

PRINCE MEMORIAL GREENWAY PHASE 2004

EXHIBIT 2

Initial Study and Mitigated Negative Declaration

RESOLUTION NO. 23227

RESOLUTION OF THE COUNCIL OF THE CITY OF SANTA ROSA APPROVING AND ADOPTING A MITIGATED NEGATIVE DECLARATION FOR THE PRINCE MEMORIAL GREENWAY PROJECT LOCATED AT SANTA ROSA CREEK BETWEEN SANTA ROSA AVENUE AND RAILROAD STREET

WHEREAS, the Environmental Coordinator has conducted an initial study on the possible environmental consequences of the proposed project, which study was initially completed July 3, 1997; and

WHEREAS, the study, in its final form, did not identify any significant effects on the environment which would result from the proposed project provided certain mitigation measures therein identified and listed were adopted and implemented; and

WHEREAS, the Environmental Coordinator, based on the Initial Study, determined that any potential environmental effects of the proposed project have been clearly mitigated by the identified mitigation measure to the point where no significant environmental effects would occur and the Environmental Coordinator, based upon this determination, prepared a Negative Declaration, subject to mitigating requirements, with respect to the environmental consequences of the subject project; and

WHEREAS, a notice of Negative Declaration was posted and given and comments from the public and interested persons were invited; and

WHEREAS, the Council has reviewed and considered the environmental study, the findings and determination of the Environmental Coordinator, the proposed Mitigated Negative Declaration, the staff reports, oral and written, and the comments, statements, and other evidence presented by all persons, including members of the public, who appeared and addressed the Council at the meeting held on August 12, 1997, and all comments and materials submitted prior thereto; and

WHEREAS, the Council has before it all of the necessary environmental information required by the California Environmental Quality Act (CEQA) to properly analyze and evaluate any and all of the potential environmental impacts of the proposed project.

NOW, THEREFORE, BE IT RESOLVED that the Council of the City of Santa Rosa, based upon the findings, records and files herein, and the findings above made, determines that the proposed Prince Memorial Greenway will not have a significant effect upon the environment if the mitigation measures listed and identified in the Mitigated Negative Declaration are implemented with development of the subject project, and the Council approves and adopts the Mitigated Negative Declaration for the Prince Memorial Greenway project.

IN COUNCIL DULY PASSED this 12th day of August, 1997.

AYES: (7)
NOES: (0)
ABSENT: (0)
ABSTAIN: (0)

APPROVED: [Signature]
Mayor

ATTEST: [Signature]
Assistant City Clerk

APPROVED AS TO FORM: [Signature]

b. Significance Criteria.

Sensitive habitats are defined by local, state, or federal agencies as those habitats that support special status species, provide important habitat values for wildlife, represent areas of unusual or regionally restricted habitat types, and/or provide high biological diversity. At the State level, riparian plant communities are considered sensitive habitat and have been identified by the California Department of Fish and Game as a habitat of special concern.

A significant biological impact is one that substantially affects a rare or endangered plant or animal species, or the habitat of the species. Impacts that interfere substantially with the movement of any resident or migratory fish, or wildlife species are also considered significant.

The project could result in a significant impact if it:

- 1) involved construction of facilities near sensitive plant habitat or wildlife habitat areas.
- 2) involved creation, enhancement or restoration of regionally significant habitat types such as wetlands, riverine habitat and riparian woodland. (Beneficial Impact)
- 3) resulted in conversion of regionally significant habitat types into other habitat types.

c. Impacts.

The primary goal of this project is to restore the native vegetation and cold-water fishery to the channelized creek. As such, all permanent impacts would be beneficial in nature because native biodiversity would be increased, water quality would be improved and the fishery for sensitive species such as steelhead would be enhanced. Temporary impacts pose the greatest possibility of short term adverse effects. Sources of short term impacts include those generated by the construction process, and those which may arise from the exposure of hazardous materials in the soils buried under the concrete lining of the channel. Mitigation measures and the de minimis magnitude of the effects are such that no significant adverse impacts would result from implementation of the proposed project.

Impact BIO-1 (Loss of Habitat): Loss of Existing Vegetation and Habitats Resulting from Implementation of the Restoration Plan.

The restoration plan involves partial removal of 700 feet of channel between Santa Rosa Avenue and the SCWA access ramp, and complete removal of the channel from there to Railroad Street. Virtually all of the existing 3.5 acres of urban vegetation type in the project area would be removed. Most of the vegetation consists of ivy, isolated non-native trees along the channel banks, and non-native landscaping at the top of bank, but it does provide incidental habitat value to a limited extent. The increased channel capacity resulting from the larger cross-sectional to be installed by implementation of this plan allows for increased vegetation within the channel. Loss of the existing habitat would not result in a significant adverse impact because it would be replaced by a total of 3.5 acres of revegetated riparian habitat with greater biological value that functions more like ecosystem prior to channelization (Table 2).

Riverine aquatic habitat would remain unchanged, however, this habitat would become more functional from the installation of a deeper, narrower, shaded low-flow channel, and weirs, rootwads and boulders to create to create pools for rearing habitat.

Table 2. Habitat conversions in Santa Rosa Creek resulting from restoration in the Prince Memorial Greenway project area.

WHR Habitat	Existing (acres)	Restored (acres)	Net Change (acres)
Riparian 5S	0.0	1.2	+1.2
Riparian 5P	0.0	2.3	+2.3
Riverine	0.7	0.7	0.0
Urban	3.5	0.0	-3.5
Total	2.4	2.4	0.0

Table 3. Net wildlife species diversity effect of converting existing urban habitat to restored riparian habitat at the "open-pole" (i.e. "young" or "3P") stage of development 5-15 years after restoration¹.

Existing Habitat	Restored Habitat	Number of Species Affected	Positive Effect	Neg. Effect	No Effect
Urban	Riparian 3P	196	110	56	30

Mitigation Measure BIO-1:

- (a) A total of 51 white alders would be planted along the south bank of the channel at the two year flood elevation, in order to decrease water temperatures by casting shade on the low flow channel during the summer. Equally important is the added arboreal habitat which especially benefits bird life and many aquatic insects. Lastly, the deciduous alders add an annual input of leaf detritus providing an important source of energy and organic matter necessary for the food chain of aquatic invertebrates.
- (b) Native sedges, rushes and tules would be planted amongst boulders on the channel bottom and in "marsh cells" to provide habitat and assist in cleansing non-point sources of water pollution.
- (c) Vines, like California grape, would be used to revegetate planting slots in along the channel banks.
- (d) Drought tolerant native species such as valley oak, live oak, buckeye and madrone, would be planted on upper banks.

Impact BIO-2 (Wildlife Disturbance): Development of new paths may disturb wildlife.

The figures shown were developed in a 1989 computer generated WHR analysis of habitat types in the project region. See Table 4 at the end of this section (Chapter 3.1) for definitions of WHR habitat stages.

Paths would be primarily placed at the top of banks, however, it is expected that there would be substantial increases in use of the creek and intensive use wherever parks or low water crossings occur.

Mitigation Measure BIO-2:

- (a) Heavily-used multi use trails would generally be located near the top of bank on the north side of the creek, furthest away from the relatively sensitive low-flow channel, thereby minimizing the potential for disturbance.
- (b) Marsh areas and alder trees would provide a greater level of visual screening for wildlife than currently exists, providing for undisturbed wildlife use in areas between low water crossing and park areas. The increased ecological functionality and physical structure of the restored vegetation would increase the carrying capacity for wildlife using the creek, thereby offsetting the adverse effects of increased use.

Impact BIO-3 (Degradation from Erosion): Grading and new construction may expose soils to erosion and degrade downstream aquatic habitat.

Removal of the existing channel lining, excavation of the channel bottom and regrading of the channel would expose unprotected sediments.

Mitigation Measure BIO-3:

- (a) Construction would be limited to the dry season as specified in the Streambed Alteration Agreement and permits under Section 404 of the Clean Water Act.
- (b) Points of excessive erosion potential would be designed with a hardened unerodible surface.
- (c) All exposed soils would be protected with erosion control fabrics and other measures specified in Standard Best Management Practices for erosion control.
- (d) Instream vegetation (i.e. marsh cells) would function to trap sediments and decrease downstream transport of fine sediments.

Impact BIO-4 (Exposure to Hazardous Materials): Exposure to hazardous materials could have an adverse effect on aquatic organisms.

Several locations of buried areas of contaminants would be exposed during construction and more extensive residual, but unconcentrated and diffuse background contamination in the channel bottom would be exposed in the project area.

This is a potentially significant impact, but would be reduced to a less than significant level with the following mitigation measures.

Mitigation Measure BIO-4:

- (a) Areas where concentrated contaminants occur would be resealed.
- (b) Marsh areas would be developed (to the extent that "roughness" is permitted, while still maintaining channel "n" values) to help to trap and remediate through natural treatment processes the pulse of low level contamination which may be released after construction.

Alternate Concept for the Boyett Parcel

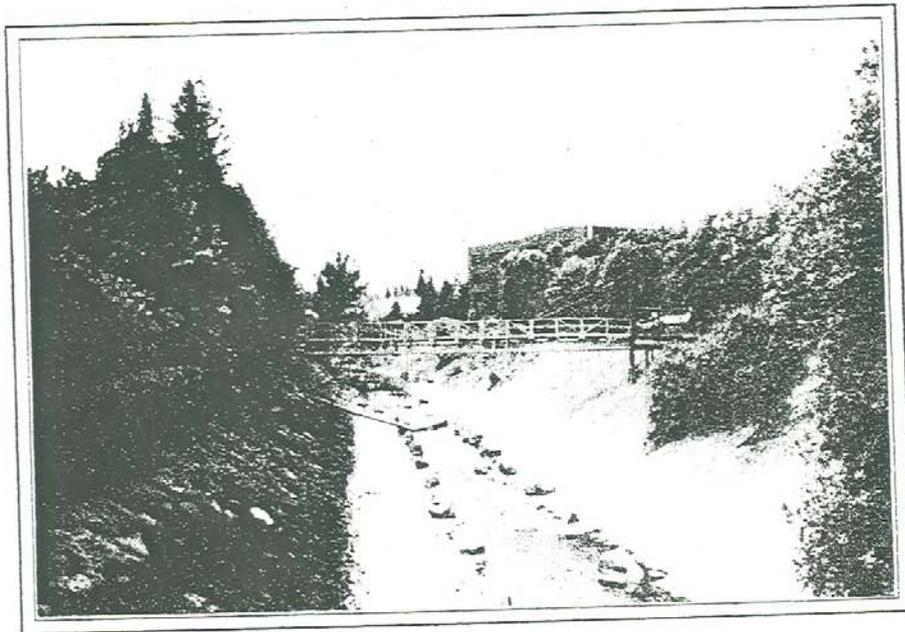
If the Boyett Park is not developed as part of the Prince Memorial Greenway project, opportunities for enhancing habitat in this location would be limited, but this alternate would not result in significant biological impacts.

Cumulative Impacts

Implementation of the Prince Memorial Greenway project and, ultimately, all or the majority of the 12.8 mile project described in the Santa Rosa Creek Master Plan would result in beneficial cumulative impacts to biological resources.

Proposed Initial Study/Mitigated Negative Declaration
for the

Prince Memorial Greenway Project



Prepared for:

City of Santa Rosa
Department of Community Development

July 1997

Table 4: Wildlife Habitat Relationships (WHR) Classification of Habitat Stages: (A) Standards for Tree Size, and (B) Standards for Canopy Closure (Mayer and Laudenslayer, 1988).

(A) Standards for Tree Size

WHR	WHR Size Class	Conifer	Hardwood	Diameter
		Crown Diameter	Crown Diameter	at Breast Diameter
		Height (DBH)		
1	Seedling Tree	n/a	n/a	< 1"
2	Sapling Tree	n/a	< 15"	1"-6"
3	Pole Tree	< 12'	15'-30'	6"-11"
4	Small Tree	12'-24'	30'-45'	11"-24"
5	Medium/Large Tree	> 24'	> 45'	> 24"
6	Multi-Layered Tree	Size class 5 trees over a distinct layer of size class 4 or 3 trees, total tree canopy exceeds 60% closure		

(B) Standards for Canopy Closure

WHR	WHR Closure Class	Ground Cover (Canopy Closure)
S	Sparse Cover	10-24%
P	Open Cover	25-39%
M	Moderate Cover	40-59%
D	Dense Cover	60-100%

3.2 Biological Resources - Fisheries and Other Aquatic Species

a. Setting

The existing physical condition of stream Reach "C" is described above in Chapter 2, Project Description, and in the Santa Rosa Creek Master Plan (1991). From a fisheries perspective, this reach can be described as unproductive, unshaded, and overheated. It currently lacks the habitat diversity needed to sustain the aquatic community that would normally be found in a similar, unmodified stream in the Santa Rosa region. Generally, flood control projects that place a stream within a long, straight, unshaded concrete channel greatly reduce opportunities for the survival of stream biota.

