and unavoidable. These impacts would also constitute a considerable contribution to cumulative cultural resources impacts.

4.12 HAZARDS AND HAZARDOUS MATERIALS

This section addresses issues related to hazards, including the presence of hazardous materials contamination in soils and groundwater in the Specific Plan area. Information in this section is based on technical reports of field sampling conducted for the EIR, as well as the following environmental site assessments:

< *Environmental Site Assessment Report, 2 Ward Street, Larkspur, California* (Geopacific Corporation 1996);

< *Phase I Site Assessment and Initial Phase II Assessment, Niven Nursery, Larkspur, California* (Harza Engineering Company 1998b) (Appendix H-1);

< *Soil and Groundwater Sampling and Analysis Report Niven Nursery, 2 Ward Street, Larkspur, California* (ENSR International 2001) (Appendix H-2);

< *Health Based Risk Assessment for Niven Nursery, Larkspur, California* (ENVIRON 2002); and

< *Draft Removal Action Workplan, Niven Nursery, 2 Ward Street, Larkspur, California* (ENSR International 2002).

The Geopacific Corporation 1996, ENVIRON 2002, and ENSR International 2002 report, as well as all figures in the Harza Engineering Company 1998b report, are available for review at the City Planning and Building Department, 400 Magnolia Avenue, in Larkspur, (415) 927-5110.

Personnel at the San Francisco Bay RWQCB also provided information relevant to the discussion of hazardous materials contamination in the Specific Plan area.

4.12.1 EXISTING SETTING

REGULATORY SETTING

In California, hazardous materials and hazardous wastes are regulated extensively under federal, state, and local laws and regulations. Laws and regulations pertaining to hazardous materials and wastes are designed to protect human health and the environment. Federal regulations set the minimum thresholds; state and local laws and regulations may be more stringent than federal standards. State and local agencies are responsible for implementing most of the requirements of these laws and regulations.

Federal

EPA is responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials. Applicable federal regulations pertaining to hazardous materials are contained primarily in Titles 29, 40, and 49 of the Code of Federal Regulations (CFR). Hazardous materials are defined as "materials that may pose an unreasonable risk to health, safety, and property when transported in commerce" (49 CFR 171.8). Such materials are listed in 49 CFR 172.101, Appendix A. Management of hazardous materials is governed by

the Resource Conservation and Recovery Act of 1976 (RCRA); the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA); and the Superfund Amendments and Reauthorization Act (SARA). The federal Hazardous Waste Act regulates the transportation of hazardous materials. These laws and associated regulations include specific requirements for facilities that generate, use, store, treat, and/or dispose of hazardous materials. EPA provides oversight and supervision for federal Superfund investigation/remediation projects, evaluates remediation technologies, and develops hazardous materials disposal restrictions and treatment standards. OSHA is responsible for enforcement and implementation of federal laws and regulations pertaining to worker health and safety.

Hazardous substances are a subclass of hazardous materials. They are regulated under the federal CWA, CERCLA, and SARA. Hazardous wastes, although included in the definition of hazardous materials and hazardous substances, are regulated separately under the RCRA and Hazardous and Solid Waste Amendments of 1984 (amendments to RCRA). The statutory definition of hazardous waste is those wastes classified as ignitable, corrosive, reactive, or toxic. A material that has a pH value of less than 2 is considered corrosive. A material can be classified as a hazardous waste only after it is generated (i.e., after it has been designated as a waste by its owner). This means that any contaminated soils, water, or sediments in place in the Specific Plan area could not be classified as hazardous waste unless they are removed from the ground (once removed, they are considered to have been "generated"). RCRA regulates hazardous waste from the time that the waste is generated through its management, storage, transport, and treatment, until its final disposal. EPA is responsible for implementing this law and can delegate its responsibility under the law to the states.

According to RCRA, generators of hazardous waste are separated into three groups:

< Large Quantity Generators are those that generate more than 2,200 pounds (1,000 kilograms) per calendar month (approximately five full 55-gallon drums). Examples include pharmaceutical companies and chemical manufacturers.

< Small Quantity Generators are those that generate between 220 pounds (100 kilograms) and 2,200 pounds (1,000 kilograms) of hazardous waste per calendar month. Examples include laboratories, printers, and dry cleaners.

< Conditionally Exempt Small Quantity Generators are those that generate less than 220 pounds (100 kilograms) of hazardous waste per calendar month. Examples include 1-hour photo labs and dental offices.

State

State regulations applicable to hazardous substances are indexed in Guidelines Title 26. California law defines a hazardous material as any material that, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may pose a present or potential hazard to human health and safety or to the environment if released in the workplace or the environment (California Health and Safety Code §25501). A hazardous waste is defined

as a discarded material of any form (e.g., solid, liquid, gas) that may pose a present or potential hazard to human health and safety or to the environment when improperly treated, stored, transported, or disposed of, or otherwise managed (California Health and Safety Code §25117). Hazardous wastes are included in the definition of hazardous materials.

The California Environmental Protection Agency (Cal/EPA) Department of Toxic Substances Control (DTSC) has been authorized by EPA to administer the RCRA program. California's RCRA program is more stringent than the federal program. DTSC has primary regulatory responsibility for the generation, transport, and disposal of hazardous substances under the authority of the Hazardous Waste Control Law. DTSC also acts as the lead agency for some soil and groundwater cleanup projects. DTSC provides cleanup and action levels for subsurface contamination; these levels are equal to, or more restrictive than, federal levels. DTSC has developed land disposal restrictions and treatment standards for hazardous waste disposal in California.

Handling and storage of fuels, flammable materials, and common construction-related hazardous materials are governed by Cal/OSHA standards for storage and fire protection.

The SWRCB has primary responsibility to protect water quality and supply. The Specific Plan area is located within the jurisdiction of the San Francisco Bay RWQCB. As mentioned in Section 4.4, Hydrology and Water Quality, the RWQCB is authorized by the Porter-Cologne Water Quality Act to protect the waters of the state. The RWQCB provides oversight for sites where the quality of groundwater or surface water is threatened. Extraction and disposal of contaminated groundwater during investigation/remediation activities would require a permit from the RWQCB if the water were discharged to storm drains, surface water, or land.

Marin County

On the local level, hazardous materials/waste laws and regulations are enforced through county health/hazardous materials departments, also known as certified unified program agencies (CUPAs). California's Secretary for Environmental Protection has established a unified hazardous waste and hazardous materials management regulatory program (Unified Program) as required by Senate Bill (SB) 1082 (1993). The Unified Program consolidates, coordinates, and makes consistent portions of the following six existing programs:

< hazardous waste generator and hazardous waste onsite treatment programs;

< underground storage tank (UST) program;

< hazardous materials release response plans and inventories;

< California Accidental Release Prevention Program;

< Aboveground Petroleum Storage Act requirements for spill prevention, control, and countermeasure plans; and

< California Uniform Fire Code hazardous material management plans and inventories.

The Secretary has certified 82 CUPAs to date. These 82 CUPAs carry out the responsibilities previously handled by approximately 1,300 state and local agencies, providing a central permitting and regulatory agency for permits, reporting, and compliance enforcement. (Cal/EPA 2003) In Marin County, the CUPA, part of the Department of Public Works, regulates, inspects, and permits more than 500 Marin businesses (Marin County 2001).

The County Department of Public Works also administers Marin County's Hazardous Waste Management Plan (HWMP), which is responsible for managing hazardous wastes in accordance with legislated regulations. The HWMP focuses on regulating hazardous wastes through permitting, enforcement, and the Unified Program activities to assure the safe storage, treatment, transportation, and disposal of hazardous wastes. The HWMP also provides for the management of hazardous wastes through waste reduction, siting criteria, and policies and programs related to projected handling needs. (Marin County 2002)

LOCAL SETTING

All three subareas of the Specific Plan have been used for various commercial enterprises in the past.

Subarea 1 includes the following five parcels:

- Nazari property, which includes four buildings: a former railroad station (now a restaurant), railroad warming house (now an architect's office), and two one-story commercial buildings;
- Doherty Park;
- entrance driveway from Magnolia Avenue to the Larkspur Plaza shopping center;
- City-owned public parking lot at the corner of Magnolia Avenue and East Ward Street; and
- building that serves as the clubhouse for the local American Legion chapter and includes leased office space.

Subarea 2 comprises the Larkspur Plaza shopping center—which includes the Albertsons supermarket and other commercial enterprises including the Larkspur Cleaners—and the Larkspur Service Station. Subarea 3 is occupied by the former Niven Nursery and associated greenhouses and residential structures, as well as a small commercial nursery.

Use and storage of hazardous materials in the Specific Plan area is associated primarily with the Niven Nursery site, the Larkspur Service Station, and the Larkspur Cleaners and with former land use in the area, such as the former Chevron station at 532 Magnolia Avenue (on the Nazari property). The Niven Nursery site, which makes up approximately 75% of the Specific Plan area, currently has the most significant hazardous substance use and storage.

Hazardous Materials Storage and Use in the Specific Plan Area

Larkspur Service Station

The Larkspur Service Station (600 Magnolia Avenue) is located in Subarea 2 at the corner of Magnolia Avenue and Doherty Drive. The site was developed as a gas station in 1988, and is operated in compliance with a Hazardous Waste and Hazardous Material Management Regulatory Program overseen by the County Office of Waste Management. The facility is permitted by the County's CUPA to generate hazardous waste, and has USTs on the premises (Certified Unified Program Agency 1995). In accordance with the Underground Storage Tank Operating Permit, tanks and pipelines are monitored for leaks every year. In 1999, significant concentrations of methyl tertiary butyl ether (MTBE) were encountered in groundwater samples taken at the facility.

Niven Nursery

The Niven family has owned and operated a nursery in Specific Plan Subarea 3 since 1920. The site is reported to have been undeveloped, vacant land before that time. Certain pesticides were used at the property in conjunction with the nursery operation. Pesticides were mixed in small quantities and were applied using pushcart and backpack sprayer type applicators. Lead-based paint was also used in the past to paint the greenhouses. Six USTs storing fuel were formerly present, but were removed. Other potentially hazardous materials at the site include asbestos, which has been identified in the greenhouses in boiler and pipe insulation, in mastic, and in exterior siding.

Because of the use of pesticides at the site, the Niven Nursery is currently listed as a Small Quantity Generator under RCRA standards. Six USTs storing fuel and two aboveground storage tanks (ASTs) at the Niven Nursery site were removed before formal permitting requirements were established; no leakage has been detected at the former locations of these underground tanks. There are currently two ASTs storing water at the site, each with a capacity of 40,000 gallons. One of these tanks (located on the northern portion of the Niven Nursery site) has never been used, and the other (located on the southern portion of the site) has been used only for water storage. According to the County Division of Environmental Health and the Larkspur Fire Department, there have been no reports of leaks or spills of hazardous materials within the Specific Plan area. There are also two above-grade transformers located in Subarea 3, but no polychlorinated biphenyls (PCBs) have been detected in the soil adjacent to the transformers.

In anticipation of approval of this Specific Plan, Larkspur Housing Partners, LLC, has proposed to develop the Niven Nursery site (Subarea 3) as a residential subdivision development. Larkspur Housing Partners has entered into a voluntary cleanup agreement (Docket N. HAS-A99/00-135) with DTSC, to remediate contaminated soils to a level acceptable for residential redevelopment of the site. This makes DTSC the lead agency for the environmental cleanup of Subarea 3. Previous studies undertaken by the developer identified

chemicals of potential concern at the site. Chemicals of potential concern are chemicals that are listed as hazardous or carcinogenic chemicals by EPA or Cal/EPA.

DTSC required that a Health Based Risk Assessment be prepared for Subarea 3 based on the list of chemicals of potential concern and contaminant levels identified for the property. The purpose of the Health Based Risk Assessment was to determine whether the chemical concentrations identified at the Niven Nursery site pose a risk to human health or the environment under a future scenario of residential land redevelopment. The Health Based Risk Assessment identified and evaluated each of the chemicals of potential concern identified for the site and addressed potential cancer risk for each of the site areas (ENVIRON 2002). According to EPA, there are four basic steps in the quantitative human health risk assessment process: data collection and analysis, exposure assessment, toxicity assessment, and risk characterization. All of these steps were followed in the Health Based Risk Assessment for the Niven Nursery site. DTSC reviewed the Health Based Risk Assessment, commented on all aspects of the document and its preparation, and required that comments be addressed and changes to the document be incorporated before final approval of the document by DTSC. Results of the Health Based Risk Assessment are used to determine the risk to human health and the environment from the identified chemicals of potential concern and their concentrations. The results are also used to determine the site areas that require remediation in order to reduce the risk to human health and the environment.

Based on the review of the Health Based Risk Assessment, DTSC required that portions of the Niven Nursery site be remediated by the removal of contaminated soil to reduce the health risk to an acceptable level. A Removal Action Workplan (RAW) was then developed for the site (ENSR International 2002) to specify the areas requiring soil remediation and the extent of soil removal necessary. A RAW is a remedy selection document that can be prepared for a hazardous substance release pursuant to California Health and Safety Code §25356. It is prepared when a nonemergency action or remedial action is projected to cost less than $1 million. A draft of the RAW was submitted to DTSC for review and comment, and the document was updated with respect to the review. As part of the process of finalizing the RAW, DTSC must comply with CEQA, and intends to use this EIR for that purpose. A preliminary draft of this Revised Draft EIR was reviewed by DTSC, and their comments were incorporated into the document. The various steps taken in the investigation, evaluation, and proposed remediation of the Niven Nursery site (Subarea 3) are described below under Environmental Site Investigations and Assessments.

Larkspur Cleaners

Larkspur Cleaners (590 Magnolia Avenue) is a dry cleaning facility located in Subarea 2. The facility has been in operation since 1993. Like the Larkspur Service Station, Larkspur Cleaners is in compliance with a Hazardous Waste and Hazardous Material Management Regulatory Program with the County Office of Waste Management. The County CUPA has permitted the facility to generate and handle hazardous waste (Certified Unified Program Agency 1993). The dry cleaning facility is required to submit a biennial business plan review and annual

hazardous material inventory statement to the County Office of Waste Management. There is no history of hazardous material spills or releases from this facility. Therefore, it is unlikely that Larkspur Cleaners is a potential source of contamination to the Specific Plan area.

Former Chevron Station

A Chevron service station was formerly located on Magnolia Avenue on the Nazari property in Subarea 1. Appendix A of the *Phase I Site Assessment and Initial Phase II Assessment, Niven Nursery, Larkspur, California* (Harza Engineering Company 1998b) lists the site address as 532 Magnolia Avenue. This site is reported to have had a leaking UST storing waste oil. The San Francisco Bay RWQCB lists the site as having been remediated by enhanced biodegradation and the status is listed as case closed, cleanup complete (San Francisco Bay RWQCB 2002).

Environmental Site Investigations and Assessments

Larkspur Service Station

Because MTBE was detected in significant concentrations in groundwater samples taken at the Larkspur Service Station, an environmental site investigation and remedial actions were conducted in accordance with orders given by the San Francisco Bay RWQCB. A final round of monitoring well sampling was conducted on April 11, 2002, and a report of the results was submitted to the RWQCB on May 22, 2002. (Reports and correspondence regarding this site may be reviewed by the public by appointment at the San Francisco Bay RWQCB office in Oakland, (510) 622-2430, or at the County Office of Waste Management in San Rafael, (415) 499-6647.)

Sampling was conducted at five monitoring wells; the results found that monitoring wells 1 through 5 had readings of 252 parts per billion (ppb), 2,150 ppb, 6,490 ppb, 71 ppb, and 774 ppb, respectively (Jang, pers. comm., 2003). In contrast, the State has established primary MCL standards for MTBE at 13 ppb. Monitoring wells 2 and 3, with the two highest readings, are the two closest wells to the USTs, while monitoring wells further downgradient contain much lower concentrations of MTBE. These results do not represent background concentrations; background concentration would be zero because MTBE is a humanmade chemical. However, the San Francisco Bay RWQCB issued a no-further-action letter for the site for the following stated reasons (Jang, pers. comm., 2003):

< The site has been adequately investigated.

< The groundwater plume is stable and not expanding (i.e., the concentration is not increasing over time).

< The groundwater MTBE does not pose a threat to public health because the groundwater is not a potential source of drinking water because of the low yield associated with the underlying Franciscan Complex greywacke and shale bedrock.

< The groundwater MTBE does not pose an ecological threat because the downgradient MTBE concentrations are below levels of concern even if the MTBE reaches a surface water body.

Niven Nursery

A number of environmental site investigations and assessments have been performed for the Niven Nursery site (Geopacific Corporation 1996; Harza Engineering Company 1998b; ENSR International 2001, 2002; ENVIRON 2002). For purposes of evaluating the presence of hazardous materials, the site (Subarea 3) has been subdivided into several areas (see Exhibit 4.12-1).

The western nursery area, located at the southwestern corner of the property adjacent to Ward Street and Larkspur Creek;

< the northern nursery area, which lies along the north edge of the property adjacent to Doherty Drive;

< the southern nursery area, which lies at the southeastern portion of Subarea 3 adjacent to Larkspur Creek;

< the Sloat Nursery area, located at the northeast corner of the subarea (adjacent to Doherty Drive), an entirely paved area that is leased to Sloat Nursery;

< former UST and current AST areas; and

< Larkspur Creek, southern drainage area, and northwest drainage area sediments (ENSR International 2002).

<u>Existing Structures and Building Materials</u>

Existing structures in Subarea 3 include numerous greenhouses that are in various states of upkeep and dilapidation. The most decayed greenhouse structures are those in the northern nursery area; several have fallen-down walls, missing doors, and caved-in roofs. Roof glass in this area was removed by the property owner for safety reasons. Chips of white lead-based paint were observed on the ground throughout the area adjacent to the outsides of structures. Paint chips were also observed in the building interiors. Structures in the western nursery area appear to be in good condition, but chips of white paint were also present adjacent to building foundations. Chips of white paint and white window glazing were also observed in the southern nursery area. A preliminary lead paint assessment was performed as part of the preparation of this EIR. Lead-based paint and lead-based window glazing were found to be present in building materials from all of the nursery areas at concentration levels qualifying the materials as hazardous waste under California law (Pinnacle Environmental 2002). Friable (easily crumbled), peeling, and flaking lead-based paint would have to be removed before structures at the property could be demolished.

An asbestos survey and evaluation was performed at the Niven Nursery site, and results were presented in a report by ProTech Consulting and Engineering (1998). Building materials

Exhibit 4.12.-1

containing asbestos were present in several areas of the site, including boiler rooms, insulation on holding and storage tanks, thermal systems insulation (TSI), aboveground and underground pipe wrap, greenhouse siding panels, and roofing mastic.

All asbestos-containing materials that were in a friable condition were repaired (stabilized) or removed from the site by a certified asbestos remediation contractor, R.B. Construction, Inc., and disposed of at an appropriate landfill facility (R.B. Construction 1998). The nonfriable, stable asbestos-containing materials were left in place. The work was completed to remove an existing hazard from areas of the site that were still active. Building materials containing asbestos are still present at the site, and would have to be removed before the site facilities could be demolished. These materials include those listed above.

Building materials such as walls, plant platforms, and floors have also been exposed to chlorinated pesticides during treatment of plants. Residues of pesticides may be present in the building materials. Pesticides were also stored and mixed in areas of the northern, western, and southern nurseries. Building materials in these storage and mixing areas are likely sources of residual contamination.

Chemicals of Potential Concern in Soil and Groundwater

The various site investigations and assessments performed for the Niven Nursery site (Subarea 3) were conducted to assess the presence of chemicals of potential concern in soil and groundwater, delineate the extent of contamination, and identify geologic and hydrogeologic conditions at the site. The studies determined that a number of chemicals of potential concern were present in soil and groundwater at the site. The investigations included a review of historic property use, interviews with property owners and employees, and sampling of soils and groundwater for contamination. The extent of contamination at the site by chemicals of potential concern was determined and delineated. The contaminants, as identified at the Niven Nursery site, were evaluated by ENVIRON to determine the chemicals of potential concern that were included in the human health risk assessment it performed. The chemicals of potential concern that were included in this assessment are metals, pesticides, and petroleum hydrocarbons. The specific chemicals are: arsenic; lead; mercury; chlordane; 4,4'-DDD; 4,4'-DDE; 4,4'-DDT; dieldrin; total petroleum hydrocarbons (TPH) as gasoline, diesel, and residual; benzene; toluene; ethylbenzene; and xylenes (ENVIRON 2002).

The following are levels of chemical contamination for the various areas of the Niven Nursery site (Subarea 3) as identified in the investigations by Harza Engineering Company (1998b) and ENSR International (2001). This summary is derived from information presented in the *Draft Removal Action Workplan* (ENSR International 2002).

< **Western Nursery Area:** The western nursery area contains a range of chemical contamination for the contaminants of concern. Metal concentrations are 6 to 26 milligrams per kilogram (mg/kg) arsenic (mg/kg is approximately equivalent to ppm) and 8.7 to 920 mg/kg lead; mercury was not detected. Pesticide concentrations are

0.017 to 0.31 mg/kg 4,4'-DDD; 0.013 to 0.9 mg/kg 4,4'-DDE; 0.017 to 10 mg/kg 4,4' DDT; and 0.015 to 0.3 mg/kg dieldrin. Other chlorinated pesticides were not detected.

< **Northern Nursery Area:** The northern nursery area contains a range of chemical contamination for the contaminants of concern. Metals concentrations are 14 mg/kg arsenic and 7.2 to 200 mg/kg lead. Mercury was not detected. Pesticide concentrations are 0.011 to 0.4 mg/kg 4,4'-DDD; 0.049 to 0.98 mg/kg 4,4'-DDE; 0.01 to 2.2 mg/kg 4,4'-DDT; and 0.01 to 0.28 mg/kg dieldrin. Other chlorinated pesticides were not detected.

< **Southern Nursery Area:** The southern nursery area contains a range of chemical contamination for the contaminants of concern. Metals concentrations are 1.5 to 270 mg/kg lead; no arsenic and mercury were detected. Chlorinated pesticide concentrations are 0.02 to 0.29 mg/kg 4,4'-DDD; 0.02 to 1.5 mg/kg 4,4'-DDE; 0.014 to 7.1 mg/kg 4,4'-DDT; and 0.029 to 0.61 mg/kg dieldrin. No other chlorinated pesticides were detected.

< **Sloat Nursery Area:** Lead was the only metal tested for in the Sloat Nursery area; it was present in concentrations ranging from 9.4 to 46 mg/kg. No pesticides were detected in the soil from the Sloat Nursery.

< **Former Underground Fuel Storage Tank Sites:** Traces of TPH as gasoline, TPH as diesel, and toluene, ethylbenzene, and xylenes (gasoline constituents) were detected from the former locations of USTs that stored fuel. TPH as gasoline at 1.6 mg/kg, xylenes at 0.025 to 0.037 mg/kg (25 ppb), and toluene at 0.015 to 0.021 mg/kg were detected in the western nursery area adjacent to a storage room. Diesel at 6 mg/kg was detected at the former drum storage area at the southwest corner of the northern nursery area. Traces of toluene at 0.012 mg/kg (12 ppb) and xylenes at 0.029 mg/kg (29 ppb) were detected from the northern nursery area. Traces of toluene, ethylbenzene, and xylenes at concentrations ranging from 0.003 to 1.075 mg/kg (3 to 1,075 ppb) were detected in the southern nursery area adjacent to the boiler room and former location of an AST that stored diesel.

< **Current Aboveground Water Storage Tank Sites:** No contaminants were detected in the vicinity of the existing ASTs that store water.

< **Larkspur Creek Bank Sediments:** Several sediment samples were collected from the banks of Larkspur Creek on the southern property boundary in Subarea 3. Samples were analyzed to evaluate the potential impacts on the creek of water runoff from the site. Samples were tested for arsenic, lead, and chlorinated pesticides. Arsenic was detected in one sample at 2.4 kg/mg, and lead was present at 13 to 19 mg/kg. No chlorinated pesticides were detected.

< **Southern Drainage Ditch Sediments:** The southern drainage ditch is located in the southern nursery area and discharges to Larkspur Creek. A single sediment sample collected from this ditch was tested for arsenic, lead, and 4,4'-DDT. Concentrations of 3.6 mg/kg arsenic, 3,800 mg/kg lead, and 0.041 mg/kg 4,4'-DDT were detected in the sample.

< **Northwest Drainage Ditch Sediments:** The northwest drainage ditch is located along the southwestern margin of the northern nursery area and discharges into a City storm drain in the northwest portion of the northern nursery area. Five sediment samples were collected from this area and were analyzed for arsenic, lead, mercury, chlorinated pesticides, and PCBs. Concentrations detected were 4.1 to 13 mg/kg arsenic, 620 to 1,800 mg/kg lead, and 0.013 to 0.22 mg/kg 4,4'-DDT. No other compounds were detected.

< **Groundwater:** A total of eleven boreholes were drilled for collection of groundwater samples (unfiltered). Ten of the boreholes contained groundwater, and were sampled. Two existing onsite wells from the southern portion of Subarea 3 near Larkspur Creek were also sampled. Groundwater sample analysis varied depending on the location of the sample and the potential nearby sources of contamination. Lead was detected at concentrations ranging from 0.23 to 5.9 milligrams per liter (mg/L) (230 to 5,900 ppb). Mercury was detected at concentrations of 0.0005 to 0.0022 mg/L (0.5 to 2.2 ppb). Benzene, toluene, and ethylbenzene and xylenes were detected at concentrations ranging from 0.00056 to 0.014 mg/L (0.56 to 14 ppb). TPH as gasoline was detected in only one sample at a concentration of 0.11 mg/L. TPH as diesel was detected in four samples, at concentrations ranging from 0.082 to 1.6 mg/L.

Health-Based Risk Assessment

ENVIRON performed a human health risk assessment (ENVIRON 2002) (Appendix H-5) to determine whether the development of Subarea 3 would pose any risk to the health of people expected to be living and working at the site under a future residential land redevelopment scenario. Soils, sediment, and groundwater samples were analyzed; the risk assessment methods and assumptions used were developed or recommended by Cal/EPA and EPA for use when residential land use is anticipated.

ENVIRON found that while the pesticide residue levels varied somewhat, the presence of pesticides and metals in surface soils in Subarea 3 does not pose a human cancer health risk greater than the acceptable risk range of 1 in 1 million to 100 in 1 million (1 in 10,000) used by Cal/EPA and EPA. More specifically, calculated cancer risks associated with the western nursery area, northern nursery area, southern nursery area, and Sloat Nursery were calculated to be 50 in 1 million, 20 in 1 million, 10 in 1 million and 0.2 in 1 million, respectively, before any soil removal.

Cal EPA and EPA guidelines call for calculation of a Hazard Index (HI) to evaluate the potential for adverse health effects other than cancer. A HI of less than 1 indicates that no noncarcinogenic health effects are expected. The HIs calculated for each of the designated nursery areas were all below the target HI of 1 used by Cal/EPA and EPA. It should be noted that to comply with applicable codes and to improve surface drainage, imported fill soil would be added across Subarea 3 to raise the grade. The presence of clean fill would substantially decrease any potential exposure and risk to people who would be on the property in the future.

Lead residues detected in sediment samples collected from the bottom of two drainage ditches in Subarea 3 exceeded levels that would be considered safe across a residential lot. Planned removal of sediment from those ditches, and removal of surface soil with the highest lead and pesticide levels from the western nursery area by Larkspur Housing Partners under Cal/EPA supervision, would further reduce potential health risks to levels that are at the low end of health risks considered protective of future residents.

The low levels of hydrocarbons found in shallow groundwater near some of the old fuel tanks did not exceed the residential groundwater risk-based concentrations (RBCs) and, therefore, do not pose a health risk to future residents.

Screening-Level Ecological Evaluation

A screening-level evaluation of potential ecological risks was conducted as part of the Subarea 3 risk assessment conducted by ENVIRON to determine whether the presence of contaminants onsite poses a potential threat to nonhuman receptors. The screening-level evaluation was performed in accordance with Cal/EPA Part B guidance for performing an ecological risk assessment scoping study (Cal/EPA 1996a). The results of this ecological evaluation indicated the absence of significant ecological concerns and, therefore, precluded the need to perform a full ecological risk assessment as described in Cal/EPA Part A guidance (Cal/EPA 1996b).

No terrestrial "Special Species" (which are defined by DTSC as either California species of special concern; state-listed and federally listed rare, threatened, or endangered species; or species that are proposed or recommended for state or federal listing) are present on Subarea 3. However, it is possible that Subarea 3 may provide foraging habitat for small common terrestrial mammals commonly found in urban and suburban environments (e.g., raccoon, skunk, squirrel, and small rodents). Although unlikely, it is possible that while foraging, these receptors could have direct contact with contaminants detected in Subarea 3.

Listed special-status species are not expected in the adjacent portion of Larkspur Creek. The reach of Larkspur Creek along Subarea 3 provides low-quality habitat for Coho salmon and steelhead. It is unlikely that either of these species enters Larkspur Creek except for possibly short durations. Tidewater goby is known in Corte Madera Creek, to which Larkspur Creek drains; however, tidewater goby is not expected in Larkspur Creek due to lack of suitable habitat. Two non-listed special-status species that may occur in the Specific Plan area, salt marsh common yellowthroat and San Pablo song sparrow, are generally restricted to the tidal marsh habitat in the adjacent Larkspur Creek for foraging and breeding. They are not expected in the drainage area at the northwestern portion of the Specific Plan area due to the absence of tidal marsh habitat in this area.

Comparisons to screening-level sediment and soil benchmarks established for ecological receptors indicate that the levels of lead and dieldrin may pose a risk to these species if they were exposed to the contamination in the limited areas of Subarea 3 where benchmark levels were exceeded. Although lead levels exceeded ecological sediment benchmarks in the drainage area in the northwestern portion of Subarea 3, it should be noted that there is little

indication that this drainage area support the fish or aquatic life for which the benchmarks were developed. Furthermore, laboratory analyses of sediments collected along Larkspur Creek did not reveal elevated concentrations of metals or pesticides that would cause significant ecological concerns, in accordance with the Cal/EPA (see Appendix H-1 and Section 4.5, Biological Resources). For soil, it should be noted that lead and dieldrin levels exceeded ecological soil benchmarks in individual areas (e.g., former underground storage tank areas) that represent a fraction of the overall area of Subarea 3, and an even smaller fraction of the total foraging areas for indigenous species. For this reason, these species would only be exposed to these chemicals for a small fraction of the total time they spend foraging. Lastly, as indicated above, surface soil would be added to Subarea 3 to raise the grade and improve drainage. The presence of clean fill would substantially decrease any potential exposure and risk to ecological receptors that would be in Subarea 3 in the future.

Conclusions of Health-Based Risk Assessment

ENVIRON concluded that while pesticide and metal residues in surface soils vary somewhat in concentrations across Subarea 3, they do not pose human health risks above the acceptable risk range recommended by Cal/EPA and EPA.

Lead residues detected in soils located in two drainage ditches exceeded levels that would be considered safe across a residential lot. Planned removal of soil from those ditches by Larkspur Housing Partners and removal, under Cal/EPA oversight, of the top foot of soil from the areas within the western nursery area shown in Exhibit 4.12-2 would further reduce health risks to levels that are at the low end of health risks considered protective of future residents.

The results of the screening-level ecological evaluation performed as part of this evaluation indicated the absence of significant ecological concerns; therefore, it was determined that a full ecological risk assessment is not required.

Lastly, it should be noted that to comply with applicable codes and to improve surface drainage, surface soil would be added across Subarea 3 to raise the grade. The presence of clean fill would substantially decrease any potential exposure and risk to people and wildlife that would be in Subarea 3 in the future.

Removal Action Workplan and Areas of the Site to be Remediated

DTSC (the oversight agency for contaminant cleanup of Subarea 3) requested that contaminated soil be removed from several areas of Subarea 3 to reduce the potential cancer risk at the property and to reduce lead levels. A Draft RAW was prepared by ENSR International for the Niven Nursery property (ENSR International 2002). The areas identified as requiring remediation include the northern drainage ditch in the northern nursery area and the southwestern drainage ditch in the southern nursery area and portions of the western nursery area (Exhibit 4.12-2). A total of 904 cubic yards of soil is planned to be removed during the Removal Action. Confirmation sampling of the excavations would be

Exhibit 4.12-2

performed during soil removal to verify that contaminants have been removed. Additional excavation and soil sampling would be performed, as necessary, to achieve the remedial goals.

A comment was received from Friends of Corte Madera Creek Watershed on the previous Draft EIR (Guldman, pers. comm., 2002) suggesting that aquatic invertebrates are exposed to contaminated soil in the ditches, and that these invertebrates may be eaten by birds. While this is an issue of concern, the State CEQA Guidelines (Guidelines §15126.2(a)) note that "[i]n assessing the impact of a proposed project on the environment, the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist at the time the notice of preparation is published…" The potential for exposure to contamination noted in the comment was present at the time of the NOP for this EIR; therefore, as an existing condition, it is not assessed further in this document. However, it should be noted that the removal of contaminated soil from the drainage ditches and from Subarea 3 that are required prior to the development of Subarea 3 would improve, rather than exacerbate, the existing conditions related to aquatic invertebrates. Potential impacts and mitigation measures related to the removal process of contaminated soils are discussed below in 4.12.2, Environmental Impacts.

Human Health Risk Results for Postremediation Conditions

The remediation approved by DTSC for the Niven Nursery site is expected to reduce arsenic levels in the top foot of soil in the western nursery area to an average of 5 mg/kg, which includes a maximum residual concentration of 13 mg/kg. These average and maximum concentrations are typical of concentrations detected in soil in the western United States and, more specifically, in the Bay Area (see Shacklette and Boerngen 1984, Bradford et al. 1996, and Scott 1991).

EPA Region 9 has calculated a Preliminary Remediation Goal (PRG) of 0.39 mg/kg for arsenic as a concentration in soil that would correspond to the most conservative lifetime incremental cancer risk of 1 in 1 million under a residential exposure scenario; however, EPA acknowledges that such a level is unrealistic as being below background concentrations in many soils. In the documentation that describes the basis and application of the PRGs, EPA notes that "...EPA Region 9 has at times used the non-cancer PRG (22 mg/kg) to evaluate sites recognizing that this value tends to be above background levels yet still falls within the range of soil concentrations (0.39 to 39 mg/kg) that equates to EPA's 'acceptable' risk range of 10E-6 to 10E-4." The average and maximum levels of arsenic expected to be present in soil after remediation of the western nursery area are under the level of 22 ppm that EPA has recommended for other residential developments. These levels are well within the range identified above, 0.39 to 39 mg/kg, that correspond to the EPA "acceptable" risk level of 1 in 1 million to 100 in 1 million (i.e., 10E-6 to 10E-4).

Following the proposed remediation, DDT levels would be reduced to levels corresponding to a lifetime incremental cancer risk of slightly under 2 in 1 million. Such a risk level is at the low end of the EPA acceptable risk range of 1 in 1 million to 100 in 1 million. As noted in the risk assessment prepared for the site by ENVIRON (2002), the risk estimate is based on the

assumption that DDT would be biologically available to a person assumed to ingest soil from the site. In fact, the DDT is expected to remain tightly bound to the soil; the vast majority of the DDT would remain attached to the soil as it passes through a person's digestive tract and would not be absorbed by the digestive tract. Accordingly, the risk to a person would be substantially lower than the 2-in-1-million level and would almost certainly be less than 1 in 1 million the most conservative endpoint of EPA's acceptable risk range. The approved cleanup, would also reduce lead concentrations in the western nursery area to levels below Cal/EPA's target range of 250 to 400 mg/kg, which were developed by the agency to prevent adverse health effects from lead.

The sediments in the southern and northwestern drainages, in which lead, arsenic, and DDT had been detected, would be scraped out of the existing drainage ditches and taken to a licensed disposal site. Thus, there would be no exposure to these materials after the remediation approved by Cal/EPA has been carried out.

Sources of Contamination Beyond the Specific Plan Area

Contamination of the Specific Plan area from offsite sources could occur by the lateral migration of toxic gases and/or contaminated groundwater. One potential source of contamination beyond the Specific Plan area was evaluated in this analysis: The former Larkspur Disposal Site (Landfill), which was located approximately 1,500 feet to the northeast of Subarea 3.

This site, located to the north of Doherty Drive, was a municipal solid waste facility that was in operation from the early 1940s to the late 1960s. When the facility reached capacity, the City decided to redevelop the site and build the existing Piper Park (Kleinfelder, Inc., 2001). The potential for the migration of methane from the former landfill site (Piper Park) to Hall Middle School (200 Doherty Drive, located less than 1,000 feet west of the park) was evaluated by Kleinfelder, Inc. (2001). Part of the analysis involved one methane sampling survey at the proposed building location, in which the concentration of methane constituents was found at very low concentrations in two of 22 boreholes. According to the analysis, there is a low possibility of methane gas migration from the former landfill site to a proposed multipurpose building at the Middle School for four primary reasons:

< Methane generation in landfills generally declines after 30 years of closure.

< There is very little organic matter in the landfill material, and thus, this small volume of organic matter is not likely to generate significant amounts of methane.

< The landfill is not capped, and therefore, any methane generated by organic matter is likely to escape upward through the topsoil.

< There are no potential conduits of methane from the former landfill site to the proposed building site, although it is possible that methane could migrate to the south, east, and north toward the free surfaces of the sloughs (Kleinfelder, Inc., 2001).

The results of the Kleinfelder analysis indicate that there is a low potential for methane gas generated beneath Piper Park to migrate laterally to surrounding parcels. The analysis does not entirely rule out the possibility of gas migration to the Specific Plan area, which is located southwest of Piper Park. However, based on the age of the landfill, the lack of impermeable soil cover, and the generally low permeability of fill and native soils in the area, migration of methane to the Specific Plan area is unlikely.

4.12.2 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

Implementation of the Specific Plan would have a significant impact if it were to result in:

< the creation of a significant hazard to the public or the environment through the routine transportation, use, or disposal of hazardous materials;

< the creation of a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

< hazardous emissions within 0.25 mile of an existing or proposed school;

< the handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school;

< development located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 (if such development would create a significant hazard to the public or the environment);

< development located in an area covered by an airport land use plan (or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport), if it would result in a safety hazard for people residing or working in the project area;

< development within the vicinity of a private airstrip, if it would result in a safety hazard for people residing or working in the project area;

< impairment of or physical interference with the implementation of an adopted emergency response plan;

< impairment of or physical interference with the implementation of an adopted emergency evacuation plan; or

< exposure of people or structures to significant risk of loss, injury, or death involving wildland fires (including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands).