A good approximation of what Reach "C" probably resembled prior to channelization can be seen a mile or so upstream, in Reach "A" along Montgomery Drive or Channel Drive: Mature riparian trees form a closed canopy above the stream, thus shading it and keeping water temperature down, while also providing vital nutrient input in the form of leaves and twigs (which are the base of the food chain in freshwater streams), as well as a steady rain of dislodged insects and spiders that are consumed by fish and other animals. Fallen trees and limbs contribute "large woody debris," a critical instream habitat element for steelhead and other native fishes, while the roots of living trees stabilize the stream banks and promote gradual release of groundwater to the stream during the summer dry season. The streambed is a jumble of boulders, bedrock, cobble, and gravel, with finer sediments accumulated in pools and glides. The interstitial spaces beneath the boulders and among the cobble and gravel shelter many aquatic insects and larvae, which are important foods for juvenile steelhead and other animals (in a concrete-lined channel there are no interstitial spaces, and insect productivity is greatly reduced, compared to an undisturbed stream). The stream contains a variety of riffles, cataracts, glides, and pools, with undercut banks and emergent vegetation.

Several sensitive species of aquatic animals known to occur in parts of Santa Rosa Creek and which could be affected by the proposed project are discussed below:

Steelhead trout (*Oncorhynchus mykiss*)

The steelhead trout of the Russian River system have been proposed for listing as a federally Endangered Species; a decision by the National Marine Fisheries Service is expected in August, 1997. Steelhead (also known as rainbow trout) are now considered one of six species of Pacific salmon. Like

other salmon, steelhead are anadromous, migrating as adults from the ocean to freshwater streams to spawn. Unlike the other salmon, many steelhead survive and return to the sea after spawning, and may spawn again in subsequent years (Shapovalov and Taft 1954; Barnhart 1986). Juveniles may spend 1-4 years in freshwater before going to sea for the first time, or may never go to sea ("resident rainbow trout"), and once in the sea, may spend from 1-4 years there before returning to freshwater to spawn, although most return after two years.

Studies conducted annually for the City of Santa Rosa for the past several years have shown that steelhead spawning and juvenile rearing still occur every year in Santa Rosa Creek in reach "A" (although the headwaters reach above Highway 12 is used more extensively), and that the presence of deep, shaded pools is critically important to juvenile survival during the summer, when surface flow often becomes intermittent (Merritt Smith Consulting 1995, 1996). On the other hand, most, if not all, of Santa Rosa Creek from Reach "C" downstream to the Laguna de Santa Rosa becomes much too warm (up to 90° F) for salmonids during the summer, owing to the shortage of shade (*ibid*).

Russian River tule perch (*Hysterothorax traskii pomis*)

The Russian River tule perch is listed as a California Species of Special Concern. This fish is one of three subspecies of the tule perch (*H. traskii*), all of which are endemic to California (Moyle, et al 1995), and are the only freshwater members of the family Embiotocidae (surfperches). The Russian River tule perch is confined to the Russian River and its tributaries. Tule perch require clear, moving water and abundant cover, especially submergent and emergent plants, and overhanging and instream branches. Tule perch have occasionally been captured in nets both above and below Reach "C" in Santa Rosa Creek during the past several years (MSC 1995, 1996).

Navarro roach (*Lavinia symmetricus navarroensis*)

The Navarro roach is listed as a California Species of Special Concern. The Navarro roach is a form or possible subspecies of the California roach (*L. symmetricus*) found in the Russian and Navarro river drainages. The systematic status of the populations of roach occupying different drainages throughout California has been in dispute for a long time (Moyle, et al 1995). Slight morphological differences among roach from different drainages are detectable, but whether on that basis the different populations should be recognized as subspecies is debatable. Moyle, et al (1995) recognize the Navarro roach as a distinct form.

California roach are small minnows (family Cyprinidae) usually found in small, warm water streams, including intermittent streams, but may also be found in the main channels of larger streams such as the Russian River. They are tolerant of high temperatures (up to 91°F) and low levels of dissolved oxygen (1-2 ppm.), and, along with introduced warm water species such as fathead minnow and mosquitofish, are among the last fish to survive deteriorating conditions as shallow pools dry up in intermittent streams during the dry season (Fawcett, personal observation). Roach are very abundant in Santa Rosa Creek both below and above Reach "C" (MSC 1995, 1996).

Western pond turtle (*Clemmys marmorata*)

The western pond turtle is presently listed as a California Species of Special Concern, although in a recent report prepared for the Department of Fish and Game, Jennings and Hayes (1994) recommended listing all of the remaining populations south of the Salinas River as Endangered, and all populations north of there as Threatened. Consensus among herpetologists on assigning subspecific status to northern versus southern populations has not been achieved--morphological differences proposed to distinguish the subspecies are rather vague (Stebbins 1985), and the turtles of the Santa Rosa area fall within a broad area of overlap between the northern and southern forms (Stebbins 1985; Jennings and Hayes 1994).

Western pond turtles are the only native turtles in most of California, including Sonoma County. These turtles are thoroughly aquatic, leaving aquatic sites only to reproduce (eggs are laid on land), aestivate (in areas that go dry in summer), or overwinter (although some may overwinter underwater and some remain active throughout winter--Jennings and Hayes 1994). Frequent basking on logs, rocks, or stream banks as an aid to thermoregulation accounts for most sightings of western pond turtles by humans. Diet consists of aquatic invertebrates, fish, carrion, and some algae. Western pond turtles are abundant in the Laguna de Santa Rosa and in the flood channel of Santa Rosa Creek west of Highway 101 (MSC 1995, 1996). They have also been observed within and upstream of reach "C" (Fawcett, pers. obs.; Waaland, pers. comm.). Up-and downstream movements by individual turtles are common (Jennings and Hayes 1994; Fawcett, pers. obs.).

California red-legged frog (*Rana aurora draytoni*)

Northern red-legged frog (*Rana aurora aurora*)

The California red-legged frog has recently (1997) been listed by the U.S. Fish and Wildlife Service as an Endangered Species. This large frog (up to about 5 in. body length) was once abundant throughout the Central Valley and

NOTICE OF NEGATIVE DECLARATION

City of Santa Rosa

NAME OF PROJECT: PRINCE MEMORIAL GREENWAY FILE NUMBER: _____

LOCATION OF PROJECT: SANTA ROSA CREEK BETWEEN SANTA ROSA AVENUE AND RAILROAD STREET

APN: _____
PROJECT DEVELOPER: CITY OF SANTA ROSA DEPARTMENT OF COMMUNITY DEVELOPMENT

DESCRIPTION OF PROJECT: THE PROJECT INVOLVES THE BIOLOGICAL RESTORATION AND ENHANCEMENT OF THE CHANNEL WHILE MAINTAINING ITS FLOOD CONTROL CAPACITY. IT IS BEING DESIGNED AS A PUBLIC GREENWAY ALONG THE CREEK.

DECLARATION

Based upon the Initial Study, dated JULY 3, 1997, the Environmental Coordinator finds as follows:

1. This project does not have the potential to degrade the quality of the environment, nor to curtail the diversity of the environment.
2. This project will not have a detrimental effect upon either short-term or long-term environmental goals.
3. This project will not have impacts which are individually limited but - cumulatively considerable.
4. This project will not have environmental impacts which will cause substantial adverse effects upon human beings, either directly or indirectly.

The aforementioned findings are contingent upon the following mitigation measures (if indicated) which shall be incorporated into this project:

SEE CHAPTER 3, ENVIRONMENTAL EVALUATION, WHICH LISTS MITIGATION MEASURES INCLUDED IN THE PROJECT TO REDUCE ALL POTENTIAL IMPACTS TO LESS THAN SIGNIFICANT LEVELS

The Initial Study and other environmental documents are available for public review at the Department of Community Development, Room 3, City Hall, 100 Santa Rosa Avenue. The public is hereby invited to submit to the Department of Community Development written comments regarding the environmental findings and Negative Declaration determination. Such comments should be submitted prior to the termination date of the posting period identified below.

Posting Period JULY 11, 1997 to AUGUST 11, 1997

Initial Study prepared by:
NANCY DAKIN, ENVIRONMENTAL PLANNER, AND THE PRINCE MEMORIAL GREENWAY

Submit comments to: ENVIRONMENTAL CONSULTANT TEAM
MIKE SHEPPARD
Santa Rosa Department of Community Development
P.O. Box 1678, Santa Rosa, CA 95402
Telephone (707) 543-3184

ADOPTED: August 12, 1997

Wayne G. Goldberg, Environmental Coordinator

NOTICE OF NEGATIVE DECLARATION

City of Santa Rosa

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LOCATION OF PROJECT: SANTA ROSA CREEK BETWEEN SANTA ROSA AVENUE AND RAILROAD STREET

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Submit comments to: MIKE SHEPPARD
Santa Rosa Department of Community Development
P.O. Box 1678, Santa Rosa, CA 95402
Telephone (707) 543-3184

ADOPTED: _____

Wayne G. Goldberg, Environmental Coordinator

By: _____

**Proposed Initial Study/Mitigated Negative Declaration
for the**

Prince Memorial Greenway Project

Prepared for:

**City of Santa Rosa
Department of Community Development**

Prepared by:

Nancy Dakin, Environmental Planner

In association with:

**Carlile, Macy, Mitchell & Heryford (CMMH)
Golden Bear Biostudies
Philip Williams Associates, LTD.
Kleinfelder, Inc.
Archaeological Resource Service
Illingworth & Rodkin
Michael Fawcett, Fisheries Biologist
Michael G. Jones, Transportation Planner**

July 1997

**Prince Memorial Greenway Project
Initial Study
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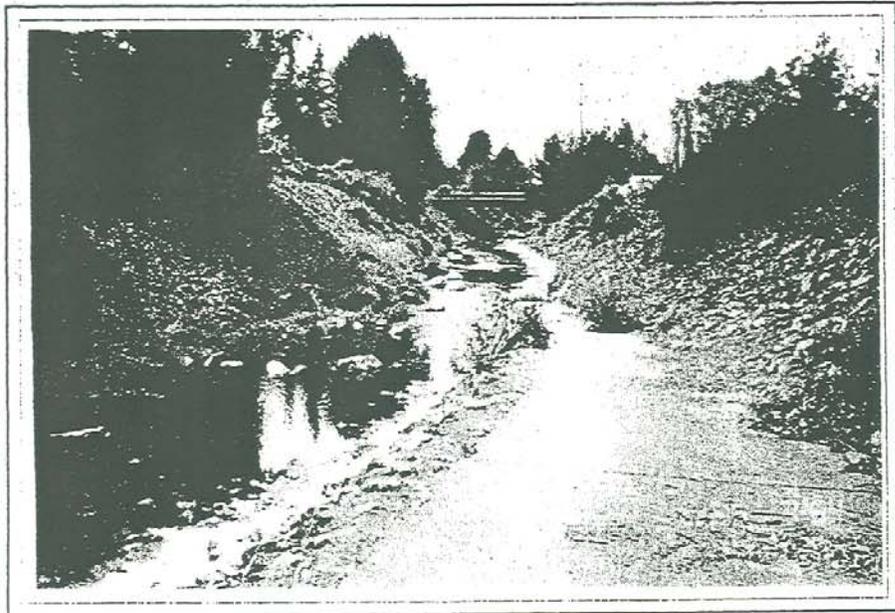
JULY 1997

PRINCE MEMORIAL GREENWAY
INITIAL STUDY
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1. Introduction



1. INTRODUCTION

1.1 Purpose of Initial Study

This document is an Initial Study prepared in compliance with the California Environmental Quality Act (CEQA). Its purpose is to evaluate the potential environmental effects of the proposed restoration of the downtown segment, Reach "C", of Santa Rosa Creek. This environmental analysis of potential impacts is required to ensure that the proposed restoration project does not inadvertently result in adverse impacts to the environment. It also identifies mitigation measures that would be required to reduce potential impacts to a less than significant level.