PROJECT-LEVEL IMPACTS

Impact **4.12-1**

MTBE and Hydrocarbons in Groundwater at Larkspur Service Station Site. *Significant concentrations of MTBE were encountered in groundwater samples taken at the Larkspur Service Station, and an environmental site investigation and remedial actions were conducted. The San Francisco Bay RWQCB issued a no-further-action letter for the site, stating that groundwater MTBE does not pose a threat to public health or an ecological threat. However, construction involving excavation, fill, pilings, dewatering, etc., could occur in areas with a shallow groundwater table. Such work has the potential to expose construction workers to MTBE from contact with groundwater; to expose the public to MTBE if groundwater were pumped from dewatering sites; and to result in contamination of surface waters. This impact is considered* ***potentially significant****.*

Significant concentrations of MTBE were encountered in groundwater samples taken at the Larkspur Service Station (Subarea 2), and an environmental site investigation and remedial actions were conducted in accordance with orders given by the San Francisco Bay RWQCB. As described above, the RWQCB issued a no-further-action letter for the site, noting that the site had been adequately investigated; that concentrations of MTBE in the groundwater are not increasing over time; that groundwater MTBE does not pose a threat to public health because the groundwater is not a potential source of drinking water; and that groundwater MTBE does not pose an ecological threat because downgradient concentrations are below levels of concern even if the MTBE reaches a surface water body. However, construction in the Specific Plan area could pose a concern related to the presence of MTBE. The groundwater level at the Larkspur Service Station is not known; however, the groundwater level at the Niven Nursery site (Subarea 3) was found to be between 2 and 20 feet below ground surface (World Environmental Science & Technology 1999). Therefore, construction involving excavation, fill, pilings, dewatering, etc., could occur in areas with a shallow groundwater table. Given the shallowness of the groundwater table in Subarea 3 (and possibly elsewhere in the Specific Plan area), there is the potential for direct exposure of construction workers to groundwater containing MTBE. In addition, the public could potentially be exposed to MTBE if groundwater were pumped from dewatering sites and discharged to storm drains, and surface waters in the area could potentially become contaminated by MTBE, again from dewatering activities. This impact is considered potentially significant.

Impact **4.12-2**

Demolition-Related Release of Hazardous Materials, Including Materials Containing Lead and Asbestos. *During demolition of structures in Subarea 3, construction materials containing potentially hazardous lead-based paint and asbestos could be released to the environment through the air, water, or soil and may pose a risk to human health and the environment. Demolition of existing structures may also pose a physical hazard from demolished building materials such as broken glass. This impact is considered* ***potentially significant****.*

Development of Subarea 3 would involve demolition of structures containing chipping, peeling, and friable lead-based paint and window glazing. During the demolition of existing structures and the removal of contaminated soil and sediments from Subarea 3 in accordance with Draft RAW prepared at the request of DTSC, contaminated materials would be

transported from the Specific Plan area. Existing construction materials in Subarea 3 contain potentially hazardous materials such as lead-based paint and glazing, and asbestos, as well as residual contamination from pesticide use, storage, and mixing. During demolition of structures in Subarea 3, these materials could be released to the environment through the air, water, or soil, and may pose a risk to human health and the environment. Redwood High School property is adjacent to Subarea 3, and Hall Middle School is located to the north of Subarea 3 across Doherty Drive, within 0.25 mile, and San Andreas High School is within 0.25 mile to the southeast; these schools could be affected by the release of hazardous materials. Demolition of existing structures in Subarea 3 may also pose a significant physical hazard from demolished building materials such as broken glass. This impact is considered potentially significant.

Impact **4.12-3**

Exposure to Hazardous Materials during Removal of Contaminated Soil. *The cancer risk associated with metals, chlorinated pesticides, and petroleum hydrocarbons in soil in Subarea 3 is at a level acceptable to the Cal/EPA and EPA. However, during removal of contaminated soil from Subarea 3, hazardous materials could be released, and Redwood High School, San Andreas High School, and Hall Middle School, located within 0.25 mile, could be among the areas affected. This impact is considered* ***potentially significant****.*

The presence of soil contaminated with metals, chlorinated pesticides, and petroleum hydrocarbons in Subarea 3 presents a cancer risk in the range of 1 in 1 million to 1 in 10,000, a risk level considered acceptable by the Cal/EPA and EPA. The specific calculated cancer risk associated with the western nursery area was 50 in 1 million, the northern nursery area 20 in 1 million, the southern nursery area 10 in 1 million, and the Sloat Nursery 0.02 in 1 million. This cancer risk level could be reduced further by removal of contaminated soils from a few select areas. However, during removal of contaminated soil, hazardous materials could be released. As mentioned above, Redwood High School, San Andreas High School, and Hall Middle School are located within 0.25 mile of Subarea 3 and could be among the areas affected by the release of hazardous materials. This impact is considered potentially significant.

Impact **4.12-4**

Development on Hazardous Materials Sites. *Under the Specific Plan, development would occur on hazardous materials sites, posing a potential threat to human health. This impact is considered* ***potentially significant****.*

The Niven property (Subarea 3) qualifies as a site that should be included on a list of hazardous materials sites, but may it not be included because of the voluntary nature of the proposed cleanup. The former Chevron service station site at 532 Magnolia Avenue (Subarea 1) is listed on the Cortese hazardous materials site list, but it is listed as a closed site. Under the Specific Plan, therefore, development would occur on hazardous materials sites. This impact is considered potentially significant.

Impact **4.12-5**

Release of Contaminated Groundwater. *Groundwater containing metals, chlorinated pesticides, petroleum hydrocarbons, and other constituents could potentially be released into surface waters or clean fill soils as a result of dewatering. This impact is considered* ***potentially significant****.*

Shallow groundwater may be encountered in excavations for utilities and foundations during construction in Subarea 3, necessitating dewatering. Groundwater may contain low concentrations of contaminants such as metals (lead and mercury), chlorinated pesticides, petroleum hydrocarbons (gasoline and diesel), and the constituents benzene, toluene, and ethylbenzene. Groundwater containing significant levels of these constituents could potentially be released into surface waters or clean fill soils. This impact is considered potentially significant.

Impact **4.12-6**

Potential Contamination of Soils Near Redwood High School, San Andreas High School, and Hall Middle School. *Improper handling or an accidental spill could result in contamination of soils around Subarea 3, including the area around the schools. This impact is considered* ***potentially significant****.*

As mentioned above, Subarea 3 is located within 0.25 mile of Hall Middle School and San Andreas High School and is adjacent to Redwood High School property. Hazardous and potentially hazardous materials would be removed from Subarea 3 during the demolition and remediation process. If such materials were not handled properly or there were an accidental spill during offsite transport, areas around Subarea 3, including the area around the schools, could become contaminated. This impact is considered potentially significant.

Impact **4.12-7**

Potential Interference with Airport Operations. *The Specific Plan area is not located in the vicinity of an airport. This impact is considered* ***less than significant****.*

The Specific Plan area is not located in the vicinity of any private airport or within an area covered by an airport land use plan. The nearest airport is the San Rafael Airport, which is located more than 3 miles to the north of the Specific Plan area. Implementation of the Specific Plan would not entail any significant adverse effects related to airport operations. This impact is considered less than significant.

Impact **4.12-8**

Interference with an Adopted Emergency Response or Emergency Evacuation Plan. *The permitted land use types in the Specific Plan area have been considered in the Marin County Operational Area Emergency Operations Plan. Therefore, development would not interfere with emergency plans. This impact is considered* ***less than significant.***

In 1999, Marin County adopted the Marin County Operational Area Emergency Operations Plan, which establishes the emergency organization, assigns tasks, specifies policies and general procedures, and provides for coordination of planning efforts of the various emergency staff and service elements utilizing the County's Standardized Emergency Management System. The Specific Plan would permit typical commercial and residential land uses that have already been considered and planned for in this emergency plan. As such, development of the Specific Plan area would not interfere with the implementation of any adopted emergency response or emergency evacuation plan. This impact is considered less than significant.

Impact **4.12-9**

Exposure of People or Structures to Wildland Fires. *The Specific Plan area is in a developed area not subject to wildland fires. This impact is considered* ***less than significant****.*

The Specific Plan area is located in downtown Larkspur, a developed area not subject to wildland fires. Implementation of the Specific Plan would not result in any significant increase in the number of people or structures exposed to the hazards associated with wildland fires. This impact is considered less than significant.

CUMULATIVE IMPACTS

Construction in the Specific Plan area would require the handling of hazardous materials (i.e., fuel, asphalt) other than those materials that could be found in soils and groundwater as described above. Other known development projects in the city may also involve the handling of hazardous materials. However, development of the area and of other projects in the city would occur in compliance with standard local, state, and federal laws pertaining to these substances. In addition, Larkspur and the surrounding area are predominantly built out, with little developable land remaining. There are currently no other development projects in the immediate vicinity of the Specific Plan area that would contribute to cumulative impacts related to hazards and hazardous materials. Therefore, there would be no cumulative impacts related to the presence of hazardous materials contamination as a result of implementation of the Specific Plan.

4.12.3 MITIGATION MEASURES

PROJECT-LEVEL MITIGATION MEASURES

No mitigation measures are required for the following less-than-significant impacts.

4.12-7: Potential Interference with Airport Operations

4.12-8: Interference with an Adopted Emergency Response or Emergency Evacuation Plan

4.12-9: Exposure of People or Structures to Wildland Fires

The following mitigation measures are recommended for potentially significant impacts.

Impact **4.12-1a, b** mitigation

MTBE and Hydrocarbons in Groundwater at Larkspur Service Station Site.

(a) ***Protect Construction Workers and Public Against Exposure to MTBE.***

The City shall include the following new policy in the Specific Plan.

New Policy: When any construction work is undertaken in the Specific Plan area, the following measures shall be incorporated into the project prior to the issuance of construction permits and implemented during construction activities

to prevent construction workers and the public from coming into contact with MTBE:

< Construction personnel should wear appropriate construction clothing (i.e., long pants, hard hat, gloves) during construction to minimize potential contact with groundwater containing MTBE. This clothing shall be in compliance with the requirements for construction personnel issued by Cal/OSHA and OSHA.

< Appropriate notices shall be posted at the project site to warn construction personnel and public of the presence of contaminated groundwater.

< The City and the San Francisco Bay RWQCB shall be notified immediately if discolored or odorous groundwater is encountered during excavation activities.

< When not under active construction or remediation, open trenches shall be covered where contaminated groundwater is present to prevent the public from coming in contact with contamination.

(b) Prepare and Implement Dewatering Plan, and Install Impermeable Membrane Around Excavation Area if Necessary.

The City shall include the following new policy in the Specific Plan.

New Policy: The contractor for any construction work undertaken in the Specific Plan area shall prepare a dewatering plan and submit the plan to the City and the San Francisco Bay RWQCB for approval prior to issuance of construction permits. Dewatering of the excavation areas shall be performed in compliance with the occupational safety and health guidelines of Cal/OSHA and OSHA, and in a manner that allows discharge to the sanitary sewer system. If dewatering is not required, groundwater shall be tested to determine the presence of MTBE or other hydrocarbons, and water shall be treated using appropriate methods approved by the City and the San Francisco Bay RWQCB. Any water removed during dewatering shall be stored and tested for residual contamination before disposal. Water shall also be tested after treatment to ensure that constituent levels meet requirements for surface or groundwater discharge before disposal or infiltration. If necessary, an impermeable membrane shall be installed around the excavation area to prevent contaminants from reaching Larkspur Creek.

Impact **4.12-2** mitigation

Demolition-Related Release of Hazardous Materials, Including Materials Containing Lead and Asbestos.

Implement a Demolition Plan.

The City shall include the following new policy in the Specific Plan.

New Policy: Site surveys for the presence of potentially hazardous building materials shall be reviewed/performed, and a demolition plan for safe demolition of existing structures in Subarea 3 shall be incorporated into the project prior to the issuance of construction permits and implemented during construction activities. The demolition plan shall address protection of both onsite workers, offsite residents, and occupants in nearby schools from chemical and physical hazards. The demolition plan shall be reviewed and approved by DTSC and by the City. All contaminated building materials shall be tested for contaminant concentrations and shall be disposed of at appropriate licensed landfill facilities. Before demolition, hazardous building materials such as peeling, chipping, and friable lead-based paint, window glazing, and building materials containing asbestos shall be removed in accordance with all applicable guidelines, laws, and ordinances. The Demolition Plan shall include a program of air monitoring for dust particulates and attached contaminants. Dust control and suspension of work during dry windy days shall be addressed in the Demolition Plan. Before a demolition permit is obtained from the BAAQMD, an asbestos demolition survey shall be conducted in accordance with the requirements of BAAQMD Regulation 11, Rule 2.

The California Division of Occupational Safety and Health (DOSH) and OSHA do not define threshold limit values for lead-containing paints and, therefore, paints or coatings containing any detectable amounts of lead are regulated by these agencies' standards, if construction activities covered in the scope of these standards emit lead. The DOSH standards prescribe procedures to be followed based on anticipated exposure resulting from construction activities performed. Demolition procedures may involve potential worker exposure above the DOSH action level for lead. Therefore, the requirements of Guidelines §1532.1 must be followed. These requirements include but are not limited to the following:

< Loose and peeling lead-containing paint and window glazing should be removed before building demolition. Workers conducting removal of lead paint and window glazing must receive training in accordance with Guidelines §1532.1.

< The lead paint and window glazing removal project should be designed by a lead project designer, project monitor, or supervisor certified by the DHS.

< A written Lead Compliance Plan that that meets the requirements of the lead construction standard must be prepared by any contractor whose actions would have an impact on lead coatings.

< Workers conducting removal of lead paint and window glazing must be certified by DHS in accordance with Guidelines §1532.1.

< Workers who may be exposed above the Action Level must have blood lead levels tested before commencement of lead work and at least quarterly

thereafter for the duration of the project. Workers who are terminated from the project should have their blood lead levels tested within 24 hours of termination.

< A written exposure assessment must be prepared in accordance with Guidelines §1532.1.

< Any amount of lead waste generated, including window glazing and painted building components, must be characterized for proper disposal in accordance with Title 22, §66261.24.

< In addition, compliance with BAAQMD Regulation 11, Rule 1, Lead, which contains procedures that limit daily emissions of lead and ensures "a person shall not discharge an emission of lead, or compound of lead calculated as lead, that will result in ground level concentrations in excess of 1.0 $\mu g/m^3$ averaged over 24 hours." This regulation required calculations of and monitoring of lead concentrations to ensure compliance.

Impact **4.12-3** mitigation

Exposure to Hazardous Materials during Removal of Contaminated Soil.

Implement Removal Action Workplan and Health and Safety Plan.

The City shall include the following new policy in the Specific Plan.

New Policy: The RAW developed for Subarea 3, under the oversight of DTSC, shall be incorporated into the project prior to the issuance of construction permits and implemented during construction activities. The workplan includes provisions for safe removal, transportation, and disposal of selected contaminated soil from Subarea 3. Removal of contaminated soils from the areas identified would reduce the cancer risk to less than 1 in 1 million. Clean fill shall also be placed over much of Subarea 3, further reducing the potential for exposure of people to residual soil contamination. A detailed Health and Safety Plan shall be prepared to address measures to protect workers and the community during remedial activities, and shall be reviewed and approved by DTSC.

Impact **4.12-4** mitigation

Development on Hazardous Materials Sites.

Implement Mitigation Measure 4.12-3.

The City shall implement Mitigation Measure 4.12-3, Implement Removal Action Workplan and Health and Safety Plan, described above.

Impact **4.12-5** mitigation

Release of Contaminated Groundwater.

Implement Groundwater Testing, Storage, Treatment, and Disposal.

The City shall include the following new policy in the Specific Plan.

New Policy: Any groundwater removed from excavations in Subarea 3 during construction shall be temporarily stored and tested to determine the appropriate method of treatment and/or disposal. Provisions for this measure shall be incorporated into the project prior to the issuance of construction permits.

Impact **4.12-6** mitigation

Potential Contamination of Soils Near Redwood High School, San Andreas High School, and Hall Middle School.

Implement Demolition Plan and Removal Action Workplan. The City shall include the following new policy in the Specific Plan.

New Policy: The proposed hazardous materials remediation plans and actions for Subarea 3 shall be implemented to reduce the overall risk to students at the nearby Redwood High School and Hall Middle School. During the demolition and remediation process, special measures shall be taken in accordance with an approved Demolition Plan and RAW to contain and remove potentially hazardous substances and wastes under controlled conditions. These plans, which must be approved by the City prior to the issuance of construction permits, shall address approved routes, truck cleaning and inspection, and contingencies for addressing spills and other accidents.

CUMULATIVE MITIGATION MEASURES

There would be no significant cumulative impacts related to hazardous materials as a result of implementation of the Specific Plan; therefore, no mitigation measures are required.

4.12.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Following implementation of the above mitigation measures, no significant impacts, including cumulative impacts, related to hazardous materials would remain.

4 ENVIRONMENTAL IMPACT ANALYSIS

SCOPE OF THE ENVIRONMENTAL IMPACT ANALYSIS

Sections 4.1 through 4.12 of this Revised Draft EIR present the environmental impact analysis for the anticipated effects of the adoption of the Specific Plan. Issues evaluated in these sections consist of a full range of environmental topics originally identified for review in the NOP (Appendix A). The environmental issues and the sections in which they are discussed are:

< Land Use and Planning
< Population and Housing
< Geology and Soils
< Hydrology and Water Quality
< Biological Resources
< Air Quality
< Traffic and Circulation
< Noise
< Public Services and Utilities
< Visual Quality and Aesthetics
< Historical, Cultural, and Archaeological Resources
< Hazards and Hazardous Materials

STRUCTURE OF THE ENVIRONMENTAL IMPACT ANALYSIS

Each section in this chapter presents a detailed evaluation of a particular resource area and includes a discussion of existing conditions (both physical and regulatory), potential environmental impacts associated with the Specific Plan, and revised or additional policies proposed to mitigate significant environmental impacts.

Existing Setting. The Existing Conditions subsection presents relevant information on both the regional and local physical environment and the regulatory/planning environment for the Specific Plan area. This subsection also presents information on the laws, regulations, and plans that relate to the resource area being evaluated.

Environmental Impacts. The Environmental Impacts subsection identifies the environmental impacts of implementation of the Specific Plan. Project-level impacts are presented first, followed by cumulative impacts. The relevant thresholds of significance used to identify impacts and methodology used in the analysis are presented before the evaluation of impacts. Throughout the discussion, impacts are identified numerically and sequentially. For example, impacts discussed in Section 4.1 are identified as 4.1-1, 4.1-2, and so on. An impact statement presented at the beginning of each impact discussion provides a summary of the impact and its level of significance. The impact analysis includes evidence and explanation supporting the conclusion on the level of significance for the impact. Growth-inducing impacts are presented in Section 5.1, Growth Inducing Impacts.

Mitigation Measures. The Mitigation Measures subsection proposes new Specific Plan policies to reduce significant and potentially significant impacts. Distinct mitigation measures are provided. Each mitigation measure is identified numerically to correspond with the number of the impact being reduced by the measure. For example, Impact 4.1-1 would be mitigated by Mitigation Measure 4.1-1. Mitigation measures for project-level impacts are presented first, followed by mitigation measures for cumulative impacts.

Level of Significance After Mitigation. This subsection describes whether any significant impacts on the specific resource area would remain after implementation of the mitigation measures presented. Significant and unavoidable impacts are identified in this subsection. (These impacts are also summarized in Section 5.2, Significant and Unavoidable Impacts and Significant and Irreversible Commitment of Resources.)

APPROACH TO THE ENVIRONMENTAL ANALYSIS

For each environmental impact identified in this Revised Draft EIR, a statement of the level of significance of the impact is provided. Each impact is assigned one of the following impact levels:

< A **less-than-significant** impact is an impact that is considered to cause no substantial adverse change in the environment and for which no mitigation measures are required.

< A **significant** impact is an impact that is considered to have a substantial or potentially substantial adverse effect on the environment but for which feasible mitigation measures are available to reduce it to a less-than-significant level. Impacts may also be considered potentially significant if the analysis cannot definitively conclude that an impact could be reduced to less-than-significant levels with mitigation.

< A **significant and unavoidable** impact is an impact that is considered to cause a substantial or potentially substantial adverse effect on the environment and for which no feasible mitigation measures or alternatives are available to reduce it to a less-than-significant level.

POLICY CONSISTENCY

According to State CEQA Guidelines §15125(d), an EIR "shall discuss any inconsistencies between the proposed project and applicable general plans and regional plans." To this end, the Specific Plan has been analyzed for consistency with the Larkspur General Plan. As described in Section 4.1, Land Use and Planning, the Specific Plan is generally consistent with the General Plan. While the consistency of the General Plan is analyzed in this Revised Draft EIR, the final authority for interpretation of these policy statements, and determination of the Specific Plan's consistency, rests with the City.

5 OTHER CEQA-MANDATED SECTIONS

5.1 GROWTH-INDUCING IMPACTS

Based on California Government Code §65450, a specific plan is a tool for the systematic implementation of the general plan for a defined area. The proposed Specific Plan would define the permitted uses and locations and the intensity of uses in the form of objectives, policies, guidelines, and standards to be applied to future development proposals. The Specific Plan does not propose the development of any specific projects, so it would not have direct growth-inducing impacts. There would be indirect growth-inducing impacts, however, because the land use map and designations, as well as the objectives, policies, guidelines, and standards of the Specific Plan are designed to provide a framework to accommodate future development. The analysis of these indirect growth-inducing impacts for the proposed Specific Plan focuses on two main factors: (1) promotion of development and population growth, and (2) elimination of obstacles to growth.

PROMOTION OF DEVELOPMENT AND POPULATION GROWTH

As described in Section 4.2, Population and Housing, the City of Larkspur and the surrounding area are predominantly built out with little developable land remaining. The total acreage of the City of Larkspur is 2,065 acres, of which 252 acres remain undeveloped. With the removal of acreage devoted to open space, only 138 acres are available for development, including the Specific Plan area. This subsection describes the extent to which implementation of the proposed Specific Plan could induce growth in Larkspur and surrounding communities.

Anticipated growth is indirect in nature because the proposed Specific Plan does not directly propose development, but provides the framework for development planning and implementation. Future development of the Specific Plan area under the theoretical maximum development scenario or any of the development alternatives would indirectly result in increased population growth and up to 51,065 square feet of new retail or community service development in the Specific Plan area. The potential future commercial development under the Specific Plan is consistent with the existing surrounding land use pattern in terms of type of use and intensity. The retail and community uses that are permitted to be developed are neighborhood-serving and would tend to employ persons from the surrounding community. This type of commercial retail infill development would not create a substantial employment draw that would attract large numbers of people to relocate to the area and demand housing, public, and community services beyond that assumed in the general plan.

As described in Section 4.2, Population and Housing, implementation of the Specific Plan—either the theoretical maximum development scenario—would result in development of new housing that could be expected to generate up to 264 new residents. This amount of growth represents an increase of less than 2.2% over the City's 2003 total population of 12,050 persons (California Department of Finance 2003). The Larkspur General Plan assumed development

of the Specific Plan area and sized public services and facilities accordingly. Development of the Specific Plan area would induce growth in the area to the extent assumed in the General Plan, but this type and amount of growth would not further induce growth in other areas of the City or surrounding communities.

ELIMINATION OF OBSTACLES TO GROWTH

Whether or not obstacles to growth are eliminated depends on the extent to which the proposed Specific Plan would increase infrastructure capacity or change the regulatory structure to allow additional development in the city and region. A physical obstacle to growth typically involves the lack of public service infrastructure or insufficient infrastructure capacity. The extension of public service infrastructure (e.g., roadways, water and sewer lines) into areas that are not currently provided with these services would be expected to support new development.

A potential constraint is the sanitary and storm drainage systems serving Subarea 3. The wastewater pumping station located west of Hall Middle School would require upgrading to accommodate existing and future wastewater discharges from development. An existing sewer line may be rerouted; in such a case, further offsite improvements may be required. The existing storm drainage system onsite is presently inadequate and must be improved pursuant to the requirements of Section 4.9, Public Services and Utilities. To the extent that the sewer and storm drainage infrastructure is sized to accommodate only the expected growth anticipated with approval of the Specific Plan, growth inducement would not occur as a result of improvement of these systems. However, if infrastructure and facilities were oversized, or extended to areas outside of the Specific Plan area, they would induce growth by providing capacity to areas not intended for development. In the case of the Specific Plan, improvement of this infrastructure would not be sized to accommodate additional growth; accommodating additional growth is not the intent of the City, and there is no offsite vacant land in the immediate vicinity of the Specific Plan area that could be developed if these systems were oversized.

SUMMARY OF GROWTH-INDUCING IMPACTS

Adoption of the Specific Plan would induce growth within the Specific Plan area, which is already designated for development in the General Plan. Outside the Specific Plan area, the vast majority of the City has already been developed. In the immediate surrounding area of the Specific Plan area, there are no vacant properties available for further development. Future growth in the City would be primarily in the form of redevelopment of developed sites. The Specific Plan would not include infrastructure improvement or development that would promote additional growth, in the City, including redevelopment of the surrounding areas. As such, the Specific Plan is not considered to be growth-inducing.

5.2 SIGNIFICANT AND UNAVOIDABLE IMPACTS AND SIGNIFICANT AND IRREVERSIBLE COMMITMENT OF RESOURCES

CEQA (CEQA §21100(b)(2)) provides that an EIR shall include a detailed statement setting forth "[i]n a separate section…[a]ny significant effects on the environment that cannot be avoided if the project is implemented" and "[a]ny significant effect on the environment that would be irreversible if the project is implemented." Further, State CEQA Guidelines §15126.2(c) provides the following guidelines for analyzing the significant irreversible environmental changes of a project:

Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irretrievable damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

Accordingly, this section describes the significant and unavoidable impacts and the significant and irreversible commitment of resources that would be associated with implementation of the Specific Plan.

SIGNIFICANT AND UNAVOIDABLE IMPACTS

Listed below are the significant and unavoidable environmental impacts of the Specific Plan that cannot be mitigated to less-than-significant levels:

Impact 4.11-2: Potential Damage to or Destruction of Archaeological Resources. Construction-related activities may damage or destroy intact portions of prehistoric site CA-MRN-68 or features related to the Bickerstaff ranch and adobe, as well as Native American archaeological resources. This impact is considered potentially significant. Following implementation of Mitigation Measures 4.11-2(a), Implement Archaeological Testing Program, and 4.11-2(b), Monitor Construction, this impact would remain significant and unavoidable.

Impact 4.11-3: Potential Alteration of or Other Effects on Historical Resources. Construction may include demolition or alteration of extant structures or destruction of historic features, and construction and development could result in structures built within the right-of-way of the historic railroad. This impact is considered potentially significant. Following implementation of Mitigation Measure 4.11-3, Document Historic Structures, this impact would remain significant and unavoidable.

Impact 4.11-5: Possible Discovery of Human Remains. Construction activities may result in the inadvertent discovery of human remains, possibly associated with CA-MRN-68. This impact is considered potentially significant. Mitigation Measure 4.11-5, Stop Potentially Damaging Work if Human Remains are Uncovered During Construction, Assess the

Significance of the Find, and Pursue Appropriate Management, would be implemented; however, if human remains are found during construction, and the area cannot be avoided, then this impact would remain significant and unavoidable.

Cultural resources are a site-specific resource in Marin County. Cumulative growth in Marin County, and in the City of Larkspur, would result in cumulative impacts on cultural resources and consequent loss of those resources throughout the region. Proposed mitigation measures described in Section 4.11, Historical, Cultural, and Archaeological Resources, would reduce the impacts to the extent feasible, primarily by maximizing data collection before site destruction. However, the impact caused by the loss of these sites is considered significant and unavoidable.

Impact 4.7-13: Unacceptable Cumulative Level of Service at Doherty Drive/Piper Park Intersection. With development that may occur in the Specific Plan area, this unsignalized intersection would operate at unacceptable LOS during the a.m. and p.m. peak hours. This impact is considered significant.

Mitigation Measure 4.7-13, Install Traffic Signal at Doherty Drive/Piper Park, would result in an acceptable level of service following development in the Specific Plan area. With implementation of this measure, the intersection would be expected to operate at acceptable LOS B during the a.m. and p.m. peak hour. This mitigation would reduce the impacts to levels that are less than significant. However, this measure would not likely be implemented at this location based on a number of objective criteria and engineering best practice measures. The adverse condition is caused only by (less than 20 vehicles per peak hour under all analysis scenarios) the delay that would be experienced by the southbound approach vehicles and the volume of traffic at the intersection is too low to meet signal warrants. If the City chooses not to implement mitigation at the Doherty Drive/Piper Park Intersection, this impact would be significant and unavoidable.

SIGNIFICANT AND IRREVERSIBLE COMMITMENT OF RESOURCES

Natural resources include minerals, energy, land, water, forestry, and biota. Nonrenewable resources are those resources that cannot be replenished by natural means, including oil, gas, and iron ore. Renewable natural resources are those resources that can be replenished by natural means, including water, lumber, and soil.

Although both renewable and nonrenewable natural resources (e.g., lumber, minerals, water, energy resources, wildlife habitat) would be used or removed during construction of projects in the Specific Plan area and during operations of the future land uses, this use is expected to be similar to typical residential and commercial development and would neither increase the overall rate of use of any natural resource nor result in the substantial depletion of any nonrenewable natural resource.

The Larkspur area has experienced an urban level of development and is almost fully built out. No agricultural operations occur in the vicinity of the Specific Plan area. Although the Niven Nursery (Subarea 3) has supported horticultural operations since the early 1920s, the

site is no longer used for agricultural production. There is also no identified Prime Farmland, Unique Farmland, or Farmland of Statewide Importance within the Specific Plan boundary. Therefore, the Specific Plan would not commit future generations to the significant irreversible change of modifying a substantial portion of the site from agricultural land uses to urban uses.

Lastly, the Specific Plan is not anticipated to result in irreversible damage from environmental accidents, such as an accidental spill or explosion of a hazardous material, because in California, the transport, storage, use, and disposal of hazardous substances are strictly regulated and are enforced by various local and regional agencies. The enforcement of these existing federal and State regulations would preclude credible significant project impacts related to environmental accidents. For example, dewatering of excavation areas would be performed and associated actions, including mitigation measures in this EIR, would be taken to prevent contaminants from reaching Larkspur Creek. Also, a demolition plan would be implemented to protect onsite workers and offsite residents from chemical and physical hazards from demolition of existing structures in Subarea 3 containing lead-based paint and asbestos.

6 ALTERNATIVES

6.1 INTRODUCTION

The State CEQA Guidelines (CEQA §15126.6(a)) state that an EIR shall include a discussion of a reasonable range of alternatives to the proposed project and their comparative merits "which would feasibly attain most of the basic objectives of the project." The selection of alternatives is to be guided by the provision of reasonable choices, and the promotion of informed decision-making and informed public participation. An EIR need not evaluate alternatives that would have effects that cannot be determined, or for which implementation would be remote and speculative.

Among the alternatives to be addressed, the State CEQA Guidelines (CEQA §§15126.6(e)(1), 15126.6(e)(2)) state that the EIR shall evaluate the No Project Alternative, and identify an "environmentally superior" alternative based on the comparative analysis among project alternatives (but not including the No Project Alternative). The discussion of alternatives is intended to focus on those alternatives that are capable of avoiding any significant environmental impacts or reducing them to a level of "less than significant." Such alternatives should be discussed, even if they "would impede to some degree the attainment of the project objectives, or would be more costly" (CEQA §15126.6(b)).

6.2 ALTERNATIVES CONSIDERED

As described under Section 2.5, Methodology and Assumptions for the EIR Analysis, in Chapter 2, Project Description, the project analyzed in this Revised Draft EIR was based on the theoretical maximum density and intensity of land use that could be developed in the Specific Plan area with the policies in the proposed Specific Plan. This theoretical maximum intensity scenario is referred to as the "Specific Plan" in the remainder of the document, but will be referred to as the "Proposed Project" in this chapter to distinguish it from the alternative development scenarios for the Specific Plan. The alternatives to the Proposed Project were designed with the intent of reducing the potential environmental impacts that could result from development of the Specific Plan area while still meeting the basic objectives of the City. Alternative locations were not considered because the primary purpose of the Specific Plan is to conduct land use planning for the Specific Plan area in order to allow for future redevelopment. Instead, the following three alternatives, which differ by the density, intensity, and pattern of land uses, were considered:

< *The No Project Alternative* is required by CEQA. Under this alternative, no specific plan would be adopted. The Specific Plan area would be developed to the extent permitted by the General Plan. Additional 28 multi-family apartments and 24,961 square feet of retail use would be permitted in Subarea 1, and another 4,500 square feet of retail use would be permitted in Subarea 2. Subarea 3 would remain much as it is today.

< *The Low Density Alternative* would consist of a specific plan that is designed to enable development within the Specific Plan area at residential and commercial retail densities

considerably lower than anticipated under the Proposed Project, while meeting the City's objectives for a mix of land uses and including a community center, hotel/inn, and a mix of housing types.

< *The Residential Focus Alternative* would consist of a specific plan that is designed to maximize residential development within the Specific Plan area by providing for residential densities somewhat higher than anticipated under the Proposed Project while reducing the intensity of commercial uses permitted. Similar to the Proposed Project, this alternative does not include a community center.

Table 6-1 shows the land use types and intensities assumed for each of the Specific Plan subareas for the Proposed Project and each of the three alternatives. Following is a comparison of the alternatives with the theoretical maximum development of the Specific Plan, as well as an evaluation of the alternatives.

6.3 NO PROJECT ALTERNATIVE

This alternative is intended to meet the requirements of the State CEQA Guidelines (CEQA §15126.6(e)), which require a description and analysis of a "no project" alternative, the purpose of which is to permit comparison of the impacts of approving versus not approving the proposed project. When, as in this case, the project is the adoption of a new plan and the revision of an existing land use plan, the no project alternative will be the continuation of the existing plan into the future.

Under the No Project Alternative, it is assumed that the Specific Plan would not be adopted and that only development permitted under the General Plan and the Larkspur Downtown Specific Plan would take place. Subarea 1 contains a parking lot and open space, which may be redeveloped with more intense land uses. Subarea 2 is presently almost fully used at the maximum permitted allowed intensity. The Larkspur General Plan states that development proposals will be considered only after a specific plan is completed for the Downtown area. The Larkspur Downtown Specific Plan, which was adopted in 1992, would allow up to 29,941 square feet of new commercial and 28 multi-family residential units in Subarea 1, as well as 4,500 square feet of retail use in Subarea 2. For the purpose of environmental analysis, it is assumed that Subarea 1 and Subarea 2 would be developed to the maximum intensity permitted by the General Plan and the Larkspur Downtown Specific Plan.

Subarea 3 is developed with more marginal commercial and parking uses. This subarea is underused and would likely be redeveloped eventually. The Larkspur General Plan requires the adoption of a specific plan before the Niven Property (Subarea 3) can be developed in any use other than nursery; therefore, in the absence of a specific plan, it is assumed that the existing wholesale, commercial, and vacant lands on that parcel would remain basically unchanged.

Table 6-1
Land Use Types, Intensities, and Trip Generation (P.M. Peak Hour) by Specific Plan Subarea and Alternative

Site	Land Use	Proposed Project		No Project Alternative		Low Density Alternative		Residential Focus Alternative	
		Intensity of Use	Trips Generated	Intensity of Use	Trips Generated	Intensity of Use	Trips Generated	Intensity of Use	Trips Generated
Subarea 1	Multifamily Apartments	0 units	0	28 units	21	12 units	7	44 units	33
	Retail	46,565 sq. ft.	121	24,961 sq. ft.	65	9,900 sq. ft.	26	12,000 sq. ft.	31
	Hotel	36 rooms	22	0 rooms	0	20 rooms	12	30 rooms	18
Subarea 2	Multifamily Apartments	19 units	14	0 units	0	0 units	0	46 units	35
	Retail	4,500 sq. ft.	12	4,500 sq. ft.	12	4,500 sq. ft.	12	0 sq. ft.	0
Subarea 3	Retail	0 sq. ft.	0	0 sq. ft.	0	0 sq. ft.	0	0 sq. ft.	0
	Large Single-Family	28 homes	42	0 homes	0	30 homes	46	32 homes	49
	Standard Single-Family	7 homes	8	0 homes	0	10 homes	10	11 homes	11
	Cottage Unit	23 units	17	0 units	0	5 units	4	35 units	27
	Multifamily Apartments	27 units	20	0 units	0	0 units	0	27 units	20
	Community Center	0 sq. ft.	0	0 sq. ft.	0	10,000 sq. ft.	18	0 sq. ft.	0
Subtotal—Residential		**104 units**	**101**	**28 units**	**21**	**57 units**	**67**	**195 units**	**175**
Subtotal—Retail		**51,065 sq. ft.**	**133**	**29,461 sq. ft.**	**77**	**14,400 sq. ft.**	**38**	**12,000 sq. ft.**	**31**
Subtotal—Hotel		**36 rooms**	**22**	**0 rooms**	**0**	**20 rooms**	**12**	**30 rooms**	**18**
Subtotal—Community Center		**0 sq. ft.**	**0**	**0 sq. ft.**	**0**	**10,000 sq. ft.**	**18**	**0 sq. ft.**	**0**
Total			**256**		**98**		**135**		**224**

Notes:
Trip Generation rates based on Institute of Transportation Engineers 1997 and Wilbur Smith Associates 2003.
sq. ft. = square feet

LAND USE AND PLANNING

Existing land use designations within the Specific Plan area would remain unchanged under the No Project Alternative. As with to the Proposed Project, the No Project Alternative would not be inconsistent with the General Plan.

POPULATION AND HOUSING

Development under the No Project Alternative would result in the construction of up to 28 new housing units within the Specific Plan area. Assuming an average of two persons per household, the estimated population increase would be approximately 56 residents, or less than 1% of the city's total population. Similar to the Proposed Project, this does not represent significant population growth. The No Project Alternative would be less effective than the Proposed Project in helping the City to meet its regional fair-share affordable housing obligation because the No Project Alternative would allow fewer multi-family housing units. However, the 28 units could be affordable housing and may meet the Larkspur General Plan Housing Section's requirement that 10% of the housing units provided be affordable. This is not considered an environmental effect. However, implementation of this alternative would contribute to increased development pressure for affordable housing on the limited number of sites in Larkspur remaining available for development.

GEOLOGY AND SOILS

Similar to the Proposed Project, development under the No Project Alternative would result in potential damage to foundations and other structures from soil compressibility and secondary consolidation settlement. Damage to underground utilities caused by corrosive soils and the potential for shallow groundwater to result in unsafe conditions for construction workers would be the same. The potential for soil erosion during and after construction to add to the sediment load of Larkspur Creek would be reduced because of the lack of development in Subarea 3. The project-specific impacts could be reduced to a less-than-significant level through the implementation of mitigation measures identified in Section 4.3, Geology and Soils.