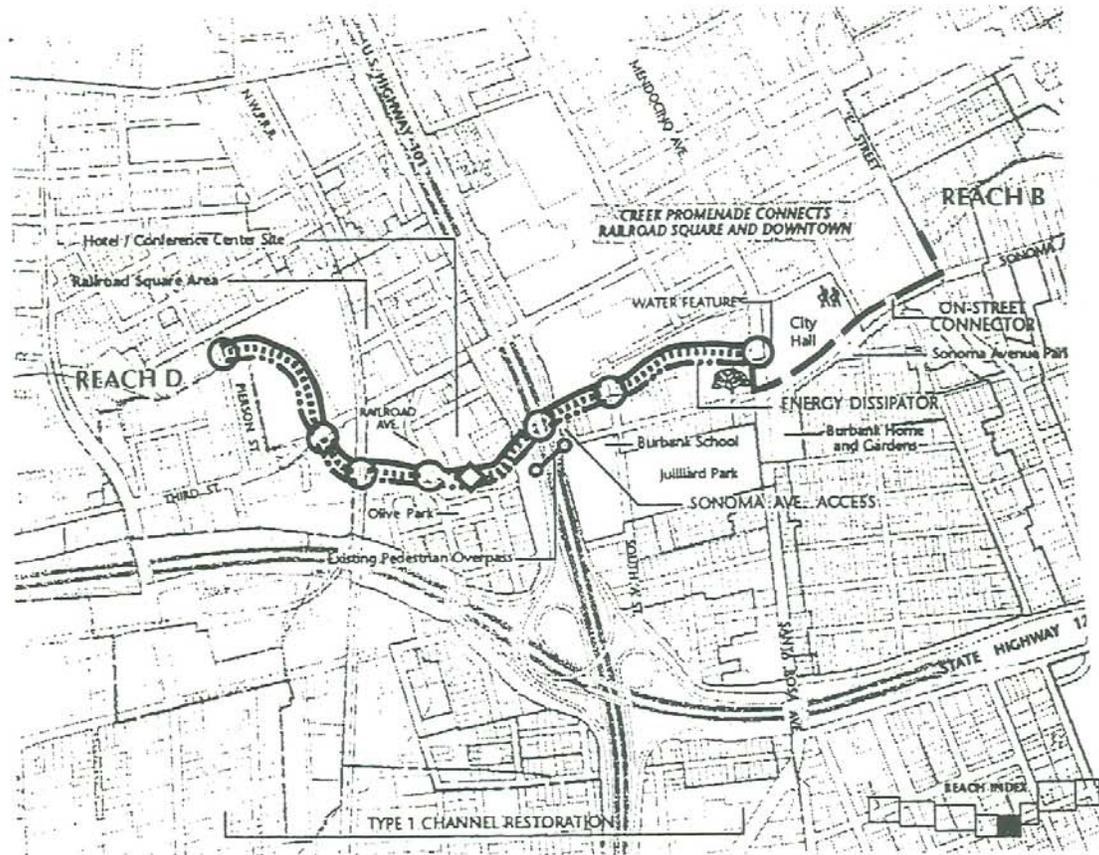
This document uses the Draft and Final Environmental Impact Report on the Santa Rosa Creek Master Plan as a framework and background for this analysis, and is thus, a "tiered" environmental document under CEQA. However, it focuses exclusively on Reach "C"¹ (See Figures 1-1 and 1-2), the Downtown Reach of Santa Rosa Creek as depicted in the Santa Rosa Creek Master Plan, and provides more detailed analysis of the potential environmental impacts and mitigation measures than the Program EIR on the Santa Rosa Creek Master Plan (State Clearinghouse # 91103002).

1.2 Required Contents

As required by CEQA, this Initial Study/Negative Declaration includes a Project Description (Chapter 2); an environmental evaluation of potential project impacts (Chapter 3); and the Initial Study Checklist (Chapter 4). It utilizes standards of significance from the State CEQA Guidelines and the City of Santa Rosa's Initial Study of Environmental Significance Checklist. It also includes a list of agencies and persons contacted in the process of preparing the document (Chapter 5) and a list of the environmental

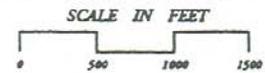
¹ Reach C in the Master Plan extends to Pierson Street. The Prince Memorial Greenway Project under review in this document extends to the east side of Railroad Avenue.

Figure 1-1



LEGEND

- CREEK
- SOFT-SURFACED PATH (proposed)
- HARD-SURFACED PATH (proposed)
- HARD-SURFACED PATH (striping only)
- ◇ MULTIPLE-USE CROSSING
- BRIDGE UNDERCROSSING
- 🌳 TRAILSIDE PARK
- 🚶 EXISTING TRAILHEAD FACILITIES

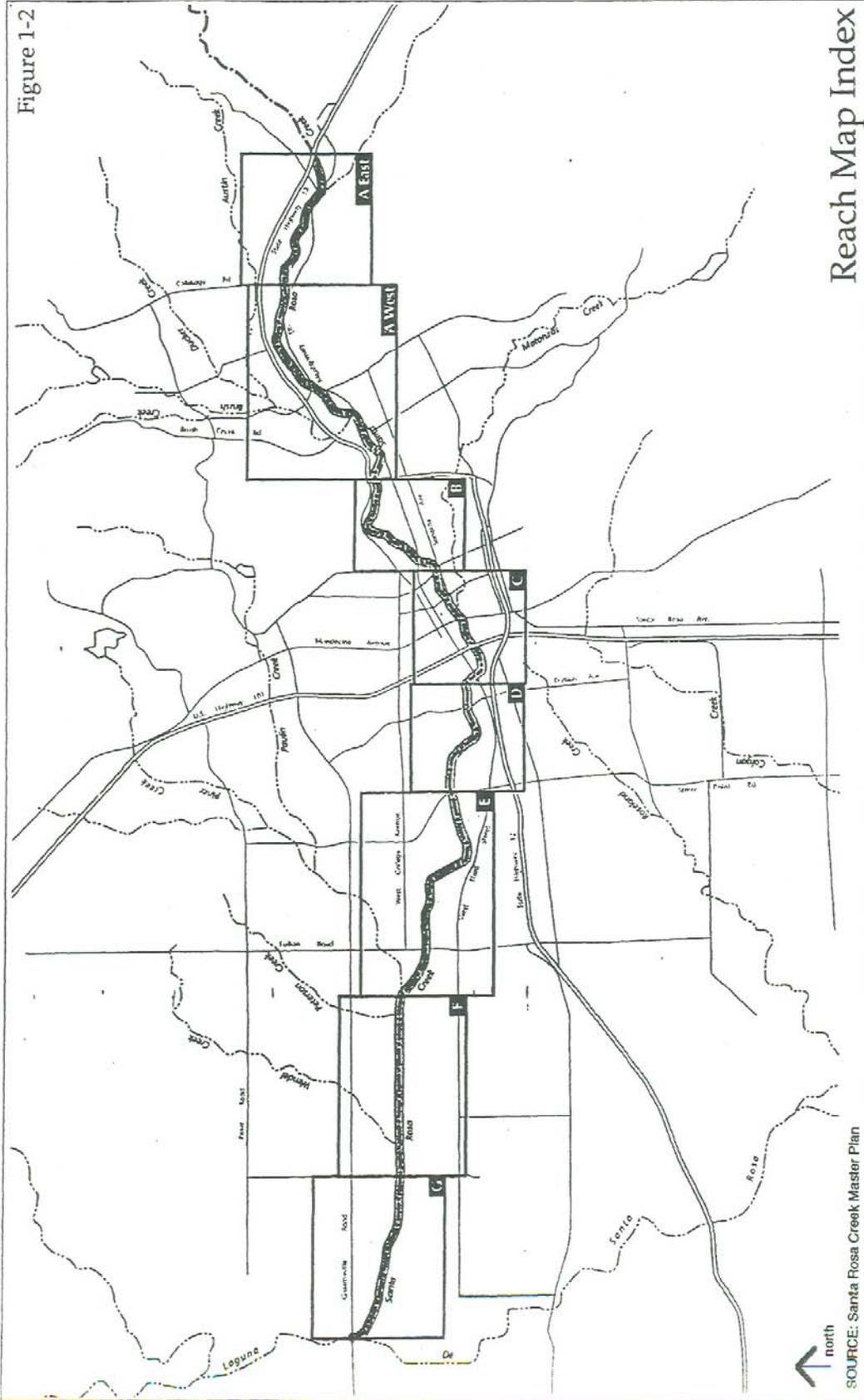


Reach "C" as Depicted in the Santa Rosa Creek Master Plan

SOURCE: Santa Rosa Creek Master Plan

PRINCE MEMORIAL GREENWAY • CITY OF SANTA ROSA

Figure 1-2



Reach Map Index

SOURCE: Santa Rosa Creek Master Plan

PRINCE MEMORIAL GREENWAY • CITY OF SANTA ROSA

consultants that prepared different sections of the document (Chapter 6). Appendices pertinent to the analysis are contained at the rear of the document.

1.3 Agency Consultation

An Interagency Meeting was conducted on August 14, 1996 to discuss plans for restoring the creek and potential issues of concern that should be addressed in the project design and the environmental analysis.

Participating agencies included the U.S. Environmental Protection Agency Region 9, the U.S. National Marine Fisheries Service, the U.S. Army Corps of Engineers, and the California Department of Fish and Game.

During the fall of 1996, the project team² conducted meetings with the Regional Water Quality Control Board (RWQCB) to discuss and agree upon a sampling program for the creek and to discuss approaches to mitigating areas of contaminated soil or groundwater that would be affected by the project. In addition, the project team met with the Sonoma County Water Agency to discuss issues related to maintaining the flood control capacity of the creek and addressing needs for ongoing maintenance of the restored channel. The project team also met with Caltrans to discuss coordination of the Prince Memorial Greenway Project with the anticipated widening of U.S. Highway 101 through downtown Santa Rosa. Further, the project team met with the Redevelopment Agency, the Department of Public Works, and the Department of Recreation and Parks to ensure coordination of the project with all involved agencies. Meetings were also conducted with private property owners that would be potentially affected by the project or that might have an interest in considering potential creek-oriented development in the future.

² The prime consultant for the Prince Memorial Greenway Project is Carlile, Macy, Mitchell & Heryford (CMM&H). CMM&H coordinated meetings with the Prince Memorial Greenway Task Force, the Santa Rosa Creek Implementation Advisory Committee, agencies responsible for resources potentially affected by the project, private property owners and members of the public.

2. Project Description



2. PROJECT DESCRIPTION

2.1 Overview of Proposed Project

The City of Santa Rosa is proposing to restore Santa Rosa Creek from Santa Rosa Avenue to Railroad Street. This project consists of a portion of Reach "C" in the Santa Rosa Creek Master Plan that was adopted in 1993.

The Prince Greenway project along Santa Rosa Creek would create a linear park/promenade through the heart of the City of Santa Rosa.

The project would consist of a 2/3 mile stretch from Santa Rosa Avenue to Railroad Avenue. It would create a greenway that is accessible to the public. It would be a key amenity downtown and would provide an important link between the Downtown Core Area and Railroad Square.

2.2 Location

The proposed restoration project extends through downtown Santa Rosa from Santa Rosa Avenue in the vicinity of City Hall to Railroad Street near Railroad Square (See Figures 2-1 and 2-2).

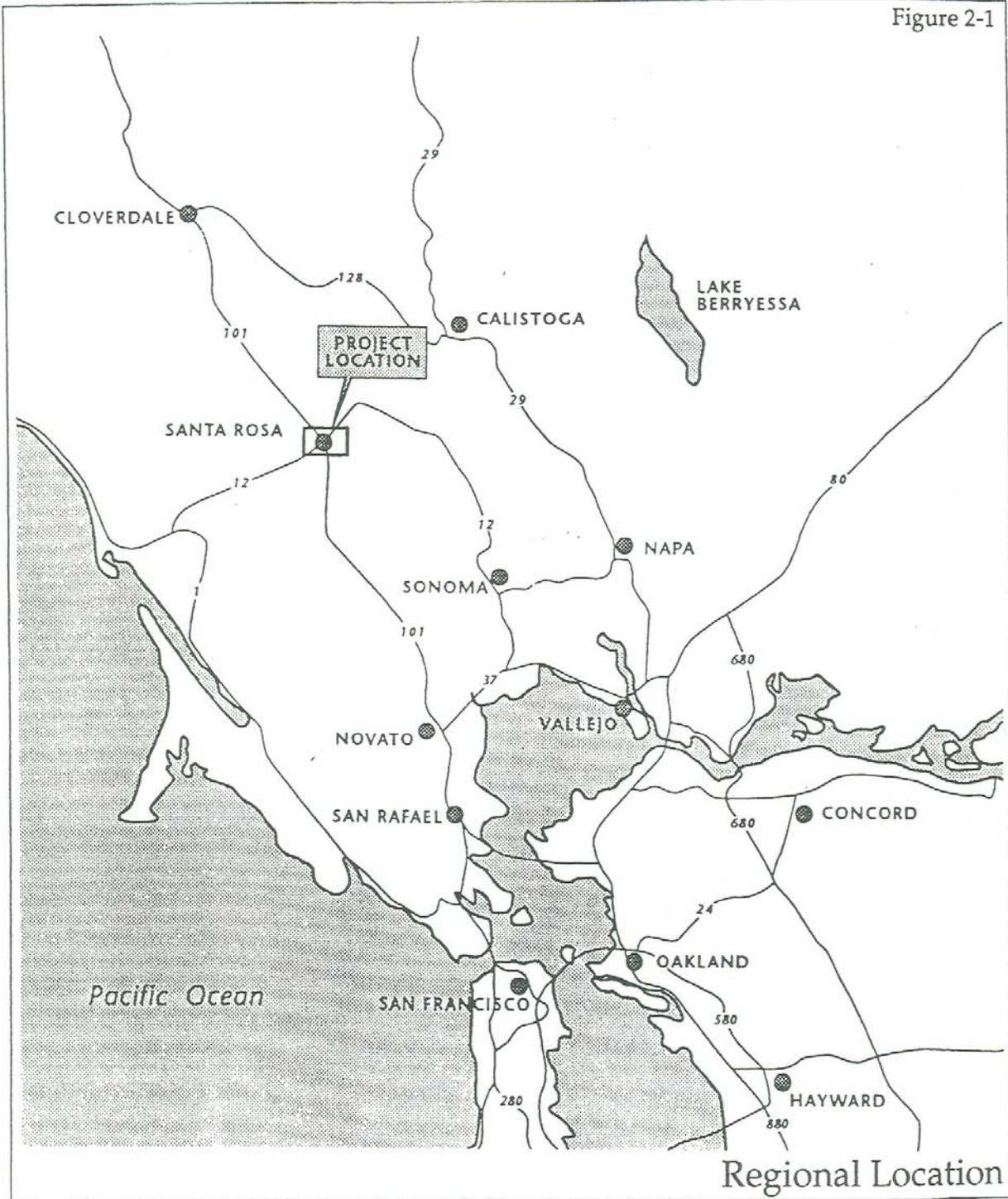
2.3 Project Objectives

The purpose of the creek restoration project is to enhance the ecological condition of Reach "C" by restoring a naturalized creek environment and creating a visually attractive and accessible "creek promenade" within the Downtown Core Area.

The project objectives for the proposed Santa Rosa Creek Restoration Project are as follows:

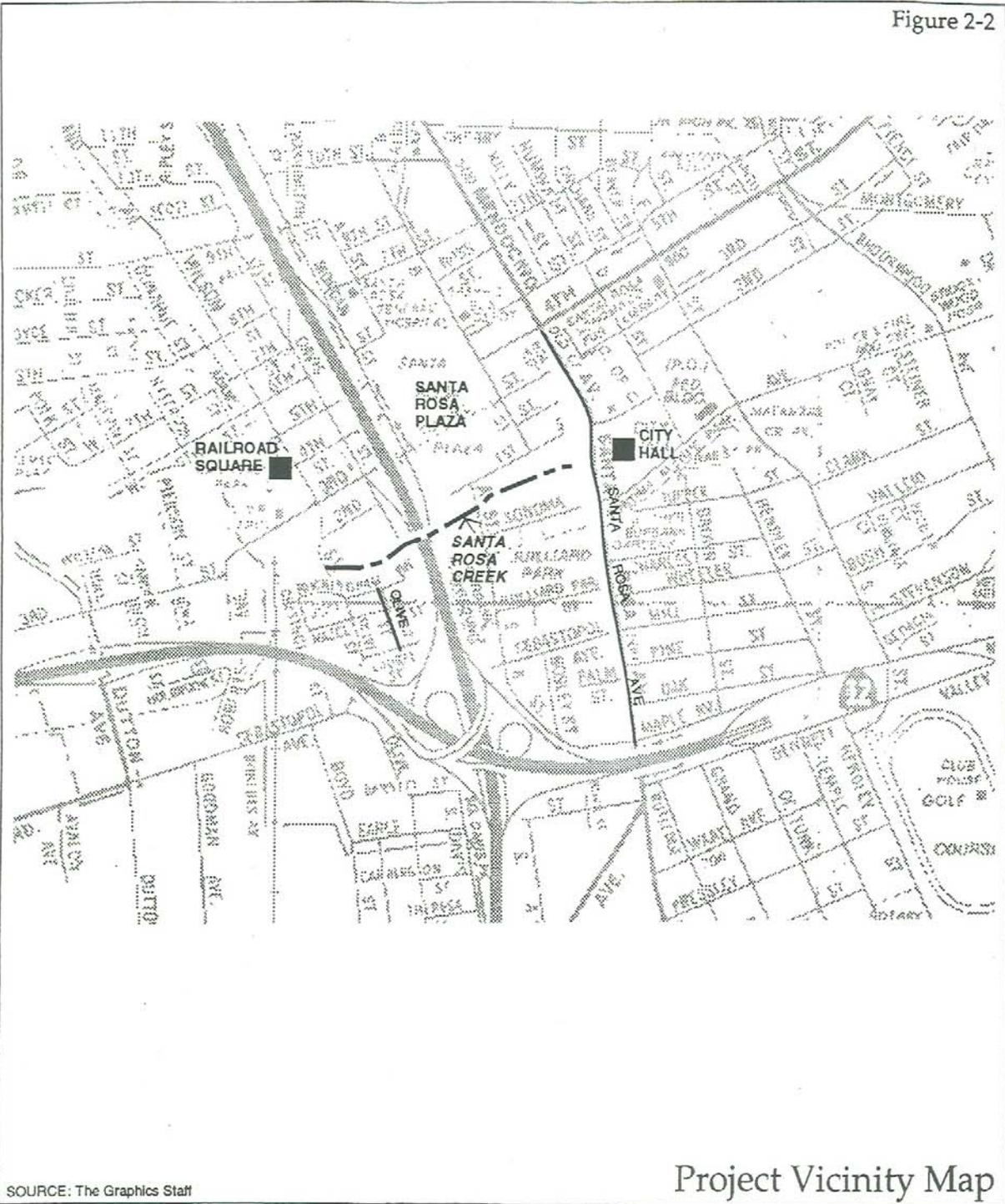
- Enhance the ecological condition of Reach "C", including habitat for steelhead and rainbow trout. Enhance biodiversity and make the creek more accessible and more attractive.
- Restore native plant and animal species to the degree feasible while still maintaining the hydraulic capacity and function of the creek.
- Remove the existing grouted concrete, where feasible, and redesign the channel to create a more natural creek environment.

Figure 2-1



PRINCE MEMORIAL GREENWAY • CITY OF SANTA ROSA

Figure 2-2



SOURCE: The Graphics Staff

Project Vicinity Map

PRINCE MEMORIAL GREENWAY • CITY OF SANTA ROSA

- Develop a path on the north side of Santa Rosa Creek that is sufficiently wide (approximately 10-12 feet) and durable to accommodate pedestrians, bicyclists, wheelchairs, and light maintenance vehicles used by the Sonoma County Water Agency (SCWA). Develop pathways on the south side of the creek to provide additional access.
- Meet Americans with Disabilities Act (ADA) requirements.
- Address safety and security concerns, particularly under and in the vicinity of U.S. Highway 101.
- Provide access for children between Olive Park and Burbank School.
- Provide opportunities for creek-oriented development.

2.4 Major Project Characteristics

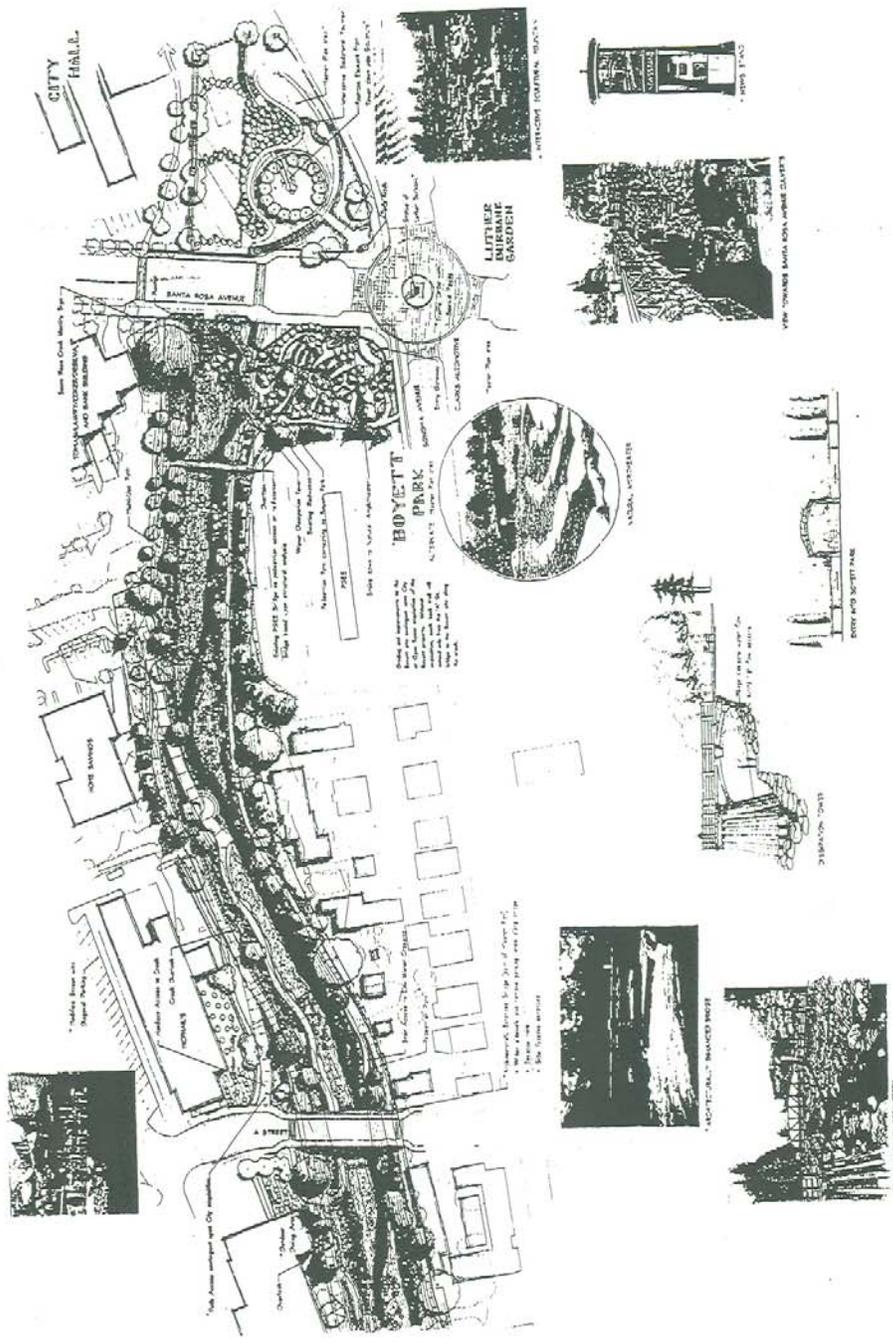
The proposed project consists of a greenway design and restoration plan which includes a variety of improvements such as paths, channel modifications, and habitat restoration and riparian planting along the creek. These improvements are intended to enhance the biodiversity and to make the creek more accessible and more attractive to the community. (See the Proposed Concept Plans for the Eastern and Western Reaches in Figures 2-3 and 2-4.)