HYDROLOGY AND WATER QUALITY

Stormwater drainage facilities at the East Ward Street culvert and the culvert at the northeastern corner of Subarea 3 under Doherty Drive are insufficient under existing conditions. Without implementation of the Specific Plan, policies calling for the improvement of existing onsite and adjacent inadequate storm drainage facilities would not be implemented; thus existing localized flooding conditions would continue. However, without development of Subarea 3, the existing drainage patterns would not be modified, the amount of impervious surfaces would not be increased, and incidences of localized flooding would not be exacerbated. Because Subarea 1 and Subarea 2 have already been developed and paved, drainage pattern and the amount of runoff would be similar to existing conditions. Dewatering activities conducted during construction in the Specific Plan area would be more limited than

under the Proposed Project; this would reduce the potential for temporary lowering of the groundwater table, with an associated increase in salinity and potential for transport of pollutants to the groundwater table. Less sediment would be generated from grading, and less runoff carrying vehicle-associated pollutants from construction and ongoing activities would be generated. As such, the potential water quality impacts on surface and groundwater sources would be less severe. However, mitigation is available to reduce hydrology and water quality impacts to less-than-significant levels.

BIOLOGICAL RESOURCES

Existing biological resources found on the Niven property (Specific Plan Subarea 3) would remain undisturbed under the No Project Alternative. Potential impacts on Larkspur Creek and associated sensitive habitat, including degradation of water quality and tidal wetland vegetation during grading, construction, and occupancy of site development, would occur to a much smaller extent because no development would occur near the banks of the creek.

AIR QUALITY

The No Project Alternative is consistent with the Larkspur General Plan assumptions for development of the site and would not conflict with the CAP. With less residential and commercial development than anticipated under the Proposed Project, fewer vehicle trips would be generated and the volume of traffic-related air pollutants would be reduced. Construction of fewer homes would result in fewer fireplaces that could potentially contribute to significant exceedances of ROG levels. Potential construction-related air quality impacts under the No Project Alternative would be less than those under the Proposed Project because fewer acres of land would be graded and developed. Because no development would occur in Subarea 3 under the No Project Alternative, reduced potential for disturbance of older buildings or site soils that may contain lead or asbestos, which could pose a health threat when entrained into the atmosphere would occur. Nonetheless, these impacts could be reduced to a less-than-significant level through the implementation of mitigation measures identified in Section 4.6, Air Quality.

TRAFFIC AND CIRCULATION

In the absence of development under the Specific Plan, traffic along local roadways would be expected to increase, although not to the same extent as would be anticipated with development of the Specific Plan area. Under existing conditions, the intersections at King Street/Magnolia Avenue and Doherty Drive/Riviera Circle would be expected to operate at levels of service "D" or worse during at least one peak hour (Table 6-2) (see 4.7, Traffic and Circulation). The intersections at East Ward Street/Magnolia Avenue, King Street/Magnolia Avenue, Doherty Drive/Larkspur Plaza, Doherty Drive/Piper Park, Doherty Drive/Riviera Circle, Fifer Avenue/Tamal Vista Boulevard and Wornum Drive/Tamal Vista Boulevard would be expected to operate at unacceptable levels of service (LOS E or worse for signalized intersections and LOS D or worse for unsignalized intersections) during one or both peak hours under future cumulative conditions with no new development in the Specific Plan area

aside from those already allowed by the General Plan and the Larkspur Downtown Specific Plan (i.e., no redevelopment of the nursery in Subarea 3).

Table 6-2
Intersection Levels of Service: Proposed Project Versus No Project Alternative

Intersections	Existing Plus Cumulative Plus Proposed Project				Existing Plus Cumulative Plus No Project Alternative			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. Bon Air Road/Magnolia Avenue	B	9.3	B	11.6	B	9.3	B	11.4
2. Doherty Drive/Magnolia Avenue	B	12.7	C	18.0	B	12.1	B	14.4
3. East Ward Street/Magnolia Avenue	**F**	**	**F**	**	**F**	**	**F**	**
4. King Street/Magnolia Avenue	**E**	**34.5**	**F**	**	**E**	**30.9**	**F**	**
5. Doherty Drive/Larkspur Plaza	B	6.9	B	9.1	**F**	**52.2**	**E**	**43.2**
6. Doherty Drive/Piper Park***	**D**	**25.8**	**D**	**21.8**	**D**	**24.1**	C	19.6
7. Doherty Drive/Riviera Circle	**E**	**40.0**	**E**	**44.9**	**E**	**36.6**	**E**	**41.1**
8. Lucky Drive/Doherty Drive	C	14.6	B	9.5	C	12.8	B	9.2
9. Lucky Drive/Fifer Avenue	C	12.2	C	15.5	C	12.1	C	14.1
10. Fifer Avenue/Tamal Vista Boulevard	C	24.4	**F**	**74.4**	C	23.5	**E**	**57.1**
11. Wornum Drive/Tamal Vista Boulevard****	D	26.3	**F**	**81.2**	C	25.1	**F**	**70.5**
12. Wornum Drive/Redwood Highway	B	8.5	B	12.8	B	8.4	B	12.6
13. 101 Northbound On-ramp/Industrial	B	5.6	C	18.1	B	5.6	C	17.8

Notes:
Delay is in average seconds per vehicle
LOS = Level of Service
** = exceeds 120 seconds delay
*** = Assumes no improvement to Doherty Drive/Piper Park intersection would be implemented under both the Proposed Project Alternative and the No Project Alternative.
**** = The improvement to the intersection of Wornum Drive/Tamal Vista Boulevard has been under construction and may be completed by the end of 2003.
Bold = unacceptable operations

According Section 18.15.010 of the City's Municipal Code, the City Council anticipates future development to cumulatively generate a substantial increase over existing levels of traffic within the city. This increase in traffic will result in traffic volumes that exceed the capacity of the existing city-wide transportation system to provide acceptable levels of service. Without the Specific Plan, traffic and circulation improvements supported by the City's TIF would still occur, and they would improve LOS to acceptable levels. However, with limited new development in the Specific Plan area under the No Project Alternative, development-related fees that could be used to help fund these intersection improvements would be reduced as compared to the Proposed Project. Without the adoption of the Specific Plan, improvements at Doherty Drive/Larkspur Plaza (which are not scheduled for TIF funding) that would occur under the Proposed Project may not be funded and developed. As such, the existing unacceptable LOS at this intersection would persist under the No Project alternative. As with the Proposed Project, all significant traffic impacts of the No Project Alternative would be

mitigable to less-than-significant levels with implementation of improvements funded by the City's TIF, with the exception of Doherty Drive/Larkspur Plaza (which are not scheduled for TIF funding) under the No Project Alternative. Also, as described in Section 4.7, Traffic and Circulation, level of service impacts at Doherty Drive/Piper Park would be significant and unavoidable if the City, because traffic volumes at the intersection are low, chooses not to install a traffic signal, as stated in Mitigation Measure 4.7-12, under both the Proposed Project Alternative and the No Project Alternative.

In the absence of additional development that would be permitted under the Proposed Project, funding for bikeway and trail improvements adjacent to the Specific Plan Subarea 3 may not be available and these improvements may not be developed.

NOISE

The potential for construction-related noise impacts under the No Project Alternative would be less than that under the Proposed Project, because no development would occur in Subarea 3. The potential for incompatibility of noise sensitive residential land uses and commercial uses would be slightly different. Compared to the Proposed Project, there would be more multifamily apartment units but less retail and hotel square footage in Subarea 1; in Subarea 2, there would be less residential development but similar square footage of commercial uses. Overall, there would be less development under the No Project Alternative, allowing more flexibility in the land area available to design the development sites such that noise sensitive uses can be buffered from operational noises. Because no new development in Subarea 3 would occur under this alternative, the potential for noise incompatibility impacts in Subarea 3 would be substantially reduced. With less traffic-generated than under the Proposed Project (3,338 daily trips), the No Project Alternative (1,402 daily trips) would produce less traffic-related noise and vibration. As with the Proposed Project, these impacts could be reduced to a less-than-significant level through the implementation of mitigation measures identified in Section 4.8, Noise.

PUBLIC SERVICES AND UTILITIES

Fewer homes would be built within the Specific Plan area under the No Project Alternative and there would be less commercial development than anticipated under the Proposed Project; therefore, fewer children would need to be accommodated at local schools (11 students in grades K-8 and 6 students in grades 9-12 under the No Project Alternative), and fewer new residents would be expected to use local parks and recreational facilities. In either instance, no new school or recreational facilities would be needed to adequately serve new residents coming from the Specific Plan area. Demands for police and fire protection would be less under the No Project Alternative than under the Proposed Project, but in either case, no new police, fire, or emergency medical facilities would need to be built. Demand for water, wastewater, and solid waste services would be slightly lower. No extension of utility infrastructure to serve Subarea 3 would be needed under this alternative, and thus the No Project Alternative would be expected to have fewer environmental effects than under the Proposed Project. Existing

onsite and adjacent storm drainage facilities are inadequate; under the No Project Alternative, no policy would be adopted to require the upgrade of stormwater drainage facilities.

VISUAL QUALITY AND AESTHETICS

The change in the existing visual character of the Specific Plan area under the No Project Alternative would be reduced as compared to the Proposed Project. Development consistent with either alternative would result in a change in visual character from existing conditions; however, no change in visual character of Subarea 3 would occur under the No Project Alternative. No formally identified scenic vistas were identified within the Specific Plan area. Onsite scenic resources in Subarea 1, including the two historic railroad structures, would be protected by policies the Larkspur Downtown Specific Plan. Similar policies in the Specific Plan would protect these visual resources under the Proposed Project. Numerous policies in these two specific plans related to building design and design elements would ensure continued protection of the visual quality of central Larkspur under either alternative.

The No Project Alternative would be expected to generate less light and glare than the Proposed Project due to the lack of new development in Subarea 3. Nonetheless, new sources of light or glare under either alternative would not be regarded as substantial within the context of the surrounding urban uses.

HISTORICAL, CULTURAL, AND ARCHAEOLOGICAL RESOURCES

Larkspur Downtown Specific Plan policies provide for the retention of existing historic railroad structures and associated right-of-way and the American Legion hall. Thus no destruction or degradation of the value of historic structures would be expected. In the absence of new development in the Subarea 3 under the No Project Alternative, it is unlikely that intact portions of known and any previously unidentified cultural resources would be disturbed and there would be no potential for construction activities to damage features. Significant and unavoidable cultural resources impacts would be avoided.

HAZARDS AND HAZARDOUS MATERIALS

The potential for exposure to hazardous materials in the Specific Plan area would exist equally under all of the alternatives except the No Project Alternative. Construction involving excavation, fill, pilings, or dewatering could expose construction workers to MTBE from contact with groundwater, and the public could be exposed to contaminated groundwater during dewatering. Contaminated groundwater pumped from the presently isolated groundwater table and disposed into storm drains could result in contamination of surface waters. However, the risk of exposure is the least under the No Project Alternative, since no development would occur in Subarea 3. Because no demolition activities would occur in Subarea 3, potential impacts related to the release of lead-based paint, asbestos, soil contaminants, and broken glass would be eliminated under the No Project Alternative. However, these impacts are mitigable to less-than-significant levels under the Proposed Project.

6.4 LOW DENSITY ALTERNATIVE

This alternative would enable the development of the Specific Plan area at considerably lower residential and commercial densities than anticipated under the Proposed Project, with a higher proportion of detached, single-family homes and less clustering of housing units. Under this alternative, Subarea 1 could support up to 12 multifamily apartment units, including up to six new multifamily apartment units above commercial uses. Subarea 1 could also support 9,900 square feet of new retail development and a smaller, 20-room hotel. An additional 4,500 square feet of retail development is assumed to be developed in Subarea 2, but no residential units would be developed in this subarea. Subarea 3 would support 45 residential units and a 10,000-square-foot community center. The residential unit mix in this subarea under the Low Density Alternative is composed of 30 large single-family homes, 10 standard single-family homes, five cottage homes, and no multifamily apartment units. All Specific Plan policies and standards are assumed to remain as proposed. All Specific Plan policies and requirements related to the maintenance of adequate creek setbacks, the preservation of historic structures, and the development of parks and a community-oriented open space would remain in force under this alternative.

LAND USE AND PLANNING

Existing land uses in the Specific Plan area would change substantially under the Low Density Alternative, but the uses anticipated would be compatible with existing adjacent uses. As with the Proposed Project, implementation of the Low Density Alternative would be inconsistent with the City's existing park dedication ordinance (in that no park or recreation facility has been designated within the Specific Plan area in the Larkspur General Plan) and with the Larkspur General Plan's pedestrian and bicycle circulation policies. These inconsistencies could be remedied by amending the Larkspur General Plan to incorporate specific references to a park or other recreational facilities within the Specific Plan area, and to show the new bikeways. Amendments to the General Plan land use diagram would also be required to change the existing land use designations assigned to the Specific Plan area in order to require lower land use densities and intensities under this alternative.

POPULATION AND HOUSING

Development under the Low Density Alternative would result in the construction of up to 57 new housing units within the Specific Plan area. Assuming an average of two persons per household, the estimated population increase would be approximately 114 residents, or less than 1% of the city's total population. Similar to the Proposed Project, this does not represent significant population growth. The Low Density Alternative would be less effective than the Proposed Project in helping the City to meet its regional fair-share housing obligation. The Larkspur General Plan Housing Element requires that 10% of the 57 housing units provided in the Specific Plan area be affordable. The 12 multi-family housing units in Subarea 1 would be permitted meeting the 10% affordable housing requirement. The affordable housing site option in Subarea 3 reflected in Specific Plan Land Use Policy 23 (Total Market Rate Units) would not be exercised under this alternative and no affordable housing would be developed

in Subarea 3 in the future. This is not considered an environmental effect. Implementation of this alternative would contribute to increased development pressure for affordable housing on the limited number of sites in Larkspur remaining available for development.

GEOLOGY AND SOILS

Similar to the Proposed Project, development under the Low Density Alternative would result in exposure to potential damage to foundations and other structures from soil compressibility and secondary consolidation settlement. Damage to underground utilities caused by corrosive soils, the potential for soil erosion during and after construction to add to the sediment load of Larkspur Creek, and the potential for shallow groundwater to result in unsafe conditions for construction workers would be the same. The project-specific impacts could be reduced to less-than-significant levels through the implementation of mitigation measures identified in Section 4.3, Geology and Soils.

HYDROLOGY AND WATER QUALITY

The range of conditions represented by development of the Low Density Alternative would be expected to be the same as those anticipated for the Proposed Project with respect to hydrology and water quality impacts. Impacts found to be less than significant include flooding. Potentially significant impacts, including exacerbation of presently inadequate capacity of the local drainage system, would be corrected with implementation of measures called for in the Specific Plan. Grading and construction activities could result in erosion and transport of pollutants and sediment to Larkspur Creek. This impact would be of the same or similar magnitude as under the Proposed Project because the same amount of land would be graded, the amount of land converted to impervious surfaces would be approximately the same, and the type of development would be similar in terms of pollutants generated that could affect water quality. Construction dewatering activities could temporarily lower the groundwater table, resulting in an associated increase in salinity and potentially causing the accidental transport of pollutants to groundwater. This alternative development scenario would be required to comply with regulatory requirements and processes described in Section 4.4, Hydrology and Water Quality, and the mitigation measures described in that section would reduce impacts to less-than-significant levels, as under the Proposed Project.

BIOLOGICAL RESOURCES

The area developed under the Low Density Alternative would be the same as the Proposed Project and effects on biological resources would be similar. Those impacts found to be less than significant, including loss of habitat and migratory corridors for common plant and wildlife species, would be the same. Potentially significant impacts, including direct and indirect effects on sensitive salt and brackish marsh habitat and associated sensitive species downstream and along Larkspur Creek, could be mitigated to a less-than-significant level with application of Specific Plan policies and adoption of the mitigation measures described in Section 4.5, Biological Resources.

AIR QUALITY

The Low Density Alternative is consistent with the Larkspur General Plan assumptions for development of the site and would not conflict with the CAP. With less residential and commercial development than anticipated under the Proposed Project, fewer vehicle trips would be generated and the volume of traffic-related air pollutants would be reduced. Construction of fewer homes would result in fewer fireplaces that could potentially contribute to significant exceedances of ROG levels. Potential construction-related air quality impacts under the Low Density Alternative would be similar to those under the Proposed Project because the same amount of acreage would be graded and developed. Redevelopment of Subarea 3 under either alternative would cause the same potential for disturbance of older buildings or site soils that may contain lead or asbestos, which could pose a health threat when entrained into the atmosphere. These impacts could be reduced to a less-than-significant level through the implementation of mitigation measures identified in Section 4.6, Air Quality.

TRAFFIC AND CIRCULATION

The Low Density Alternative would be expected to generate an estimated 1,626 daily vehicle trips, with 90 in the a.m. peak hour and 135 in the p.m. peak hour (see Table 6-1). Table 6-3 provides a comparison of the projected future cumulative effects associated with traffic generated under the Low Density Alternative to those associated with the implementation of the Proposed Project under the same set of assumptions. The five intersections identified as operating unacceptably under the Cumulative Plus Proposed Project conditions (East Ward Street/Magnolia Avenue, King Street/Magnolia Avenue, Doherty Drive/Riviera Circle, Fifer Avenue/Tamal Vista Boulevard, and Wornum Drive/Tamal Vista Boulevard) would continue to operate unacceptably under the Low Density Alternative, but generally with lower average vehicle delay. Implementation of the mitigation measures identified in Section 4.7, Traffic and Circulation, would reduce the traffic-related impacts associated with this alternative to a less-than-significant level. However, as described in Section 4.7, Traffic and Circulation, level of service at Doherty Drive/Piper Park would exceed the City's standards under the Existing Plus Cumulative (No Specific Plan) scenario, which assumes no improvements at this intersection would be made. Any contribution of traffic volumes to this intersection under cumulative conditions would worsen the level of service at this intersection. As shown in Table 6-3, if the improvements to this intersection, as described in Mitigation Measure 4.7-13, were made, then the LOS would be within the acceptable standards and the impact would be less than significant. However, if the City, because traffic volumes at the intersection are low, chooses not to install a traffic signal at this intersection, as stated in Mitigation Measure 4.7-13, then the impact at this intersection would be significant and unavoidable under both the Proposed Project Alternative and the Low Density Alternative.

NOISE

The potential for construction-related noise impacts under the Low Density Alternative would be similar to the Proposed Project, as the same land areas would be graded and developed. The potential for incompatibility of noise sensitive residential land uses and commercial uses

would be slightly different. Compared to the Proposed Project, there would be more multifamily apartment units but less retail and hotel square footage in Subarea 1; in Subarea 2, there would be less residential development but similar square footage of commercial uses. Overall, there would be less development under the Low Density Alternative, allowing more flexibility in the land area available to design the development sites such that noise sensitive uses can be buffered from operational noises. Noise sensitive residential uses in Subarea 3 may potentially be subject to more compatibility impacts under the Low Density Alternative than under the Proposed Project because this alternative includes a community center, which would potentially generate noise from vehicles entering and exiting the parking area and from any outdoor activity areas such as children's play areas, tennis courts, or a pool. With less traffic-generated than under the Proposed Project (3,338 daily trips), the Low Density Alternative (1,626 daily trips) would produce less traffic-related noise and vibration. As with the Proposed Project, these impacts could be reduced to a less-than-significant level through the implementation of mitigation measures identified in Section 4.8, Noise.