The Santa Rosa Creek Master Plan envisions the downtown reach to be a "creek promenade" with adjacent businesses oriented toward the creek, paths connecting Railroad Square to downtown, lighting, and benches. It is envisioned as a place to stroll, to shop, to rest, to watch the creek and to eat. It would be a balance of creek restoration, recreation and flood control. Over time, uses would broaden as more creek-oriented development occurs along the Prince Memorial Greenway.

2.4.1 Project Components

This project would commence at Santa Rosa Avenue and extend along the creek as a series of paths, overlooks--providing access to both sides of the creek. It would create links to the Grace Brothers site and to Olive Park (See Figures 2-5 and 2-6 for Section Drawings of the Concept Plan). The following components have been subject to environmental review in this document; however, the phasing of some components could be affected by funding and the development of final cost estimates.

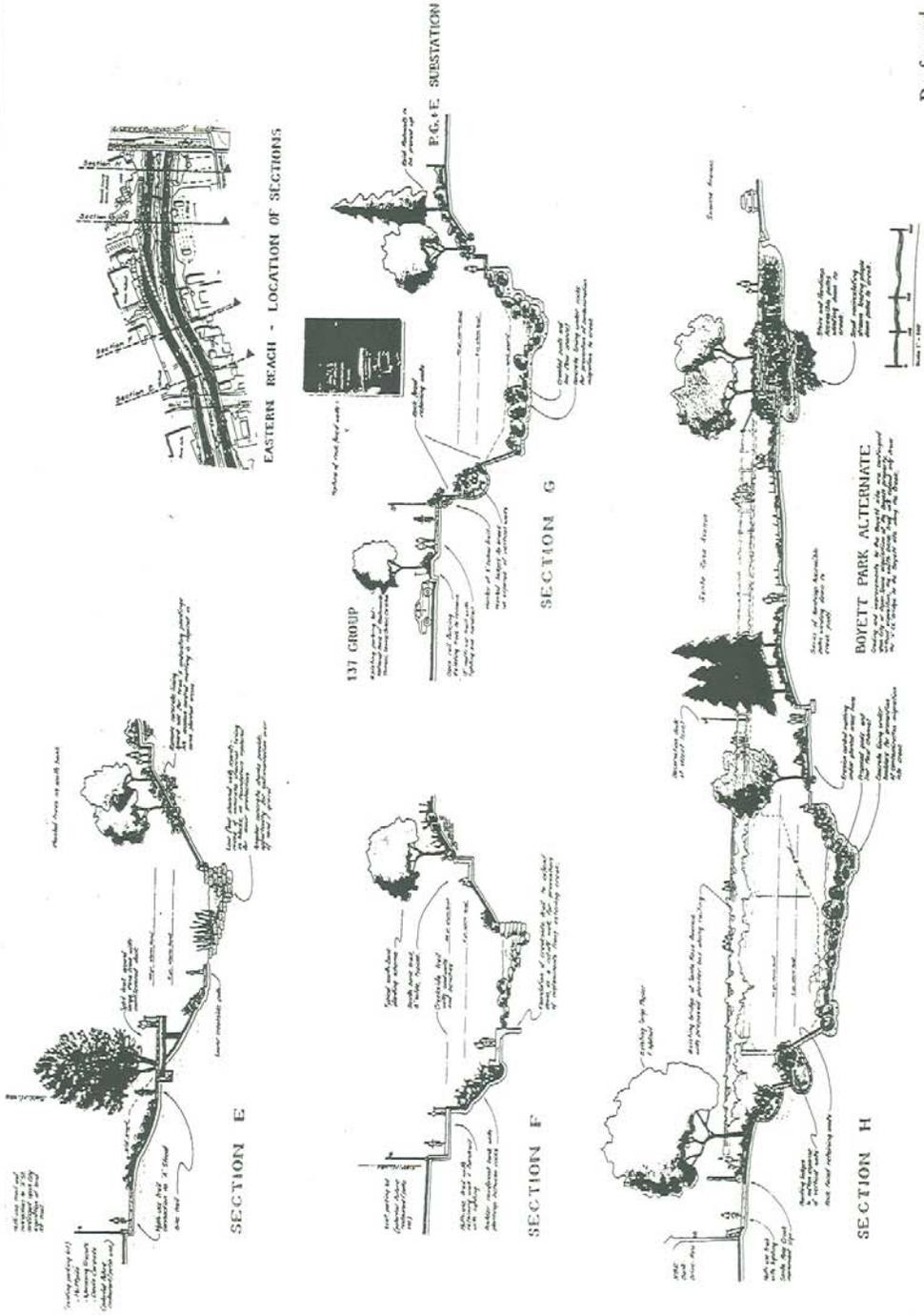
Figure 2-3



Preferred Concept Plan - Eastern Reach

Source: CMM&H and RRM Design Group

Figure 2-6



Preferred Concept Plan-
Section Drawings

coastal areas south of Pt. Reyes. It was commercially hunted for food from the Gold Rush days until about the turn of the century, and has since been further depleted by loss of habitat and widespread introductions of exotic predators such as bullfrogs, crayfish, and warm water fishes such as catfishes and largemouth bass. It has been extirpated from about 99 percent of its former range in the Central Valley (Jennings and Hayes 1994). As is the case with the western pond turtle, the red-legged frogs in the Santa Rosa area fall within a broad area of overlap between a northern subspecies (*R. aurora aurora*), presently listed as a California Species of Special Concern, and the Endangered southern subspecies (*R. aurora draytoni*--Jennings and Hayes 1994; Stebbins 1985; Fellers, pers. comm.). Red-legged frogs have been observed recently in the Laguna de Santa Rosa and the flood channel of Santa Rosa Creek west of Highway 101 (Bachinni, pers. comm.); these frogs could be either the northern or the southern subspecies or could be intermediate forms with features akin to both subspecies, as described in Jennings and Hayes (1994). Final determination of the taxonomic and listing status of red-legged frogs of the Santa Rosa area cannot be made until further studies of morphological and genetic variation among populations are completed.

Red-legged frogs prefer permanent, still or slow-moving water with dense riparian (especially willow) and emergent vegetation, and deep water (> 2 ft.) into which they can escape from predators. The diet of adults includes insects, crayfish, smaller frogs, and mice, while subadults consume smaller prey (Jennings and Hayes 1994).

Foothill yellow-legged frog (*Rana boylei*)

The foothill yellow-legged frog is presently listed as a California Species of Special Concern. Jennings and Hayes (1994) recommended Endangered status for populations south of the Salinas River, Threatened for Sierra and Cascade populations east of the Sacramento-San Joaquin River axis, and Special Concern for coastal regions north of the Salinas River, which includes the Santa Rosa region.

The foothill yellow-legged frog is a moderate-sized frog (up to 3 in. body length). It is usually found in shallow, perennial, rocky streams with riffles and some sunny banks. Foods consist mainly of aquatic and terrestrial insects, snails, and other invertebrates. Foothill yellow-legged frogs have been observed on numerous occasions in the headwater reach of Santa Rosa Creek (Fawcett, pers. obs.), but may also occur in reaches "A" and "B", as these contain suitable habitat for this species.

b. Significance Criteria

Sensitive habitats are defined by local, state, or federal agencies as those habitats that support special status species, provide important habitat values for wildlife, represent areas of unusual or regionally restricted habitat types, and/or provide high biological diversity. At the State level, riparian plant communities are considered sensitive habitat and have been identified by the California Department of Fish and Game as a habitat of special concern.

A significant biological impact is one that substantially affects a rare or endangered plant or animal species, or the habitat of the species. Impacts that interfere substantially with the movement of any resident or migratory fish, or wildlife species are also considered significant.

The project could result in a significant impact if it resulted in:

- 1) changes in the diversity of species, or numbers of any species of plants or animals.
- 2) reduction of the number of any unique, rare or endangered species of plants or animals.
- 3) introduction of new species of plants or animals to the detriment of existing native species, or creation of a barrier to the normal migration, replenishment, or movement of existing species.
- 4) deterioration or reduction of existing plant or animal habitat, including agricultural crops.
- 5) construction of facilities near sensitive plant habitat or wildlife habitat areas.
- 6) involved creation, enhancement or restoration of regionally significant habitat types such as wetlands, riverine habitat and riparian woodland. (Beneficial Impact)
- 7) conversion of regionally significant habitat types into other habitat types.

c. Impacts

Impacts of the project are almost entirely beneficial to fish and other aquatic species, however, the following potential impacts and mitigation measures are identified to ensure enhancement of aquatic resources.

Impact FIS-1 (Habitat Disturbance): The proposed project could result in disturbance of habitat for the western pond turtle and steelhead trout.

The only negative impact to aquatic resources identified in the EIR for the Santa Rosa Creek Master Plan was disturbance of habitat for western pond turtle and steelhead, which was judged to be non-significant and mitigated by monitoring and relocation of animals prior to construction of any improvements.

Construction-phase disturbance should also be considered as a potential adverse impact for the additional sensitive aquatic species identified in this document: northern and/or California red-legged frog, foothill yellow-legged frog, Russian River tule perch, and Navarro roach. However, the only reach being considered for restoration in this document is Reach "C", which, in its present condition, provides no useful habitat for any sensitive species, with the possible exception of Navarro roach (which may be seen in some of the existing backwater pools and eddies).

Reach "C" is presently an obstacle to aquatic vertebrates during low-flow periods, a somewhat hazardous corridor (because of its lack of cover) through which aquatic animals must pass if they wish to move upstream or downstream. Migratory movements of native fishes (steelhead, Sacramento sucker, and roach) in Santa Rosa Creek occur mainly from November through April (MSC 1995, 1996), and are unlikely to be affected by construction during the projected construction window (end of April through October). Construction-phase impacts to aquatic life are judged to be non-significant.

Mitigation Measure FIS-1: The temporary disturbance caused by demolition and construction would be mitigated by capturing and relocating all aquatic vertebrates found in the reach prior to construction, and by monitoring the stream above and below the construction zone, and, if necessary, relocating any animals found attempting to move into Reach "C".

Impact FIS-2 (Night Lighting): Night lighting provided along the trails and under the freeway could result in adverse impacts to aquatic life.

Lighting would be shielded downward so that it is focused on the path rather than the creek to minimize disturbance to aquatic life. Nocturnal streamside mammals such as raccoons, skunks, mink, and weasels, would ignore incidental lighting and move along the edges of the stream. Lighting would not affect frogs or turtles, which usually spend the night in the water (because it is warmer than the air at night), nor fishes. Migrating adult steelhead are believed to make a lot of their upstream movements at night (they also move

during the day), but they mainly move during high water events following storms--the increased water depth and turbidity during high flows would likely reduce any disturbance by lighting to an insignificant level.

Mitigation Measure FIS-2: Path lighting would be shielded downward along the length of the path and would avoid focusing directly on waterways.

Impact FIS-3 (Benefits of Restoration): The proposed project would result in long-term beneficial impacts to aquatic life.

For steelhead, the design changes in channel morphology (especially the construction of a narrow low-flow channel and deep pools with natural substrate), the addition of instream habitat features such as rootwads, boulders, and cut banks, and restoration of riparian and emergent vegetation with corresponding shade and nutrient input, would all result in improvements over the existing condition. The same improvements would also make the reach more attractive and liveable for other native fishes (Navarro roach, Russian River tule perch, Sacramento sucker, Coast range sculpin) as well as frogs, salamanders, snakes, turtles, and a variety of native birds and mammals.

It is anticipated that the project would result in an increase in the diversity of species and numerical abundance of individual species in the project area.

Mitigation Measure FIS-3: Use of the project area by aquatic and terrestrial animals would be monitored following project completion to evaluate the effectiveness of the improvements to the stream.

Alternate Concept for the Boyett Parcel

If the Boyett Park parcel is not included in the Prince Memorial Greenway project, the pool area adjacent to the mouth of the culvert adjacent to Santa Rosa Avenue would be smaller, but it would not result in a significant impact to fish or other aquatic species.

Cumulative Impacts

Cumulative development in the project area and greater watershed could result in additional disturbance to wildlife by increased human use of the stream corridor. However, most human use will be on the tops of the stream banks and would have minimal effect on aquatic life or on terrestrial animals foraging along the stream (mainly at night). Also, the Santa Rosa Master Plan requires that proposed access points for people to enter the riparian corridor

or stream channel be surveyed by wildlife biologists specifically to determine if any sensitive wildlife habitat (e.g. an otter den) exists, and re-direct the access points, if necessary.