Table 6-3
Cumulative Intersection Levels of Service: Proposed Project Versus Low Density Alternative

	Existing Plus Cumulative Plus Proposed Project				Existing Plus Cumulative Plus Low Density Alternative			
	AM Peak Hour		PM Peak Hour Hour		AM Peak Hour		PM Peak Hour Hour	
Intersections	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. Bon Air Road/Magnolia Avenue	B	9.3	B	11.6	B	9.3	B	8.4
2. Doherty Drive/Magnolia Avenue	B	12.7	C	18.0	B	12.3	B	14.6
3. East Ward Street/Magnolia Avenue	**F**	**	**F**	**	**F**	**	**F**	**
4. King Street/Magnolia Avenue	**E**	**34.5**	**F**	**	**E**	**33.1**	**F**	**
5. Doherty Drive/Larkspur Plaza	B	6.9	B	9.1	B	5.3	B	8.1
6. Doherty Drive/Piper Park [(1)]	**D**[1]	**25.8**	**D**[1]	**21.8**	C[1]	12.2	C[1]	17.3
7. Doherty Drive/Riviera Circle	**E**	**40.0**	**E**	**44.9**	**E**	**42.7**	**D**	**21.9**
8. Lucky Drive/Doherty Drive	C	14.6	B	9.5	C	17.4	C	10.0
9. Lucky Drive/Fifer Avenue	C	12.2	C	15.5	C	0.5	C	1.0
10. Fifer Ave/Tamal Vista Boulevard	C	24.4	**F**	**74.4**	D	26.4	**E**	**55.2**
11. Wornum Drive/Tamal Vista Boulevard***	D	26.3	**F**	**81.2**	D	25.4	**F**	**
12. Wornum Drive/Redwood Highway	B	8.5	B	12.8	B	9.2	C	18.0
13. 101 NB On Ramp/Industrial	B	5.6	C	18.1	B	5.5	C	22.2

Notes:
Delay is in average seconds per vehicle
LOS = Level of Service
** = Exceeds 120 seconds delay
*** = The improvement to the intersection of Wornum Drive/Tamal Vista Boulevard has been under construction and may be completed by the end of 2003.
[1] Assumes Doherty Drive/Piper Park Improvement would be implemented for Low Density Alternative but not under Proposed Project.

PUBLIC SERVICES AND UTILITIES

Fewer homes would be built within the Specific Plan area under the Low Density Alternative, and there would be less commercial development than anticipated under the Proposed Project; therefore, fewer children would need to be accommodated at local schools (22 students in grades K-8 and 11 students in grades 9-12 under the Low Density Alternative), and fewer new residents would be expected to use local parks and recreational facilities. In either instance, no new school or recreational facilities would be needed to adequately serve new residents coming from the Specific Plan area. Demands for police and fire protection would be somewhat less under the Low Density Alternative than under the Proposed Project, but either case, no new police, fire, or emergency medical facilities would need to be built. Demand for water, wastewater, and solid waste services would be slightly lower. Depending on the ultimate placement of structures, the extension of utility infrastructure to serve the Specific Plan area under this alternative would be expected to have environmental effects similar to those expected under the Proposed Project. Existing onsite and adjacent storm drainage facilities are inadequate. As with the Proposed Project, Specific Plan policies and mitigation requiring improvement to the existing inadequate storm drainage system would apply equally to all alternatives.

VISUAL QUALITY AND AESTHETICS

The change in the existing visual character of the Specific Plan area under the Low Density Alternative would be similar to that of the Proposed Project. Development consistent with either alternative would result in a change in visual character from the existing conditions to a visual character consistent with surrounding development. No formally identified scenic vistas were identified within the Specific Plan area. Onsite scenic resources including the two historic railroad structures, heritage trees, and scenic values of Larkspur Creek would be protected equally by Specific Plan policies. Numerous Specific Plan policies related to building design and design elements would ensure continued protection of the visual quality of central Larkspur.

The Low Density Alternative includes development of a community center on a portion of the Niven property, which would provide an additional public space with a view of Mt. Tamalpais. The Low Density Alternative might be expected to generate less light and glare than the Proposed Project. Depending on the site design, the less intensive nature of the development would provide more opportunity for landscaping and shielding of parking areas and security lighting, although this level of light or glare would not be regarded as substantial within the context of the surrounding urban uses.

HISTORICAL, CULTURAL, AND ARCHAEOLOGICAL RESOURCES

Development in the Specific Plan area consistent with the Low Density Alternative could result in disturbance of, damage to, or alteration or destruction of intact portions of known and any previously unidentified archaeological resources located onsite. As described in Section 4.11, Historical, Cultural, and Archaeological Resources, Specific Plan policies provide for the

retention of existing historic railroad structures and associated right-of-way and the American Legion hall. However, the structures associated with the former nursery in Subarea 3, which appear to be eligible for listing on the CRHR, would be demolished, and construction activities in this subarea could also result in inadvertent uncovering of human remains. With implementation of Mitigation Measure 4.11-2a, destruction of the prehistoric site CA-MRN-68 and potentially undiscovered features related to the Bickerstaff ranch and adobe or the Fremont encampment would be avoided of any of the alternatives. However, implementation of any of the development alternatives would result in the loss of the Niven Nursery. Mitigation measures identified in Section 4.11 would reduce the potential impacts; however, even with the completion of appropriate documentation before demolition, the impact related to the destruction of the Niven Nursery would remain significant and unavoidable. The loss of the Nivens Nursery contributes to the cumulative loss of cultural resources in the region because of past, present, and future destruction of cultural resources (e.g., potential demolition of historic structures associated with developments occurring elsewhere in the city). As such, development in the Specific Plan area would contribute to a cumulative impact.

HAZARDS AND HAZARDOUS MATERIALS

The potential for exposure to hazardous materials within the Specific Plan area would be similar to that of the Proposed Project. Construction involving excavation, fill, pilings, or dewatering could expose construction workers to MTBE from contact with groundwater, and the public could be exposed to contaminated groundwater during dewatering. Contaminated groundwater pumped from the presently isolated groundwater table and disposed into storm drains could result in contamination of surface waters. Demolition of structures in Subarea 3 could result in release to the environment through air, water, or soil of materials containing lead-based paint and asbestos. A physical hazard also exists in this subarea from demolished building materials such as broken glass. Contaminated soils located in Subarea 3 containing metals, chlorinated pesticides, and petroleum hydrocarbons could be released during remediation. Development would occur on sites that formerly contained hazardous materials. As with the Proposed Project, the remediation efforts and mitigation measures identified in Section 4.12, Hazards and Hazardous Materials, could be expected to reduce these potential impacts to a less-than-significant level.

6.5 RESIDENTIAL FOCUS ALTERNATIVE

The Residential Focus Alternative would allow development of the Specific Plan area at a higher residential density than would the Proposed Project, with a higher proportion of attached, multifamily homes and greater clustering of housing units (see Table 6-1). Commercial density would be lower. Under the Residential Focus Alternative, Subarea 1 would support up to 44 multifamily apartment units, 12,000 square feet of commercial uses, and a 30-room hotel. Subarea 2 would be redeveloped with 46 multifamily apartment units. Subarea 3 would contain 32 large single-family homes, 11 standard single-family homes, 35 cottage homes, and 27 multifamily units. Similar to the Proposed Project, a community center is not included in this scenario. All Specific Plan related policies and standards are assumed to remain as proposed, and all Specific Plan policies and requirements related to the maintenance

of adequate creek setbacks, the preservation of historic structures, and the development of parks and a community-oriented open space would remain in force under this alternative.

LAND USE AND PLANNING

Existing land uses in the Specific Plan area would change substantially under the Residential Focus Alternative, but the uses would be compatible with existing adjacent uses. As with the Proposed Project, implementation of the Residential Focus Alternative would be inconsistent with the City's existing park dedication ordinance (in that a park or recreation facility has not been designated within the Specific Plan area in the Larkspur General Plan) and with the Larkspur General Plan's pedestrian and bicycle circulation policies. These inconsistencies could be remedied by amending the Larkspur General Plan to incorporate specific references to a park or other recreational facilities within the Specific Plan area and to show the new bikeways. Amendments to the General Plan land use diagram would also be required to change the existing land use designations assigned to the Specific Plan area in order to allow for higher land use densities and intensities under this alternative.

POPULATION AND HOUSING

Development under the Residential Focus Alternative would result in the construction of up to 195 new housing units within the Specific Plan area. Assuming an average of two persons per household, the estimated population increase would be approximately 390 new residents, or approximately 3.2% of the city's total population. This would be 126 more residents than the Proposed Project, but would still not represent significant population growth. The Residential Focus Alternative would be more effective than the Proposed Project in helping the City to meet its regional fair-share housing obligation. This alternative reflects a housing type that would allow affordable housing consistent with Specific Plan Land Use Policy 23 (Total Market Rate Units). This is not considered an environmental effect; provision of these affordable units would contribute to the stock of housing, including affordable housing. Therefore, it could reduce development pressure on the limited number of sites in Larkspur remaining available for development.

GEOLOGY AND SOILS

Similar to the Proposed Project, development under the Residential Focus Alternative would result in exposure to potential damage to foundations and other structures from soil compressibility and secondary consolidation settlement. Damage to underground utilities caused by corrosive soils, the potential for soil erosion during and after construction to add to the sediment load of Larkspur Creek, and the potential for shallow groundwater to result in unsafe conditions for construction workers would be the same. As with the Proposed Project, the impacts could be reduced to a less-than-significant level through the implementation of mitigation measures identified in Section 4.3, Geology and Soils.

HYDROLOGY AND WATER QUALITY

Hydrology and water quality impacts of the Residential Focus Alternative would be similar to those of the Proposed Project. Impacts found to be less than significant include flooding. Potentially significant impacts, including exacerbation of presently inadequate capacity of the local drainage system, would be corrected with mitigation requiring implementation of measures called for in the Specific Plan. Grading and construction activities could result in erosion and transport of pollutants and sediment to Larkspur Creek. This impact would be of the same magnitude because the same amount of land would be graded, the amount of land converted to impervious surfaces would be approximately the same, and the type of development is similar in terms of pollutants generated that could affect water quality. Construction dewatering activities could temporarily lower the groundwater table, resulting in an associated increase in salinity and potentially causing the accidental transport of pollutants within the groundwater table. As with the Proposed Project, this alternative development scenario would be required to comply with regulatory requirements and processes described in Section 4.4, Hydrology and Water Quality, and the mitigation measures described in that section.

BIOLOGICAL RESOURCES

The area developed under the Residential Focus Alternative would be the same as the Proposed Project, and effects on biological resources would be similar. Those impacts found to be less than significant, including loss of habitat and migratory corridors for common plant and wildlife species, would be the same. Potentially significant impacts, including direct and indirect effects on sensitive salt and brackish marsh habitat and associated sensitive species downstream and along Larkspur Creek, could be mitigated to a less-than-significant level with application of Specific Plan policies and adoption of the mitigation measures described in Section 4.5, Biological Resources.

AIR QUALITY

The Residential Focus Alternative is consistent with the General Plan assumptions for development of the site and would not conflict with the CAP. The mix of higher residential development and less commercial development proposed under this alternative would result in generation of fewer vehicle trips and the volume of traffic-related air pollutants would be less than under the Proposed Project. Construction of more homes would result in more fireplaces that could potentially contribute to significant exceedances of ROG levels. Because more residential units are proposed in this alternative than the Proposed Project, the severity of this potentially significant impact is also greater under this alternative. Potential construction-related air quality impacts would be similar under all development scenarios because the same amount of acreage would be graded and developed. Redevelopment of Subarea 3 under all development scenarios would cause the same potential for disturbance of older buildings or site soils, which may contain lead or asbestos that could pose a health threat when entrained into the atmosphere. These impacts could be reduced to a less-than-

significant level through the implementation of mitigation measures identified in Section 4.6, Air Quality.

TRAFFIC AND CIRCULATION

As indicated in Table 6-1, the Residential Focus Alternative would generate an estimated 2,716 daily vehicle trips, with 158 in the a.m. peak hour and 237 in the p.m. peak hour. Table 6-4 provides a comparison of the projected future cumulative level of service effects associated with traffic generated under the Residential Focus Alternative to those associated with the implementation of the Proposed Project under the same set of assumptions. Five of the six intersections identified as operating unacceptably under the Existing Plus Cumulative Plus Proposed Project conditions (East Ward Street/Magnolia Avenue, King Street/Magnolia Avenue, Doherty Drive/Piper Park, Doherty Drive/Riviera Circle, Fifer Avenue/Tamal Vista Boulevard, and Wornum Drive/Tamal Vista Boulevard) would continue to operate unacceptably under the Residential Focus Alternative, but generally with greater average vehicle delay. The intersection LOS of Doherty Drive/Piper Park would not deteriorate to unacceptable levels under the Residential Focus Alternative if intersection improvements are made. Implementation of the mitigation measures identified in Section 4.7, Traffic and Circulation, would reduce the traffic-related impacts associated with this alternative to a less-than-significant level. However, as described in Section 4.7, Traffic and Circulation, level of service at Doherty Drive/Piper Park would exceed the City's standards under the Existing Plus Cumulative (No Specific Plan) scenario, which assumes no improvements at this intersection would be made. Any contribution of traffic volumes to this intersection under cumulative conditions would worsen the level of service at this intersection. Thus the impact at this intersection would be significant and unavoidable under both the Proposed Project Alternative and the Residential Focus Alternative if the City, because traffic volumes at the intersection are low, chooses not to install a traffic signal at this intersection, as stated in Mitigation Measure 4.7-13.

NOISE

The potential for construction-related noise impacts under the Residential Focus Alternative would be similar to the Proposed Project, as the same amount of land would be graded and developed. The potential for incompatibility of noise sensitive residential land uses and commercial uses would be slightly different. In Subarea 1 there would be more multifamily apartment units and less retail and hotel/motel square footage, which may permit more flexibility in the land area available to design the site such that noise sensitive uses are protected. With the Residential Focus Alternative (2,716 new daily trips) generating less traffic than under the Proposed Project, this alternative would produce less traffic-related noise and vibration. As with the Proposed Project, the noise impacts could be reduced to less-than-significant levels through the implementation of mitigation measures identified in Section 4.8, Noise.

Table 6-4 Cumulative Intersection Levels of Service: Proposed Project Versus Residential Focus Alternative								
	Existing Plus Cumulative Plus Proposed Project				Existing Plus Cumulative Plus Residential Focus			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
Intersections	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. Bon Air Road/Magnolia Avenue	B	9.3	B	11.6	B	9.6	B	8.5
2. Doherty Drive/Magnolia Avenue	B	12.7	C	18.0	B	12.6	C	16.1
3. East Ward Street/Magnolia Avenue	**F**	**	**F**	**	**F**	**	**F**	**
4. King Street/Magnolia Avenue	**E**	**34.5**	**F**	**	**E**	**35.3**	**F**	**
5. Doherty Drive/Larkspur Plaza	B	6.9	B	9.1	B	5.6	B	10.2
6. Doherty Drive/Piper Park[1]	**D**[1]	**25.8**	**D**[1]	**21.8**	C[1]	12.6	C[1]	18.4
7. Doherty Drive/Riviera Circle	**E**	**40.0**	**E**	**44.9**	**F**	**46.0**	**D**	**24.8**
8. Lucky Drive/Doherty Drive	C	14.6	B	9.5	C	18.0	C	10.4
9. Lucky Drive/Fifer Avenue	C	12.2	C	15.5	C	0.5	C	1.0
10. Fifer Avenue/Tamal Vista Boulevard	C	24.4	**F**	**74.4**	D	26.9	**F**	**60.3**
11. Wornum Drive/Tamal Vista Boulevard	D	26.3	**F**	**81.2**	D	25.8	**F**	**
12. Wornum Drive/Redwood Hwy	B	8.5	B	12.8	B	9.2	C	18.0
13. 101 NB On Ramp/Industrial	B	5.6	C	18.1	B	5.5	C	22.6

Notes:
Delay is in average seconds per vehicle
LOS = Level of Service
** = Exceeds 120 seconds delay
[1] Assumes implementation of improvement of Doherty Drive/Piper Park intersection for Residential Focus Alternative but not for Proposed Project.

PUBLIC SERVICES AND UTILITIES

More homes and less commercial development would be built within the Specific Plan area under the Residential Focus Alternative as compared to the Proposed Project. Therefore, more children would need to be accommodated at local schools (74 students in grades K-8 and 39 students in grades 9-12 under the Residential Focus Alternative), and more new residents would be expected to use local parks and recreational facilities. In either instance, no new school or recreational facilities would be needed to adequately serve new residents coming from the Specific Plan area. Demands for police and fire protection would be somewhat greater under the Residential Focus Alternative than under the Proposed Project, but in either case, no new police, fire, or emergency medical facilities would need to be built. Demand for water, wastewater, and solid waste services would be slightly higher, but services are expected to be adequate. Depending on the ultimate placement of structures, the extension of utility infrastructure to serve the Specific Plan area under this alternative would be expected to have environmental effects similar to those expected under the Proposed Project. Existing onsite and adjacent storm drainage facilities are inadequate. Specific Plan policies and mitigation

requiring improvement to the existing inadequate storm drainage system would apply equally to all alternatives.

VISUAL QUALITY AND AESTHETICS

The change in the existing visual character of the Specific Plan area under the Residential Focus Alternative would be similar to the Proposed Project. Development consistent with either alternative would result in a change in visual character from the existing conditions to a visual character consistent with surrounding development. No formally identified scenic vistas were identified within the Specific Plan area. Onsite scenic resources including the two historic railroad structures, heritage trees, and scenic values of Larkspur Creek would be protected equally by Specific Plan policies. Numerous Specific Plan policies related to building design and design elements would ensure continued protection of the visual quality of central Larkspur. The Residential Focus Alternative would generate light and glare like the Proposed Project; however, the higher proportion of attached, multifamily homes and greater clustering of housing units would provide more opportunity for landscaping to be used to shield parking areas and security lighting. In any case, this level of light or glare would not be regarded as substantial within the context of the surrounding urban uses.

HISTORICAL, CULTURAL, AND ARCHAEOLOGICAL RESOURCES

Development within the Specific Plan area consistent with the Residential Focus Alternative could result in disturbance of, damage to, or alteration or destruction of intact portions of known and any previously unidentified archaeological resources located onsite. As described in Section 4.11, Historical, Cultural, and Archaeological Resources, Specific Plan policies provide for the retention of existing historic railroad structures and associated right-of-way and the American Legion hall. However, the structures associated with the former nursery in Subarea 3 that appear to be eligible for listing on the CRHR would be demolished, and construction activities in this subarea could result in inadvertent uncovering of human remains. Implementation of any of the development alternatives would avoid in the loss of prehistoric site CA-MRN-68, and potentially undiscovered features related to the Bickerstaff ranch and adobe or the Fremont encampment, with implementation of mitigation measures. However, development in the Specific Plan area would result in the loss of the Nivens Nursery. Mitigation measures identified in Section 4.11 would reduce this potential impact; however, even with the completion of appropriate documentation before demolition, this impact would remain significant and unavoidable and would contribute to cumulative losses of cultural resources throughout the region.

HAZARDS AND HAZARDOUS MATERIALS

The potential for exposure to hazardous materials within the Specific Plan area would be similar to the Proposed Project. Construction involving excavation, fill, pilings, or dewatering could expose construction workers to MTBE from contact with groundwater, and the public could be exposed to contaminated groundwater during dewatering. Contaminated groundwater pumped from the presently isolated groundwater table and disposed into storm

drains could result in contamination of surface waters. Demolition of structures in Subarea 3 could result in release to the environment through the air, water, or soil of materials containing lead-based paint and asbestos. A physical hazard also exists in this subarea from demolished building materials such as broken glass. Contaminated soils located in Subarea 3 containing metals, chlorinated pesticides, and petroleum hydrocarbons could be released during remediation. Development would occur on sites that formerly contained hazardous materials. The remediation efforts and mitigation measures identified in Section 4.12, Hazards and Hazardous Materials, could be expected to reduce these potential impacts to a less-than-significant level.

6.6 COMPARISON OF PROPOSED PROJECT AND ALTERNATIVES

In an effort to identify the "environmentally superior" alternative, the environmental impacts associated with each of the alternatives described above were compared with those of the Proposed Project (see Table 6-5).

LAND USE AND PLANNING

Existing land uses in the Subarea 3 would remain basically unchanged under the No Project Alternative, but would change substantially under the Proposed Project, the Low Density Alternative, or the Residential Focus Alternative. In each instance, however, the uses anticipated would be compatible with existing adjacent uses. Land use impacts are similar under each alternative and less than significant.

POPULATION AND HOUSING

The increase in the number of housing units or in the local population under the No Project Alternative would be the smallest. The level of residential development possible under the Proposed Project could vary within the range of uses and densities permitted for each parcel, with the development of up to 132 new residential units possible (and a population increase estimated at 264). Development under the Low Density Alternative would result in up to 57 new housing units (and a population increase estimated at 114). Development under the Residential Focus Alternative would result in the construction of up to 195 new housing units (and a population increase estimated at 390). As the number of housing units to be developed under each alternative increases, the alternatives that result in more residential units would have the benefit of making greater contributions toward providing the City's "fair share" of the regional housing need, including affordable housing. Population and housing impacts are similar under each alternative and less than significant.

GEOLOGY AND SOILS

Implementation of the Proposed Project and any of the alternatives would result in the exposure of additional people to potential seismic hazards. Potential construction-related erosion impacts, potential soil compressibility impacts, the potential for secondary consolidation settlement, and potential impacts related to corrosive soils and shallow

groundwater would be similar for the Proposed Project, the Low Density Alternative, and the Residential Focus Alternative because the same amount of land would be redeveloped. Under the No Project Alternative, Subarea 3 would not be redeveloped and thus would avoid these potential impacts in Subarea 3. Geology and soils impacts would be mitigable to less-than-significant levels under any alternative

HYDROLOGY AND WATER QUALITY

The Low Density Alternative and the Residential Focus Alternative would have similar impacts on hydrology and water quality as the Proposed Project. Because no new development would occur in Subarea 3 under the No Project alternative, no development adjacent to the creek would occur and no changes in existing hydrologic conditions in the Subarea 3 would occur. In any case, development under the Proposed Project or any of alternatives would be required to comply with regulatory requirements and processes and implement the mitigation measures described in Section 4.4, Hydrology and Water Quality. Such compliance would mitigate any potential hydrology and water quality impacts to a less-than-significant level.

BIOLOGICAL RESOURCES

Biological resources in Subarea 3 would remain undisturbed under the No Project Alternative. Potential development-related effects on plants and wildlife (e.g., displacement of deer) in the Specific Plan area would be similar (but less than significant) under either the Proposed Project, the Low Density Alternative, or the Residential Focus Alternative, because Subarea 3 would be developed under the Proposed Project, the Low Density Alternative, and the Residential Focus Alternative.

AIR QUALITY

Potential construction-related air quality impacts would be similar under the Proposed Project, the Low Density Alternative, and the Residential Focus Alternative, but would be lower under the No Project Alternative due to the absence of construction activities in Subarea 3. For all alternatives, the potential impacts could be reduced to a less-than-significant level. The generation of traffic-related air pollutants would be greatest under the Proposed Project, although the total volume of criteria pollutants generated would be considered less than significant under any of the alternatives. The impact related to wood stove-generated ROG would be greater with more residential development; thus the Residential Focus would have the greatest impact, followed by the Proposed Project, the Low Density Alternative, and then the No Project Alternative. This impact could be mitigated to a less-than-significant level.

TRAFFIC AND CIRCULATION

Five of six intersections identified as operating unacceptably under the Existing Plus Cumulative Plus Proposed Project conditions (East Ward Street/Magnolia Avenue, King Street/Magnolia Avenue, Doherty Drive/Riviera Circle, Fifer Avenue/Tamal Vista Boulevard, and Wornum Drive/Tamal Vista Boulevard) would continue to operate unacceptably under either the Low Density Alternative or the Residential Focus Alternative, but generally with

shorter or longer average vehicle delay. LOS of Doherty Drive/Piper Park would operate at acceptable levels under the Low Density Alternative or the Residential Focus Alternative. Implementation of the mitigation measures identified in Section 4.7, Traffic and Circulation, would reduce the traffic-related impacts to a less-than-significant level under the Proposed Project and these two alternatives.

All six intersections that would operate at unacceptable LOS under the Proposed Project would also operate at unacceptable LOS under the No Project Alternative, with the exception of the intersection of Doherty Drive/Piper Park, which would have acceptable LOS during the p.m. peak hour under the No Project alternative. However, the intersection of Doherty Drive/Larkspur Plaza would be expected to operate at unacceptable levels under the No Project alternative due to the absence of Specific Plan-related intersection improvements. Furthermore, without the proposed roadway improvements that would be implemented as mitigation measures under the Proposed Project or the other two alternatives, these intersections may continue to operate at unacceptable LOS with the addition of traffic volume under the No Project Alternative. Without the mitigation measures that would be implemented as a part of the Specific Plan, the No Project Alternative would result in worse LOS and delays at these two intersections than under the Proposed Project, Low Density Alternative, and Residential Focus Alternative. Over all, however, the No Project Alternative would generate less traffic and cause the least amount of delay in the study area.

However, as described in Section 4.7, Traffic and Circulation, level of service at Doherty Drive/Piper Park would exceed the City's standards under the Existing Plus Cumulative (No Specific Plan) scenario, which assumes no improvements at this intersection would be made. Any contribution of traffic volumes to this intersection under cumulative conditions would worsen the level of service at this intersection. Thus the impact at this intersection would be significant and unavoidable under all of the alternatives if the City, because traffic volumes at the intersection are low, chooses not to install a traffic signal at this intersection, as stated in Mitigation Measure 4.7-13.

NOISE

Noise impacts associated with the No Project Alternative would be expected to be less than those associated with the Proposed Project and the other two alternatives because there would be less new development in the Specific Plan area to contribute new noise sources (particularly during construction activity). The potential for construction-related noise impacts would be similar under the Proposed Project, Low Density Alternative, and Residential Focus Alternative but less under the No Project Alternative due to the absence of construction activities in Subarea 3; for all alternatives, these impacts could be reduced to less-than-significant levels. With the most traffic generated, the Residential Focus Alternative would produce the greatest volume of traffic-related noise and/or vibration, although this would not be regarded as significant for any of the alternatives.

PUBLIC SERVICES AND UTILITIES

For the Proposed Project and the three alternatives, effects on the local schools would be a function of the number of residential units built, with the greatest impacts associated with the Residential Focus Alternative. In any case, no new school or recreational facilities would be needed to adequately serve new residents coming from the Specific Plan area. Demands for police and fire protection would be somewhat greater with development of the Specific Plan area, but no new police or fire protection facilities would need to be built under the Proposed Project or any of the alternatives. Demand for water, wastewater, and solid waste services would be higher with more development; however, these services are expected to be sufficient for all alternatives.

VISUAL QUALITY AND AESTHETICS

The change in the existing visual character of the Subareas 1 and 2 would be similar under all of the alternatives. For Subarea 3, the change in visual character would also be similar under the Proposed Project, Low Density Alternative, and Residential Focus Alternative, whereas there would be no change in visual character of Subarea 3 under the No Project Alternative. No formally identified scenic vistas would be blocked in any case, and onsite scenic resources would be protected. The Residential Focus Alternative could be expected to generate more light or glare than the Proposed Project, the Low Density Alternative, or the No Project Alternative, although this increased level of light or glare would not be regarded as substantial within the context of the surrounding urban uses.

HISTORICAL, CULTURAL, AND ARCHAEOLOGICAL RESOURCES

In the absence of new development in the Subarea 3 under the No Project Alternative, it is unlikely that any previously unidentified cultural resources would be disturbed, and existing, unused structures in Specific Plan Subarea 3 would continue to deteriorate. Structures that appear to be eligible for listing on the CRHR would be expected to be demolished before development under the Proposed Project, Low Density Alternative, and Residential Focus Alternative; even with the completion of appropriate documentation before demolition, this impact would remain significant and unavoidable. The existing railroad structures and the associated open space would be retained under the Proposed Project and all of the alternatives. The possibility of discovering unknown archaeological resources or human remains during construction activity would be similar under the Proposed Project, Low Density Alternative, and Residential Focus Alternative; the potential for the occurrence of this impact, which would be less than significant after mitigation, would be lowest under the No Project Alternative due to the absence of construction activities in Subarea 3.

HAZARDS AND HAZARDOUS MATERIALS

The potential for exposure to hazardous materials in the Specific Plan area would exist under the Proposed Project and all of the alternatives. The risk is lowest under the No Project Alternative due to the absence of construction activities in Subarea 3. For the Proposed Project

and all alternatives, the remediation efforts and mitigation measures described in Section 4.12, Hazards and Hazardous Materials, would reduce this potential impact to a less-than-significant level.

6.7 EVALUATION OF ALTERNATIVES

The State CEQA Guidelines require identification of an "environmentally superior alternative other than the no project alternative" from among the proposed project and the alternatives evaluated.

Table 6-5 identifies whether each of the three alternatives would have "greater," "less," or "similar" impacts as the proposed project for each of the 12 environmental issues evaluated in this EIR. The No Project Alternative would not have greater impacts than the proposed project in any of the issue areas, less impacts in nine issue areas, and similar impacts in three. The Low Density Alternative would not have greater impacts than the proposed project in any of the issue areas, less impacts in two, and similar impacts in ten. The Residential Focus Alternative would have greater impacts than the proposed project in one issue area, less impacts in two, and similar impacts in nine.

Based solely on the listing of lesser and greater impacts as identified in Table 6-5 the No Project Alternative would appear to be the environmentally superior alternative, and all significant and unavoidable of the Proposed Project would be avoided in the No Project Alternative. Also this alternative would have the least number of impacts, and some potentially significant impacts would be less severe under this alternative (i.e., intersection LOS).

The Residential Focus Alternative would have less impacts than the Proposed Project, with the exception of air quality (i.e., wood stove-generated ROG). Overall, it would have less impact than the Proposed Project, but more impacts than the Low Density and the No Project alternatives. Also, the Residential Focus Alternative would not avoid any of the significant unavoidable impacts.

The Low Density Alternative would have less impacts but would not avoid any of the significant unavoidable impacts of the Proposed Project. Compared to the other alternatives, the Low Density Alternative would have the lowest numbers of significant impacts and less severe impacts, with the exception of the No Project Alternative.

Of the alternatives, the No Project Alternative is identified as the environmentally superior Alternative. However, as mentioned above, CEQA does not permit the identification of the No Project Alternative as the environmentally superior alternative. Therefore, given that the Low Density Alternative would have the highest ratio of less to greater impacts among the alternatives and has lesser impacts than the Proposed Project, it is identified as the environmentally superior alternative.

Table 6-5
Comparison of Project and Alternatives

Environmental Issues	Specific Plan	Alternatives		
		No Project Alternative	Lower Density Alternative	Higher Density Alternative
Land Use and Planning	LTS	Similar	Similar	Similar
Housing and Population	LTS	Similar*	Similar*	Similar
Geology and Soils	PS/LTS	Less	Similar	Similar
Hydrology and Water Quality	PS/LTS	Less	Similar	Similar
Biological Resources	PS/LTS	Less	Similar	Similar
Air Quality	PS/LTS	Less	Similar	Greater
Traffic and Circulation	PS/LTS	Less***	Less	Less**
Noise	PS/LTS	Less	Less	Less
Public Services and Utilities	LTS	Similar	Similar	Similar
Visual Quality and Aesthetics	LTS	Less	Similar	Similar
Historical, Cultural and Archaeological	SU	Less	Similar	Similar
Hazards and Hazardous Materials	PS/LTS	Less	Similar	Similar
Totals				
Greater Impacts		0	0	1
Less Impacts		9	2	2
Similar Impacts		3	10	9

LTS = Less than Significant Impact (no mitigation required)
PS/LTS = Less than Significant after Mitigation
SU = Significant and Unavoidable Impact (no mitigation available to reduce the impact to a less-than significant level)
* Although not an environmental impact, the No Project and Low Density Alternatives would contribute less to assisting the City in meeting its "fair share" of the regional housing need, and would not add to the supply of housing that might *be* available for those in the local work force.
** May be SU if City chooses not to install signal at Doherty Drive/Piper Park because of low traffic volumes.
*** May be SU if no improvements are implemented at Doherty Drive/Piper Park.

7 REFERENCES

7.1 PRINTED REFERENCES

Association of Bay Area Governments. 2001 (December). *Projections 2002*. Oakland, CA.

——. 2002. ABAG Earthquake Maps and Information. <http://quake.abag.ca.gov>. Last updated June 5, 2003. Accessed in 2002.

——. 2003. Earthquake Hazard Maps by Scenario. <http://www.abab.ca.gov/bayarea/eqmaps/pickfault.html>. Accessed August 19, 2003

Atwater, B. F. 1979. Ancient Processes at the Site of Southern San Francisco Bay: Movement of the Crust and Changes in Sea Level. In T. J. Conomos (ed.), *San Francisco: The Urbanized Estuary*. Pacific Division of the American Association for the Advancement of Science. San Francisco, CA.

Bay Area Air Quality Management District (BAAQMD). 1999 (December). *BAAQMD CEQA Guidelines: Assessing the Air Quality Impacts of Projects and Plans*. San Francisco, CA.

——. 2000. *Toxic Air Contaminant Control Program Annual Report, 1999*. San Francisco, CA.

Beardsley, R. K. 1948. Cultural Sequences in Central California Archaeology. *American Antiquity* 14(1):1-28.

Biosystems. 1994. *Life on the Edge*. A Guide to California's Endangeral Natural Resource: Wildlife. Santa Cruz, CA.

Bradford, G. R., A. C. Chang, A. L. Page, D. Bakhtar, J. A. Frampton, and H. Wright. 1996 (March). *Background Concentrations of Trace and Major Elements in California Soils*. Kearney Foundation Special Report, University of California at Riverside, Division of Agriculture and Natural Resources. Riverside, CA.

Brian Kangas Foulk. 1998 (March). *Irving Group Property Residential Development Drainage Study, Larkspur Residential Partners*.

BSI Consultants, Inc. 1989. *Larkspur Creek Channel Study*. Prepared for the City of Larkspur, Larkspur, CA.

California Air Resources Board. 1984. *California Surface Wind Climatology*. Sacramento, CA.

——. 2003. California Air Resources Board website. <http://arb.ca.gov>. Accessed in May 2003.

California Department of Finance. 2003. Demographic Information. <http://www.dof.ca.gov/html/Demograp/druhpar.htm>. Accessed in May 2003.

California Department of Natural Resources, Division of Mines. 1951. *Geologic Guidebook for the San Francisco Bay Counties*. Bulletin 154.

California Department of Transportation (Caltrans). 2000 (July 25). Officially Designated State Scenic Highways and Officially Designated County Scenic Highways. <http://www.dot.ca.gov/hq/LandArch/scenic/schwy1.html>. Last updated July 25, 2000. Accessed May 13, 2003.

——. 2001b (February 23). The California Scenic Highway System. <http://www.dot.ca.gov/hq/LandArch/scenic/cahisys.htm>. Last updated February 2001. Accessed May 13, 2003.

——. 2002a. *Caltrans 2002 Highway Volume Data*. Sacramento, CA.

——. 2002b. *Transportation Related Earthborne Vibrations*. Caltrans Technical Advisory TAV-02-01-R9601. Sacramento, CA.

California Division of Mines and Geology. 1966. *Geology of Northern California*. Bulletin 190.

——. 1969. *Geologic and Engineering Aspects of San Francisco Bay Fill*. CDMG Special Report 97.

——. 1996. Probabilistic Seismic Hazard Assessment for the State of California. Open-File Report 96-08. Produced in cooperation with the U.S. Geological Survey, Denver, CO, and Menlo Park, CA (USGS Open-File Report 96-706). <http://www.consrv.ca.gov/CGS/rghm/psha/ofr9608/index.htm>. Last updated May 12, 2003. Accessed May 13, 2003.

California Environmental Protection Agency (EPA). 1996a (July 4). Guidance for Ecological Risk Assessment at Hazardous Waste Sites and Permitted Facilities, Part B: Scoping Assessment. Department of Toxic Substances Control, Human and Ecological Risk Division. Sacramento, CA.

——. 1996b (July 4). Guidance for Ecological Risk Assessment at Hazardous Waste Sites and Permitted Facilities, Part A: Overview. Department of Toxic Substances Control, Human and Ecological Risk Division. Sacramento, CA.

——. 2003. Unified Program: A program of the California Environmental Protection Agency. <http://www.calepa.ca.gov/cupa/default.htm>. Last updated March 4, 2003. Accessed May 12, 2003.

California Geological Survey (CGS). 2002. How Earthquakes and Their Effects are Measured. CGS Note 32. <http://www.consrv.ca.gov/cgs/information/publications/cgs_notes/note_32/note_32.pdf>. Last revised April 2002. Accessed May 5, 2003.

——. 2003a. Cities and Counties Affected by Alquist-Priolo Earthquake Fault Zones as of May 1, 1999. <http://www.consrv.ca.gov/CGS/ rghm/ap/affected.htm> Accessed August 18, 2003.

——. 2003b. Seismic Hazards Mapping Program. <http://gmw.consrv.ca.gov/shmp/html/pdf_maps_no.html> Accessed August 18, 2003.Caltrans.

California Natural Diversity Database (CNDDB). 2003 (April). Database search for San Rafael quadrangle. Wildlife and Habitat Data Analysis Branch, California Department of Fish and Game. Sacramento, CA.

Certified Unified Program Agency. 1993. *Hazardous Waste and Hazardous Materials Management Regulatory Program, Larkspur Cleaners, Permit No. 60-0396*.

——. 1995. *Hazardous Waste and Hazardous Materials Management Regulatory Program, Chevron-Oyster Petroleum Inc. (Larkspur Service Station), Permit No. 60-0560*.

City of Larkspur. 1990. *Larkspur General Plan 1990-2010*. Adopted December 19, 1990. Larkspur, CA.

——. 1992. *Larkspur Downtown Specific Plan*. Adopted March 3, 1992. Larkspur, CA.

——. 2001 (June). *Draft Central Larkspur Specific Plan*. Larkspur, CA. Prepared by Thomas Cooke Associates, Oakland, CA.

——. 2002 (June). Central Larkspur Specific Plan Draft Environmental Impact Report. SCH #2001112092. Larkspur, CA. Prepared by Lamphier-Gregory, Oakland, CA.

——. 2003a. Central Larkspur Specific Plan. Larkspur, CA.

Department of Water Resources (DWR). 2003. California's Groundwater: Update 2003, Public Review Draft, Bulletin 118. Sacramento, CA.

ENSR International. 2001. *Soil and Groundwater Sampling and Analysis Report, Niven Nursery, 2 Ward Street, Larkspur, California*.

——. 2002. *Draft Removal Action Workplan, Niven Nursery, 2 Ward Street, Larkspur, California*.

ENVIRON. 2002. *Health-Based Risk Assessment for Niven Nursery, Larkspur, California*.