Restoration of degraded reaches of Santa Rosa Creek and other tributaries, on balance, would result in beneficial impacts. As more components are completed, it would result in improved continuity of natural or semi-natural stream and riparian habitat. Animal movements would be facilitated, and improved habitat conditions would result in increased species diversity and increased numerical abundance and density of plant and animal life, both aquatic and terrestrial.

3.3 Hydrology and Water Quality

a. Setting.

The hydrology, hydraulics, geomorphology, and water quality setting of Santa Rosa Creek are described in section 6.1 of the Environmental Impact Report for the Santa Rosa Creek Master Plan. The discussion below will summarize those discussions and highlight any new information.

(1) Hydrology. At Santa Rosa Avenue, Santa Rosa Creek drains a watershed of approximately 56 miles. The largest tributaries are Matanzas Creek, which joins Santa Rosa Creek just upstream of Santa Rosa Avenue, and Brush Creek, which joins Santa Rosa Creek near Brush Creek Road.

The hydrologic analysis of Santa Rosa Creek used as the basis for design of the channel was developed in the late 1950's by the Soil Conservation Service. It was based on limited regional stream gaging data and a projection of future development conditions in the watershed. Modifications were included to reflect the expected effect of flood control facilities, such as Spring Lake, which detain flood flows.

(2) Hydraulics. The Santa Rosa Creek channel in the project reach was designed to convey a discharge of 10,300 cfs, an estimated 100-year flood event, with a typical three feet of freeboard.

Based on hydraulic modeling of the existing Santa Rosa Creek channel, there appears to be a potential for the formation of a weak hydraulic jump, or abrupt change in water surface elevation at the design discharge of 10,300 cfs. Modeling suggests that such a phenomenon would persist even at lower discharges which have almost certainly occurred within the history of the

constructed channel. However, this condition has reportedly never been observed²

(3) Water Quality. The water quality of Santa Rosa Creek is primarily impaired by excessive summer and fall temperatures, though there may also be excessive levels of chromium, copper, lead, and zinc relative to State standards for aquatic habitat³. The summer and fall temperatures measured at a site downstream of Willowside Road in 1985-1988 were an average of 21.5°C and 19°C, respectively. Salmonids (e.g., steelhead and trout) are generally considered to require temperatures of 18°C or less.⁴ Note that water quality considerations relative to hazardous substances are addressed separately in Section 3.4.

b. Significance Criteria.

The CEQA Guidelines state that a project will normally have a significant effect on the environment if it would substantially degrade water quality, contaminate a public water supply, substantially degrade or deplete ground water resources, or interfere substantially with groundwater recharge.

Water quality impacts are considered significant if they change the concentrations of substances in the creek to exceed or be brought below the state standards for aquatic habitat, or if they create conditions which are intolerable to the mix of aquatic species targeted for restoration.

In addition, erosion impacts would be considered significant if the stability of adjoining structures are placed at risk. Flood hazard impacts would be considered significant if they increase flood damages from Santa Rosa Creek.

c. Impacts.

The proposed project would not result in any significant impacts. Less than significant impacts would include temporary erosion and sedimentation impacts related to construction, long-term changes in sediment transport characteristics of the channel, potential reductions in summer low flows due to surfacewater-groundwater interactions, and changes in water quality. Potentially significant impacts requiring mitigation measures to reduce impacts

² Oliveri, M.J., Sonoma County Water Agency, personal communication, June 16, 1997.

³ CA Water Resources Control Board, Inland Surface Water Plan, #91-12-WQ, April, 1991.

⁴ David W. Smith, et al., Long-Term Detailed Wastewater Reclamation Studies, Santa Rosa Subregional Water Reclamation System, Technical Memorandum No. L1, January 12, 1989. Data values estimated from graph.

to less-than-significant levels relate to long term erosion and sedimentation, hydraulic characteristics of the channel, flood control and flood hazard.

Impact HYDRO-1 (Construction-Related Erosion and Sedimentation):

Removal of the existing channel lining for the length of the project, excavation of the channel bottom, and regrading of the channel in preparation for installation of the new channel lining or revetment (bank or bed protection material) would expose unprotected soils.

Mitigation Measure HYDRO-1:

- (a) Construction should be limited to the dry season (mid-May through mid-October) and would be fully complete for each constructed reach at the end of that period.
- (b) Standard Best Management Practices (BMP's) for protection against erosion and sedimentation impacts during construction within the channel setting would be implemented.
- (c) After the porous revetment lining the bed of the channel is put in place, excavated material would be backfilled to reform the new exposed bed of the channel.

Impact HYDRO-2 (Long-Term Erosion and Sedimentation Impacts):

Development of the proposed project could result in an increase in erosion and sedimentation in the creek channel.

With the following mitigation measures built into the design of the project, potential impacts related to erosion and sedimentation would be reduced to a less than significant level.

Mitigation Measure HYDRO-2:

- (a) The channel would be protected from large scale slope failures by the use of one or more forms of revetment throughout the channel. In the channel bottom in the furthest upstream reach, near Santa Rosa Avenue, the bed would be fully lined both to provide scour protection and to limit the flow of contaminated groundwater into the channel. The banks would be fully lined on the north side. On the south side the bank would either be fully lined or—if the park option is established at the Boyett parcel—revetted with a combination of large rock, rock-faced concrete retaining walls, or vegetated, highly shear resistant erosion control fabric. The erosion control fabric would be

limited to the elevations near or above the expected design flow (10,300 cfs, an estimated 100-year flow) water surface elevation. Downstream of the fully lined section, the revetment materials would be similar except that the bed of the channel would be protected by a buried layer made up of large pieces of the current lining material. Erosion control material might be used at relatively lower elevations as anticipated design shear stresses decreased, but would remain above the expected 2-year flow elevation. The size of rock to be used in the channel would be based on the anticipated shear stresses and would conform to standard sizing specifications for stability.

- (b) To reduce the amount of sediment movement that occurs when flows are returned to the channel bed, the new bed would be shaped to match the best available information on the expected equilibrium shape of the channel bottom. In selected locations, weir structures made of rock would be used to fix the channel grade. The location of the low flow channel would be largely controlled by planform⁵ conditions and the placement of buried "hard points" or spur dikes constructed of rock and rubble along the opposite bank of the channel.
- (c) If the park at the Boyett parcel is constructed, an observation tower with vertical support beams would reduce the potential for the formation of a strong eddy developing at the park as a result of the high velocity flows exiting the culverts. During development of construction drawings, physical testing of the hydraulic conditions at the Boyett parcel should be conducted if the park is constructed to refine the observation platform design to effectively disrupt formation of eddies at this location.
- (d) The low flow portion of the channel, including the pools, is expected to be maintained by natural scour and deposition processes. It is possible that after project construction, some pools may not be maintained at the 2 - 3 foot level anticipated. Monitoring of the channel morphology would be conducted to determine if the pools are being maintained at this depth, which is expected to provide valuable fish habitat. If most pools are not successfully maintained at these depths after five years following construction, corrective modifications to the in-

⁵ "Planform" refers to the two-dimensional shape of the channel when viewed from overhead.

channel structure in the immediate vicinity of the expected pools should be carried out.

Impact HYDRO-3 (Water Quality Impacts): Development of the proposed project could result in changes to water quality.

The water quality conditions in Santa Rosa Creek would change as part of this project, but changes are expected to be primarily positive. Temperatures in the channel would decrease as a result of increased shade, concentration of low flows, and exchange with subsurface water supplies. Levels of dissolved oxygen may increase as a result of increased aeration due to placement of boulders, rock weirs, and increased variation in channel morphology. Water quality would improve to some extent as a result of the increase in levels of in-channel vegetation; emergent species are particularly well known for their ability to remove pollutants from the water column.

In the first approximately 1 - 3 years after construction, levels of suspended sediment in the creek would be high as the flows transport and redeposit the finer material exposed in the bed.

This impact is considered less than significant with the restoration and enhancement measures that are built into the project design. The short-term addition of suspended sediment would be a less-than-significant impact given its limited duration.

Mitigation Measure HYDRO-3: No additional mitigation required.

Impact HYDRO-4 (Impacts to Low Flow Levels): Removal of the existing grouted-concrete channel could affect the summer flow regime of the channel.

There is some potential for a change in the summer flow regime as a result of this project. In some locations within the project reach, local groundwater conditions may be lower than the existing water surface level during the summer and fall, before the rains begin⁶. Since free flow of water from the stream to the groundwater table and vice versa would result in stream water levels in equilibrium with the surrounding groundwater table, the potential exists for low flows to fall to even lower elevations. Alternatively, the free exchange of flows may allow locally higher groundwater levels to persist later in the summer, which could potentially maintain present levels of low flows. Since the proposed project would involve excavating a deeper low flow channel which is expected to be maintained by the natural erosive forces of

⁶ Mark Klaver, Kleinfelder, Inc., personal communication, 9/12/96.

the channel, there may be little perception of a change in low flow rates or levels since flow would probably remain visible— as it is downstream of Pierson Street in the ungrouted reach— even if it occurs at a lower elevations.

This impact is considered less-than-significant with implementation of restoration measures described above that are built into the project design.

Mitigation Measure HYDRO-4: None required.

Impact HYDRO-5 (Flood Hazard): The proposed project could result in a channel that is more susceptible to changes in morphology in response to large flood flows.

The proposed project would create a channel with greater potential for change over time and adjustment in response to large flood flows (bed form and vegetation changes) than the existing grouted channel. As a result, there would be a greater potential for variation in channel capacity, and a greater need for maintenance and monitoring than exist for the current channel conditions. Nonetheless, the Prince Memorial Greenway Project would provide the same level of flood protection as the existing channel design.

The changes in the creek channel with the potential to affect the channel's flood protection function include the following: 1) an increase in levels of vegetative debris on bridge piers in flood events, 2) changes in peak water surface elevations due to changes in hydraulic conditions (the design goal will be no change, but there would be variations due to inherent uncertainty about "roughness" conditions and the changes in vegetation and bed form over time); and 3) potential creation of locally hazardous hydraulic phenomena, such as a hydraulic jump. Each of these issues is discussed in turn below.

Mitigation Measure HYDRO-5: See Mitigation Measures for HYDRO-6, and HYDRO-7.

Impact HYDRO-6 (Flood Hazard - Vegetative Debris): The proposed project could result in the build-up of additional vegetative debris in the channel.

With an increase in the amount of vegetation in the channel, there is greater potential for buildup of debris on channel bridge piers during floods, both within the project reach and downstream. Such a buildup can increase water surface elevations upstream of the affected bridge. However, the increase in woody, in-channel vegetation over what had been originally planned for the channel would be modest, in keeping with the modest amount of channel excavation that can be permitted in this heavily developed urban reach of the

creek. Project plans call for most woody vegetation to be planted at the elevation of the 2-year flow or higher, where the frequency and duration of exposure to flood flows and high shear forces would be less.

Mitigation Measure HYDRO-6: The potential impacts of vegetative debris on bridge piers can be addressed by a two-pronged program: 1) regular maintenance prior to the high runoff season to remove or cut up any unsecured large woody debris, which poses the greatest risk; and 2) monitoring of bridge conditions as high flows develop to address any buildup that may be initiated. The first aspect of the program is already part of the regular channel maintenance conducted by the Sonoma County Water Agency, though the need for this activity would increase if the proposed project is built. The equipment necessary to remove debris from bridge piers may need to be acquired by the SCWA or the City (depending on the maintenance agreement developed by these Agencies) if the second strategy is required. It may be 5 - 10 years before vegetation within the channel is sufficiently large to consider the need for such a program.

Impact HYDRO-7 (Flood Hazard - Changes in Hydraulic Conditions): The proposed project would result in some changes to the channel cross section.

The project plan calls for some changes to the channel cross section; however, the channel cross section would remain largely intact in most locations due to constraining adjacent uses. The bed of the channel would be excavated to allow mobility of the bed above the buried scour protection lining. The addition of large rock revetment and vegetation would create a "rougher" channel surface in comparison to existing conditions, though the existing conditions include less vegetation than was planned for in the original channel design.

The 10- and 25-year water surfaces may be slightly higher than under existing conditions. Modest increases of .1 to .2 feet of water surface elevations could result in reduced ability of storm drains to drain, causing some back-up on streets. While this condition could result in some inconvenience, streets are designed to handle short-term flooding, and it would not be considered a significant impact.