Environmental Resolutions, Inc. 1999 (April 25). *Report Removal of Underground Storage Tanks, Product Lines and dispensers at Former Exxon Service Station 7-0221.*

Federal Emergency Management Agency (FEMA). 1983 (September 15). *Flood Insurance Study: City of Larkspur, Marin County, California.*

——. 1984 (March 15). *FIRM (Flood Insurance Rate Map): City of Larkspur, Marin County, California,* Panel 1 of 2 (Community-panel number 065040 0001 B).

Federal Highway Administration. 1983. *Visual Impact Assessment for Highway Projects.* (Contract DOT-FH-11-9694.) Washington, DC.

Fredrickson, D.A. 1973. *Early Cultures of the North Coast Ranges, California.* Unpublished Ph.D. dissertation, Department of Anthropology, University of California, Davis. Davis, CA.

——. 1974. Cultural Diversity in Early Central California: A View from the North Coast Ranges. *Journal of California Anthropology* 1(1):41-53.

Friends of Corte Madera Creek Watershed. 1999. <http://www.jwtools.com/comcreek/results.htm>. Last accessed on November 1, 1999.

——. 2003. An Overview of the Watershed. <http://www.cotemaderacreek.org/creek.htm>. Accessed July 15, 2003.

Geopacific Corporation. 1996. *Environmental Site Assessment Report, 2 Ward Street, Larkspur, California.*

Hart, E. W., and W. A. Bryant. 1997. *Fault-Rupture Hazard Zones in California Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zone Maps* (Special Publication 42). California Division of Mines and Geology. Sacramento, CA.

Harza Engineering Company. 1998a (April 24). *Geotechnical Investigation for Niven Nursery Site, Larkspur, California.*

——. 1998b (October 8). *Phase I Site Assessment and Initial Phase II Assessment, Niven Nursery, Larkspur, California.*

Hill, W. 2000 (April 20). *Historic and Architectural Assessment of the Niven Nursery, 2 Ward Street, Larkspur, California.*

Holland, R. F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California.* Non-Game Heritage Program, California Department of Fish and Game. Sacramento, CA.

Holman & Associates. 1995 (October 18). *Archaeological Field Inspection of the 17-Acre Niven Parcel, Lands of Irving Group, Larkspur, Marin County, California*. Letter report to Mr. Robert Odermatt, The Odermatt Group, Berkeley, CA.

——. 1998 (March 4). *Proposal to Conduct Further Archaeological Research at the Niven Parcel, Larkspur*. Letter report.

——. 2003. *Initial Findings of Core Sampling for Archaeological Materials at the Niven Property, Larkspur, Marin County, California*. Letter report to Ms. Cecilia Bridges, Attorney at Law, Petaluma, CA.

Illingworth & Rodkin, Inc. Memo to EDAW, Inc. regarding CO modeling for East Ward Street/Magnolia Avenue. September 8, 2003.

Institute of Transportation Engineers (ITE). 1997. *Trip Generation*. 6th Edition. Washington, DC.

Jackson, T. L. 1976. *A Preliminary Archaeological Reconnaissance of the Piper Park in the City of Larkspur*. Letter report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA, S#17567.

Kelly, I. 1978. Coast Miwok. Pages 414-425 in *Handbook of North American Indians, Volume 8, California,* R. F. Heizer (ed.). Smithsonian Institution. Washington, DC.

Kleinfelder, Inc. 2001. *Methane Migration Potential Assessment, Proposed Building Multipurpose Building 300, Hall Middle School, Larkspur, California*.

Knudsen, K. L., J. S. Noller, J. M. Sowers, W. R. Lettis, and William R. Lettis and Associates, Inc. 1997. *Quaternary Geology and Liquefaction Susceptibility Maps, San Francisco, California 1:100,000 Quadrangle, A Digital Database*. U.S. Geological Survey Open-File Report 97-715.

Kroeber, A. L. 1925. *Handbook of the Indians of California*. Bureau of American Ethnology Bulletin 78. Smithsonian Institution. Washington, DC.

Lapkoff & Gobalet Demographic Research, Inc. 1998 (June). *Demographic Analysis and Enrollment Projections for the Larkspur School District*. Saratoga and Pleasanton, California.

Marin County. 1994. *The Marin Countywide Plan: Environmental Quality Element*. Adopted January 1994. San Rafael, CA.

——. 2001. Public Works—Certified Unified Program Agency. <http://www.co.marin.ca.us/depts/PW/main/cupa1.cfm>. Last updated September 26, 2001. Accessed May 12, 2003.

——. 2002 (March). Marin Countywide Plan: Geology, Mineral Resources and Hazardous Materials Technical Background Report. San Rafael, CA. Prepared by Snyder and Smith Associates, Inc., Oakland, CA, and Nichols-Berman, Benicia, CA. <http://www.co.marin.ca.us/depts/CD/main/pdf/planning/geologyBR.pdf>. Last updated March 2002. Accessed May 12, 2003.

Marin County Department of Public Works. 2000 (August 2). *Hydrology Manual Simplified Instructions*. San Rafael, CA.

——. 2001. *Action Plan 2005: Protecting and Enhancing Marin County's Watersheds*. San Rafael, CA.

Marin County Storm Water Pollution Prevention Program (MCSTOPPP). 2003. *Condensed Planning and Design Guide for Surface Water Pollution Control Planning and Permanent Best Management Practices*. San Rafael, CA.

Marin Municipal Water District (MMWD). MMWD Fast Facts. <http://www.marinwater.org/fastfactspg.html>. Accessed June 17, 2003.

Meighan, C. W. 1955. Archaeology of the North Coast Ranges, California. *University of California Archaeological Survey Reports* 30:1-39.

Morre, G. 1996. *A Cultural Resources Evaluation of the Elm Avenue Project in Larkspur, Marin County, California*. Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA, S#-18590.

National Ocean Service. 1983. Tidal Benchmark Data. <http://www.opsd.noaa.gov/bench/ben_ca.html>.

Origer, T. M. 1991. *An Archaeological Survey for the AT&T Fiber Optics Cable, San Francisco to Point Arena, California*. Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA, S#-13217.

Pinnacle Environmental. 2002. *Preliminary Lead Paint Assessment, Niven Nursery Site, 2 Ward Street, Larkspur, California*.

ProTech Consulting and Engineering. 1998. (January). *Asbestos Survey and Evaluation, Niven Nursery, 2 Ward Street, Larkspur, California*.

R.B. Construction, Inc. 1998. *Hazardous Waste Removal, Phase 1, Niven Nursery, 2 Ward, Larkspur, California*.

Rice, S. J., T. C. Smith, and R. G. Strand. 1976. *Geology for Planning Central and Southeastern Marin County, California*. DMG OFR 76-2. California Division of Mines and Geology.

Risk Prediction Initiative. 1996. Assessing Earthquake hazards. March 26, 1996. Available:<http://www.bbsr.edu/rpi/meetpart/eqhaz/summary.html>,. Accessed: August 2002.

Roop, W. 1991. *A Cultural Resources Evaluation of a Proposed Reclaimed Water Pipeline in the San Quentin Point, Corte Madera, Larkspur, Kentfield and San Rafael Areas*. Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA, S#-16949.

San Francisco Bay Conservation and Development Commission. 1987 (December). *Future Sea Level Rise: Predictions and Implications for San Francisco Bay*. Revised October 1998. San Francisco, CA.

San Francisco Bay Regional Water Quality Control Board (RWQCB). 1994. *Corte Madera Watershed Resource Evaluation and Information Report*. Prepared by J. Marshall, C. Denisoff, and D. Hopkins. Oakland, CA.

——. 1995 (June 21). *Water Quality Control Plan for the San Francisco Bay Basin*. Oakland, CA.

——. 2002. Leaking Underground Storage Tank Database. <http://www.swrcb.ca.gov/rwqcb2/Agenda/05-22-02/may02lust.xls>. Last updated May 2002. Accessed July 9, 2003.

Scott, C. 1991 (December). *Background Metal Concentrations in Soils in Northern Santa Clara County, California*. Thesis for Master of Science in Environmental Management at the University of San Francisco. San Francisco, CA.

Shacklette, H. T., and J. T. Boerngen. 1984. *Element Concentrations in Soil and Other Surficial Materials in the Coterminous United States*. Geological Service Professional Paper 1270. U.S. Government Printing Office. Washington, DC.

Shuford, W. D. 1993. *The Marin County Breeding Bird Atlas: A Distributional and Natural History of Coastal California Birds*. California Avifauna Series 1. Bushtit Books. Bolinas, CA.

Transportation Research Board. 1994. *Highway Capacity Manual*. Special Report 209, Third Edition. Washington, DC.

U.S. Army Corps of Engineers (USACE). 1984 (October). *San Francisco Bay Tidal Stage vs. Frequency Study*. San Francisco District. San Francisco, CA.

——. 1994 (August 31). *Engineering and Design—Flood-Runoff Analysis*. Manual #1110-2-1417. Washington, DC.

——. 1999 (November). *Corte Madera Creek Flood Control Project, Draft Report*. San Francisco District. San Francisco, CA.

U.S. Census Bureau. 2003. State and County Quickfacts, Marin County, California. 2000 Census. <http://quickfacts.census.gov/qfd/states/06/06041.html>. Accessed in May 2003.

U.S. Department of Agriculture, Soil Conservation Service (USDA SCS). 1979. *Soil Survey of Marin County, California*.

U.S. Environmental Protection Agency (EPA). 1971. Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances.

U.S. Fish and Wildlife Service (USFWS). 1984. *Salt Marsh Harvest Mouse and California Clapper Rail Recovery Plan*. Portland, OR.

——. 1999. Designated Critical Habitat: Central California Coast and Southern Oregon/Northern California Coasts Coho Salmon; Final Rule and Correction. *Federal Register* 64(86):24049-24062.

——. 2000. Designated Critical Habitat: Critical Habitat for 19 Evolutionary Significant Units of Salmon and Steelhead in Washington, Oregon, Idaho, and California; Final Rule. *Federal Register* 65(32):7764-7787.

U.S. Forest Service. 1974. The Visual Management System. Chapter 1 in *National Forest Landscape Management*, Vol. 2. (Agricultural Handbook No. 462.) U.S. Government Printing Office. Washington, DC.

U.S. Geological Survey. 1993. *San Rafael Quadrangle, Marin County, California (7.5-Minute Series Topographic Map), scale 1:24,000*.

——. 2003. *Earthquake Probabilities in the San Francisco Bay Region: 2002–2031*. Prepared by Working Group on California Earthquake Probabilities. USGS Open-File Report 03-214.

Watson, R. T., M. C. Zinyowera, and R. H. Moss (eds.). 1996. *Climate Change 1995. Impacts, Adaptations and Mitigations of Climate Change: Scientific-Technical Analyses*. IPCC (Intergovernmental Panel on Climate Change). Cambridge University Press. Cambridge, England.

Wentworth, C. M. 1997. *General Distribution Of Geologic Materials In The San Francisco Bay Region, California: A Digital Map Database*. Based on the work of E. E. Brabb (1989), S. E. Ellen and C. M. Wentworth (1995), and E. J. Helley and K. R. Lajoie (1979). U.S. Geological Survey Open-File Report 97-744.

Whiffen, A. C., and D. R. Leonard. 1971. *A Survey of Traffic Induced Vibrations*. Transport and Road Research Laboratory, RRL Report LR418. Crowthorne, Berkshire, England.

White, G., and D. A. Fredrickson. 1992. *Research Design for: The Anderson Flat Project, Archaeological Data Recovery Investigations at Sites CA-LAK-72, 509, 510, 536, 542, and 1375, Lake County, California*. On file at the Northwest Information Center of the Historical Resources File System, Sonoma State University, Rohnert Park, CA.

William Self Associates. 1999. *Archaeological Assessment of Niven Nursery Property, Larkspur, Marin County, California*. Letter Report to Joan Lamphier, Lamphier & Associates, Oakland, CA.

World Environmental Science & Technology. 1999 (December 30). *Review of Geologic Conditions for the Central Larkspur Area Specific Plan, Larkspur, California*.

Zander Associates. 1998 (April). *Preliminary Biological Assessment, Niven Nursery Project Site, Larkspur, California (Vegetation and Habitat Types Map, Scale 1 Inch = 50 Feet)*. Novato, CA.

7.2 PERSONAL COMMUNICATIONS

Busse, Debora. Local resident, Larkspur, CA. September 9, 2002—letter to Robert Pendoley for City of Larkspur Planning Department regarding issues pertaining to geology and soils, hydrology and water quality, traffic and circulation, and sound and vibration as described in the 2002 Central Larkspur Draft EIR.

Botti, Fred. Biologist. California Department of Fish and Game. February 8, 2001—personal communication with Anne King of EDAW regarding potential for salt marsh harvest mouse at Corte Madera Ecological Reserve.

Conkling, Una. Engineer. Marin Municipal Water District. September 5, 2003—personal communication with Bob Pendoley. City of Larkspur, regarding availability of water supplies.

Dow, Jason. General manager. Central Marin Sanitation Agency. 2003—personal communication with Steven Huang, EDAW, Inc. regarding wastewater treatment service for the Specific Plan area.

Eischens, Joseph. Water engineer. Marin Municipal Water District. September 5, 2003—personal communication with Bob Pendoley, City of Larkspur, regarding water supply for the Specific Plan area.

Evens, Jules. Ornithologist. Avocet Research Associates, Point Reyes Station, CA. February 9, 2001—personal communication with Anne King of EDAW regarding presence of California clapper rail and California black rail in the vicinity of the Specific Plan area (Corte Madera Ecological Reserve and at the nearby Muzzi Marsh).

Foreman, Daryl. September 2, 2002—letter to the City of Larkspur Planning Department regarding dredging of lower Corte Madera Creek and sediment from the Larkspur Creek watershed.

Guldman, Sandra. President. Friends of Corte Madera Watershed, Larkspur, CA. September 4, 2002—letter to Robert Pendoley for the Larkspur Planning Department regarding issues related to hydrology, biological resources, visual resources, transportation, and hazardous materials as described in the 2002 Central Larkspur Specific Plan EIR.

Hahn, Jim. Athletic director. Redwood High School. September 4, 2003—Personal Communication with Steven Huang of EDAW regarding availability of Redwood High School athletic facilities to the public.

Hayre, Stuart. Associate engineer. City of Larkspur Public Works Department, Larkspur, CA. May 29, 2002—personal communication with Lamphier-Gregory, Urban Planning, regarding potential storm drainage improvements.

Hill, John. Engineer. City of Larkspur, Larkspur, CA. February 19, 2002—personal communication with Lamphier-Gregory, Urban Planning, regarding storm drainage design criteria for City of Larkspur Department of Public Works and Engineering.

Hogue, Barry. District manager. Ross Valley Sanitary District #1. May 22, 2002—personal communication with Lamphier-Gregory, Urban Planning, regarding capacity of Ross Valley Sanitary District #1 with development under the Specific Plan.

Horn, Andre. Captain. Twin Cities Police Department, Larkspur, CA. (1) May 19, 2003—telephone call with Elizabeth Candela of EDAW regarding funding for police services and demand under the Specific Plan; (2) August 19, 2003—telephone call with Julie Nichols of EDAW regarding Twin Cities Police Department Staffing.

Jang, John. Water resources control engineer. San Francisco Bay Regional Water Quality Control Board, Oakland, CA. May 26, 2003—email to Julie Nichols of EDAW regarding MTBE status of 600 Magnolia Avenue, Larkspur.

King, Whitney. Environmental programs manager. Redwood Sanitary District, Novato, CA. April 29, 2003—telephone call with Elizabeth Candela of EDAW regarding availability of landfill space.

Maltzahn, Charles G. Local resident, Larkspur, CA. August 27, 2002—letter to Robert Pendoley for the Larkspur Planning Department, Larkspur Planning Commission, and Larkspur City Council regarding density of development, traffic, acoustical engineering, geological engineering, structural engineering, and safety as described in the 2002 Central Larkspur Specific Plan EIR.

Morisoli, Mike, and Scott A. Stephens. Geotechnical engineers. Miller Pacific Engineering Group. September 9, 2003—letter to Bob Pendoley, Contract Planner, City of

Larkspur, regarding Doherty Drive Preliminary Evaluation of Settlement and Vehicle Induced Vibrations.

McGuire, Eric. Environmental services coordinator. Marin Municipal Water District, Corte Madera, CA. June 19, 2003—email to Amanda Olekszulin of EDAW regarding MMWD water supply.

Pendoly, Bob. Planner. City of Larkspur. June 2003—personal communication with Holly Keeler, EDAW, Inc. regarding settlement of Doherty Drive.

Rose, Tom. Technical services manager. Central Marin Sanitation Agency. May 28, 2002—personal communication with Lamphier-Gregory, Urban Planning, regarding Central Marin Sanitation Agency's capacity with development under the Specific Plan.

Salzman, Barbara. Conservation. Marin Audubon Society, Mill Valley, CA. September 4, 2002—letter to Jan Vazquez for the City of Larkspur regarding issues related to policies, geology, hydrology, water quality/flooding, biological resources, and hazardous materials as described in the 2002 Central Larkspur Specific Plan EIR.

Sarkella, Mardell. Controller. Marin Sanitary Service, San Rafael, CA. August 29, 2003—personal communication regarding solid waste services.

Sinnott, Robert. Larkspur Fire Department, Larkspur, CA. May 23, 2002—personal communication with Lamphier-Gregory, Urban Planning, regarding need for fire protection facilities under Central Larkspur Specific Plan.

Toft, Neal. Associate planner. City of Larkspur, Larkspur, CA. May 29, 2003—telephone call with Robert Pendoley regarding development projects in the Specific Plan area.

Toukonen, Arvo. Assistant superintendent. Tamalpais Union High School District, Larkspur, CA. (1) April 28, 2003—telephone call with Elizabeth Candela of EDAW regarding capacity at Redwood High School; (2) August 14, 2003—Telephone call with Steven Huang of EDAW regarding student generation per household at Redwood High School.

Wilkinson, Dave. Director. City of Larkspur Recreation Department, Larkspur, CA. May 22, 2002—personal communication with Lamphier-Gregory, Urban Planning, regarding funding for parks and recreational facilities.

Winkler, Jeff. Larkspur School District, Larkspur, CA. May 7, 2003—telephone call with Elizabeth Candela of EDAW regarding capacity at Neil Cummins Elementary School and Henry Hall Middle School.

8 REPORT PREPARATION

CITY OF LARKSPUR

Nancy Kaufman ..... Planning Director
Jan Vazquez ..... (former) Planning Director
Robert Pendoley ..... Consulting Planner

EDAW

Sydney Coatsworth ..... Principal-in-Charge
Holly Keeler ..... Project Manager
Steven Huang ..... Assistant Project Manager
Julie Nichols ..... Project Coordinator
Karen Brandt ..... Environmental Planner
Elizabeth Candela ..... Environmental Planner
Leo Edson ..... Senior Biologist
Charlane Gross ..... Senior Archaeologist
Joan McHale ..... Document Production
Gayiety Hasbrouck ..... Document Production
Amber Martin ..... Document Production
Brian Perry ..... Graphics

PHILIP WILLIAMS & ASSOCIATES

Jeff Haltiner ..... Senior Principal
Betty Andrews ..... Principal
Jorgen Blomberg ..... Senior Associate

ILLINGWORTH & RODKIN, INC.

Fred Svinth ..... Senior Consultant
David Morrow ..... Staff Consultant

WILBUR SMITH ASSOCIATES

Ron Foster ..... Principal Transportation Planner
Lisa Young ..... Transportation Planner