Modelling of the channel indicates that even through a slight increase in water surface elevation is expected in some locations, especially in the lower reach, sufficient freeboard is still provided to meet the original freeboard criteria of the project in most of the reach. This means that the channel would continue to be capable of conveying the design discharge with adequate freeboard under proposed conditions.

Vegetation would be planted and maintained within the channel only at the level which, in combination with the channel cross-section changes and revetment "roughness" changes, would not increase the water surface elevation during the design flow beyond the levels originally planned for in the channel design. As indicated in the Santa Rosa Creek Master Plan EIR, roughness values will need to be monitored over time. It is anticipated that maintaining an "n" value of between 0.035 and 0.040 within certain reaches of the stream would maintain water surface elevations at levels anticipated in the original design of the channel. As final design is refined, this can be confirmed with additional hydraulic analysis. Slight refinements could be required over time if, in the process of channel monitoring, any variation is observed in the surface elevations in order to meet the design discharge with adequate freeboard as established by the Natural Resource Conservation Service (formerly the Soil Conservation Service, or SCS), and the Sonoma County Water Agency (See Appendix C).

Mitigation Measure HYDRO-7:

- (a) The testing conducted to date includes steady-state hydraulic analysis using the Corps of Engineers' computer simulation model, HEC-RAS. During development of construction drawings, plan-level protection from hazards created by changes in hydraulic conditions should be tested with a physical model to allow for refinements in the placement of boulders and other elements of project design. The physical model would be used to test and refine the design for the proposed channel to ensure that a weak hydraulic jump does not form downstream of Santa Rosa Avenue at discharges at or less than the design discharges.
- (b) In addition, ongoing monitoring of the channel should be conducted through the installation of stream gages⁷ at Santa Rosa Avenue and another bridge downstream, such as Pierson Street. These gages would provide extremely valuable information about conditions in the channel and the hydrologic conditions in the creek. Only one of them would need to be correlated to discharge levels; stage data would be sufficient at the other gage for the purpose of monitoring the effect of natural changes in vegetation and channel conditions on peak flow elevations in the channel. Because vegetation and changes

⁷ The SCWA is already planning to install two gages on Santa Rosa Creek later this year, but they are both upstream of the proposed project reach.

in the bed morphology that affect roughness would evolve over time, the "roughness" in the channel must be monitored on an ongoing basis. Through calibration of the hydraulic model to actual flood data, the means would also exist to compare the estimated channel roughness to actual channel conditions. If channel conditions are shown to be "rougher" than assumed in the hydraulic model used to develop the plan, construction or maintenance activities can be undertaken to reduce the calibrated channel "roughness."

Boyett Alternate Concept

If the Boyett parcel is not included in the Prince Memorial Greenway project, and therefore, not developed into a park, grading in this area would be reduced and the channel configuration and hydraulic conditions would be more similar to that of the existing channel; the potential for hydraulic impacts would be reduced.

Cumulative Impacts

Anticipating no hydrologic change and only modest changes to hydraulic conditions, the incremental approach to project implementation would allow information about project performance to be collected and used to refine subsequent project stages. While changes in the Santa Rosa Creek channel could alter the performance of the channel during peak flow events, detailed

design of altered channel sections, phasing, revegetation, and monitoring efforts will be specifically carried out to prevent any increases in surface water elevation at the design discharge⁸.

⁸Draft Environmental Impact Report for the Santa Rosa Creek Master Plan, Volume 1, January 1992, p. 147.

3.4 Hazardous Materials

a. Setting.

Control of hazardous substance problems is the shared responsibility of federal, State and local agencies. EPA has the primary federal authority under the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, Superfund) the Toxic Substances Control Act (TSCA) and the Safe Drinking Water Act (SDWA). The State Water Resources Control Board (SWRCB) and the Department of Health Services (DHS) share major authority under state law for the control of hazardous substances.

(1) Preliminary Environmental Assessment to Evaluate Existing Conditions. During a preliminary environmental assessment conducted by Kleinfelder, Inc.⁹, three known listed contaminant sources sites were identified in the project area in information provided by Vista Information Solutions (VISTA) as follows:

1. Grace Brothers Site: The Grace Brothers Project Site located at the lower reach of the project between Railroad Street and Davis Street where lead, and petroleum products were identified during previous site investigation work by Kleinfelder. Former gas stations, auto parts yards, railroad facilities, warehouses, tanneries and brewing operations were all found to be likely contributors to soil and groundwater contamination at the site.¹⁰

2. 137 Group Parcel : The area once occupied by a former PG&E Coal Gassification Plant on the north side of the creek at the uppermost reach of the project between the creek and the intersection of First Street and B Street and including a former junkyard located adjacent to Santa Rosa Avenue. The former PG&E site collectively includes the area occupied by historic Santa Rosa Lighting Company, which included out buildings described as "gas holders", coal shed", "coke shed", "lime shed", and "junkyard". The junkyard was actually an

⁹Preliminary Hazardous Materials Assessment Report, Prince Memorial Greenway Project, by Kleinfelder, Inc. August 28, 1996.

¹⁰The Grace Brothers Site was remediated during the Summer of 1996. The majority of designated wastes were removed in accordance with the Remedial Action Plan. Residual petroleum hydrocarbons remained in the ground on the walls of the excavation below the static water level. This thin zone of oil-impacted soils was not removed because it would have entailed excavation of a substantial amount of non-impacted overburden material encompassing the entire face of the creek bank in that area.

adjoining business which operated many years after the coal gassification plant ceased operation. Subsurface contamination originating from these independent sources overlapped to some extent. Soils generated during the excavation of the subgrade parking structure at the building constructed at the former junkyard site were found to contain high lead concentrations. The approximate area of soil excavation where high lead concentrations were removed beneath the building is depicted on Figure 3-1.

The remaining area of the former PG&E coal gassification site is where coal was converted into natural gas. The process involved the use of coal burning which resulted in "coal tar" a semi-solid waste product containing high concentrations of polynuclear aromatic (PNA) hydrocarbons. Generally coal tars and PNA compounds (pyrene, naphthalene, flouranthene, benzo-a-pyrene, and others) are relatively insoluble in water and tend not to migrate freely in the subsurface or pose a water quality threat except under direct contact scenarios.

3. Boyett: The Boyett parcel located on the south side of the creek at the uppermost reach of the project and bounded by Santa Rosa Avenue to the east and the current PG&E substation to the west.

From previous project experience in the area, Kleinfelder, Inc. identified two other non-specific contaminant source areas in the creek including the outfall area of the B Street storm drain culverts and undocumented historic fill debris placed along the creek bank beneath the concrete-lined creek channel walls.

- "B" Street Storm Drains: The locations of two parallel storm drain culverts which extend underneath B Street and the downtown area of Santa Rosa are shown on Figure 3-1. During field reconnaissance within the creek channel in early July 1996, Kleinfelder staff noted petroleum hydrocarbon odors within 30 feet of the culvert openings. The odor increased in strength closer to these drains. According to the RWQCB, oil was first observed emanating from these storm drains approximately 5-6 years ago when the Empire Building (Old Courthouse Square) site investigation was initiated. An old heating oil tank(s) located at the site was found to be leaking. Based on recent observations, it appears that oily discharge to the B Street storm drain is still occurring, particularly during wet weather months.

- Fills Along the Creek Margins: Some potential for contaminated soils was known to exist within the undocumented fill material which has been deposited along the margins of the historic creek channel since at least the late 1,800s.

Potential contaminant source areas are considered to be sites that once operated as a business where the use, storage, or disposal of chemicals may have occurred. Kleinfelder obtained Sanborn Fire Insurance Maps that covered the project vicinity. Figures 3-1 and 3-2 depict notable features and land use activities which were observed in the Sanborn Maps for the project areas as well as other areas known to contain contaminants at the time of this preliminary environmental analysis.

- Steam Laundry ("fuel oil", 1908) and Santa Rosa Steam Laundry ("dry cleaning area", 1950) located at a property now occupied by the east portion of the Sears building immediately adjacent to A street. (Possible tetrachloroethane (PCE), or "perc" use with former dry cleaning operations.
- Temporary Fire Station, 1908 (possible fuel storage site) located immediately west of the former coal gassification plant along First Street.
- Santa Rosa Laundry, 1885, previously located at site of temporary fire station noted above (possible PCE site if dry-cleaning operations involved)
- Chinese Laundry, 1893, located along Santa Rosa Avenue (or "Main Street") immediately east of former PG&E coal gassification plant (possible PCE if dry-cleaning operations involved).
- Painting shop, 1908, once located at the site of Buckingham Drive (current) on the south edge of the creek bank (possible paint related wastes and solvents.

(2) Detailed Sampling to Further Document Existing Conditions.

To gather additional information regarding hazardous materials in the project area, Kleinfelder, Inc. conducted an environmental assessment of hazardous materials in and along the creek. The project team developed a two-phase sampling program as approved by the Regional Water Quality Control Board, North Coast Region (RCRWQCB), that was conducted during the fall of 1996.

Major Access Points: On the north side of the creek, the major access points to the creek would be at either end--at Santa Rosa Avenue and Railroad Street. At Santa Rosa Avenue, the path would commence as a cantilevered structure adjacent to the National Bank of the Redwoods, with an entry sign marking the trailhead at Santa Rosa Avenue. This access point is identified as a major trailhead in the Santa Rosa Creek Master Plan; the Master Plan notes that its use is supported by parking and restrooms at City Hall. This access at Santa Rosa Avenue is dependent upon securing an easement across that property.

Paths: The project would contain a 10-12-foot hard surface bicycle and pedestrian path on the north side of the creek and a 5-foot pedestrian-only path at the lower reaches of the channel on the south side of the creek (at approximately the two-year flood level). The path on the south side would be inundated during periods of high water flow. Paths on both the north and the south side of the creek would meet Americans with Disability Act (ADA) requirements.

Bridge Crossings: Two pedestrian crossings would span Santa Rosa Creek within the Downtown Reach. The first crossing would utilize or replace the existing PG&E pipeline crossing, and, the second bridge would span between the edge of the Grace Brothers site and Olive Park; this pedestrian path would extend from Orange Street over the creek to join the Grace Brothers site¹.

Low Water Crossings: While not included in the Santa Rosa Creek Master Plan, along the length of the creek, the proposed project includes three low water creek crossings consisting of relatively flat boulders that are lined up to allow foot passage from one side of the creek to the other. Moving east to west, the first low-water crossing would be located immediately west of the "A" Street Bridge. The second crossing would be located just west of the U.S. Highway 101 overcrossing, and the third crossing would be located just east of Railroad Bridge.

Boulders and Rock Facing: The channel will be made to look more natural to the extent feasible. The existing grouted rock will be removed at the base of the channel in order to deepen the channel between Santa Rosa Avenue and the portion of the creek passing adjacent to Davis Carpets, downstream from the SCWA ramp leading to the creek bottom. After over-excavating the channel by approximately 6 feet, a new rough rock

¹It should be noted that this second bridge has been analyzed as part of the project, but has not yet been funded. The City is currently looking for funding sources so that it could be built as part of the project.

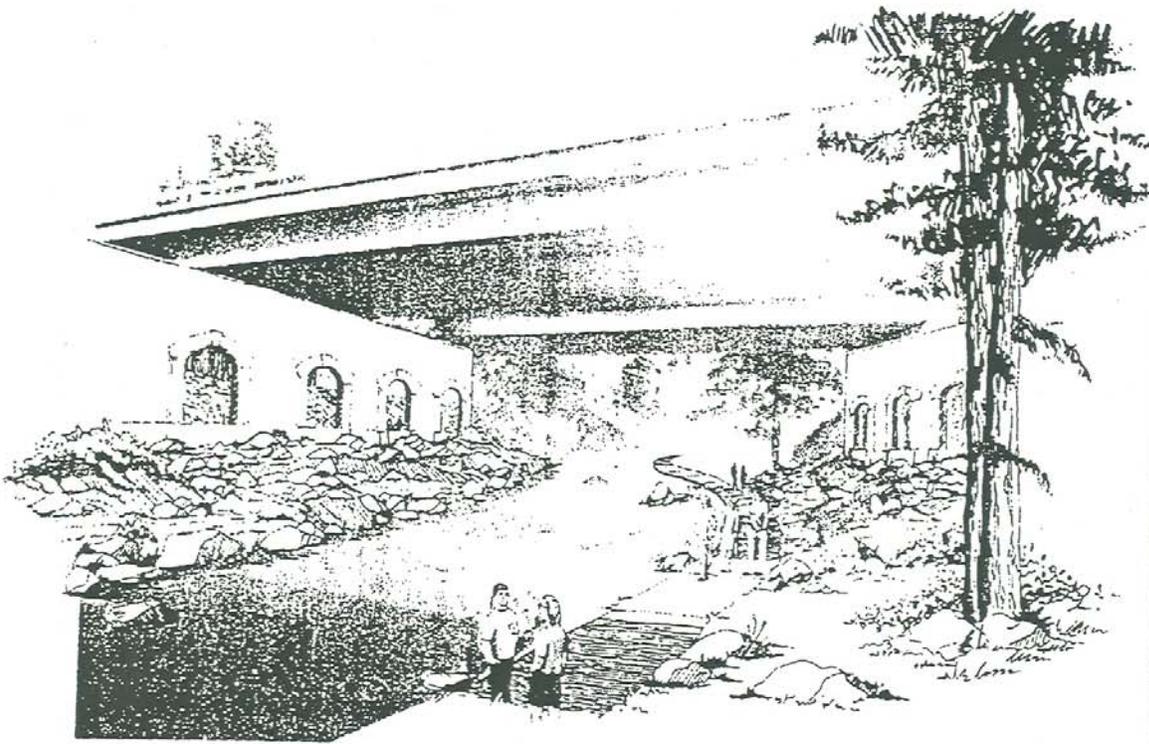
faceted surface would be placed at the bottom of the channel and the low-flow channel, and the excavated bed material would be replaced over the lining. Boulder reinforcement would be used along the banks. Downstream from the SCWA access road, concrete would be removed, and the banks contoured to create a more natural appearance. The excavated material will be broken up and reused as part of the lining, along with natural rock. Rock groins would also be built up from the bottom to force the low-flow channel to one side. A number of large boulders will be brought in and placed at the bottom and along the banks of the creek. A combination of natural rock and vegetated erosion control fabric would be used to protect the channel banks.

Highway 101 Undercrossing: The greenway design includes a U.S. Highway 101 undercrossing on both the north and south sides of the creek. Three alternate approaches are being considered for this undercrossing, as follows:

- (1) The first would involve reinforcing and thickening of the existing walls. A row of arches would then be opened up within the reinforced walls to allow visibility of the creek and greater light penetration (See Figure 2-7 for this approach to the proposed U.S. Highway 101 undercrossing).
- (2) The second approach involves eliminating the pier walls within portions of the undercrossing that are not part of the bridge structure to allow for penetration of more light and greater visibility of the creek. It is anticipated that this approach would be a relatively short-term solution because of Caltrans's future plans for widening U.S. Highway 101 at this location. Because detailed plans for future widening have not been developed, it is not clear at this time the extent to which the widening project would affect the bicycle/pedestrian paths and environment under the freeway in the future.²
- (3) The third approach involves maintaining the existing pier walls and developing wainscoted walls with murals along the length of the

²Caltrans has indicated that the widening would likely involve filling in between the existing bridges and adding an additional lane on the west side of the overcrossing. Caltrans indicated further that they would consider putting in a new "clear span" bridge in this location; however, the cost of a clear span could be prohibitive. In addition, Caltrans expressed a willingness to work with the City to develop a mutually beneficial solution to this undercrossing, and has indicated some willingness to pay for some of the final design elements since the widening project would affect the Prince Memorial Greenway project.

Figure 2-7



PATHWAY AND ARCHES UNDER HIGHWAY 101

U.S. Highway 101
Undercrossing

SOURCE: RRM Design Group and CMM&H

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bicycle/pedestrian paths. The murals would be developed by school children, and could be changed with the work of new classes of students over time. For this approach, railroad trellis structures would be used as decorative features at both sides of the overcrossing (See Figure 2-8).

For any of these three approaches, artificial lighting would be used on a 24-hour basis under U.S. Highway 101 along the length of the bicycle/pedestrian paths on both sides of the creek. In addition, a grotto would be developed along the path on the north side of the creek under the freeway. It is anticipated that recirculated water, running down the rock walls beneath the overpass, would be used to create "riffle noise" to help muffle the sound of traffic.

Enhancement of Bridges: Removal of parking along existing bridges (Olive Street bridge and "A" Street bridge), increasing pedestrian sidewalk widths, and architecturally enhancing bridges for visual interest.

2.4.2 Restoration Components

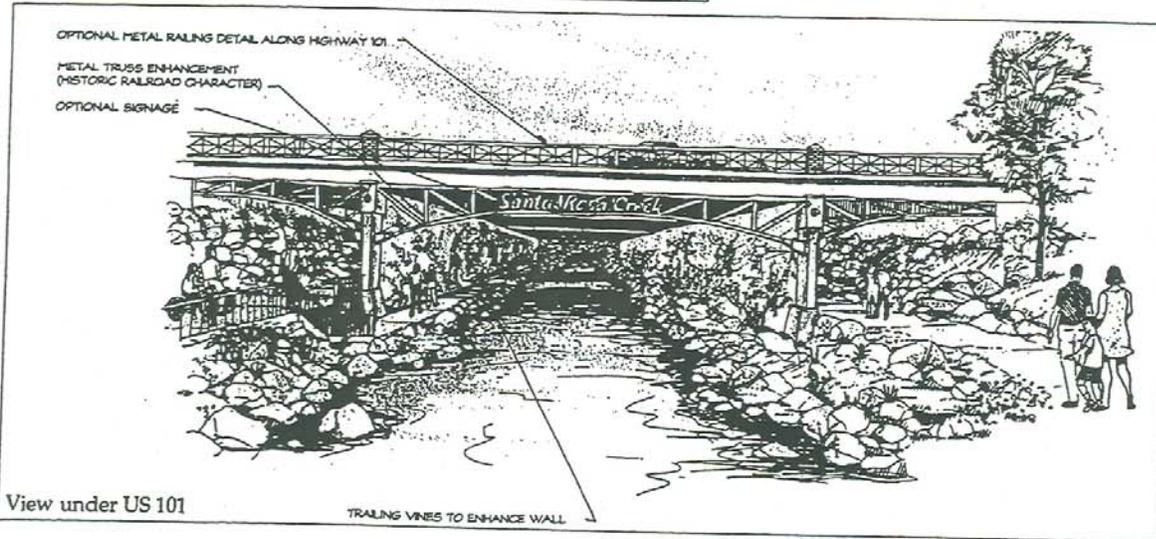
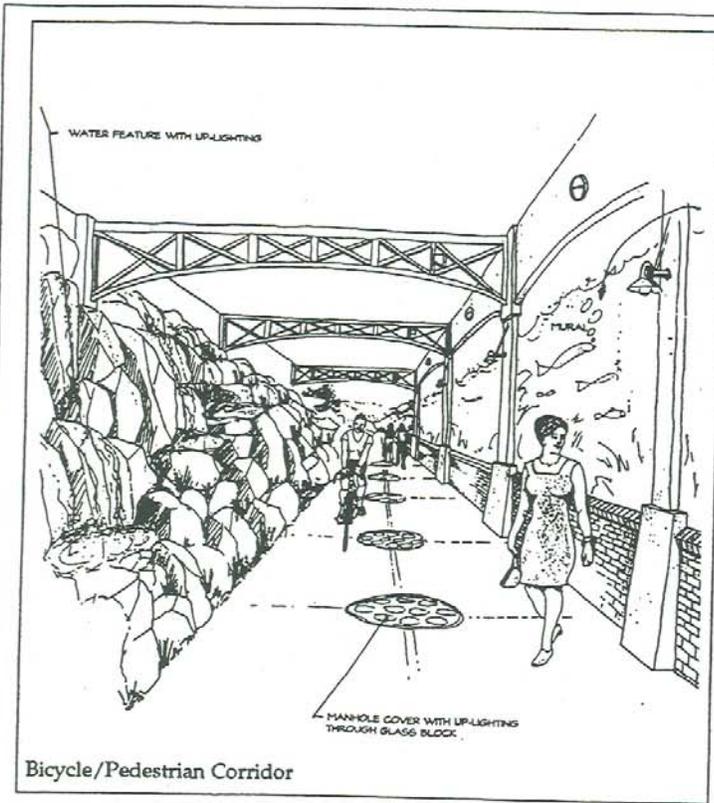
West of Davis Street, the following components have been incorporated into the project design to naturalize the stream channel and to improve habitat for steelhead trout and other species.

- Eddy Dissipator: A concrete tower with piers would be constructed at the Boyett parcel, if this parcel is included in the project. The series of piers comprising the tower would disrupt the flows that could otherwise form a strong eddy at the Boyett parcel³. A large pool would be developed at the culvert and the channel would be widened in this location, to the degree feasible⁴.
- Rock Weirs: A series of notched rock weirs (rows of rocks) would be built to the west of the deep pool to further reduce the rate of water flow through the channel, maintain ponded water under low flow conditions and provide visual interest. The weirs would be

³As noted by the Department of Fish and Game (See letter of 6/24/97 in Appendix D), the eddy dissipator would be a fairly large structure at this location. This portion of the Prince Memorial Greenway is envisioned as a more urban portion of the creek. The project hydrologist has indicated that the concrete piers of the observation tower would be more effective in disrupting the formation of eddies than a more natural feature consisting of rock pinnacles or other natural components.

⁴Opportunities for widening the channel in this location would be enhanced if the Boyett parcel becomes part of the project area.

Figure 2-8



Alternate Design for the US Highway 101 Undercrossing

SOURCE: CMM&H and RRM Design Group

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notched for sediment pass-through and to ease fish passage. In addition, water surface drop at the rock weir structures would be designed for one foot or less to facilitate fish passage.

- Pools and Riffles: Pools would be developed upstream and downstream of each of the rock weirs to provide resting areas for migrating fish. The rock weirs would create riffles in the lower sloped portion of the channel west of A Street.
- Low Water Channel: Restoration would involve establishing a low flow creek channel along the length of the project area, with over-arching trees and other vegetation to provide shade where feasible. The low flow channel would meander along the bottom of the channel, following the meander of the channel. At the western reach of the project area, the low flow channel is located in close proximity to the southern bank.
- Marsh: Pockets of marsh vegetation (reeds and tule beds) would be placed along the length of the creek⁵. These beds would be protected by boulders that are placed and secured in the creek bed and would serve to screen some contaminants from water passing through the creek. They will also help naturalize the appearance of the creek bottom and provide some in-stream habitat and shade along the creek.
- Planting of Trees and Shrubs along and within the Creek: As part of the restoration effort, 51 trees would be planted within the channel⁶. Additional trees would be planted at the top of the bank to provide additional shade.
- Fish Ladder: A fish ladder exists at this time extending through the Santa Rosa Creek culvert under City Hall. At Santa Rosa Avenue, the project design involves development of a resting pool and a comparable or better entry chute design to the existing fish ladder. If altered, the existing entry chute to the fish ladder would be redesigned to provide comparable or better function.

⁵The channel would be monitored on a yearly basis to ensure that the "n" value (degree of roughness) is maintained, so that the project does not adversely affect flood control capacity. Allowable "roughness" would be determined in consultation with SCWA personnel. It is likely that marsh features would be developed within the first 5 years, assuming water surface elevations are not increased during a design discharge event.

⁶Trees would generally be planted above the 2-year flood level, and would not be planted within the existing planting wells in the channel.

2.4.3 Hazardous Materials Mitigation Developed As Part of the Project Design

During the fall of 1996, design of the creek project was put on hold to proceed with sampling within the creek, so that the design of the creek would be based on an assessment of materials in the ground. This information is summarized in *Environmental Assessment and Conceptual Remedial Alternatives Report*, Prince Memorial Greenway Project, Santa Rosa Creek, by Kleinfelder, Inc. March 18, 1997.

The project team worked to minimize the potential for and amount of hazardous materials that would require special handling and design during construction, to the extent feasible.

Approaches to mitigation described in this report are incorporated into the project design as follows (See Figures 2-9 and 2-10 for approaches to hazardous materials mitigation that are built into the project design):

- Concrete Lining: The concrete channel would be relined at the east end of the project area to minimize scour, helps to isolate known contaminants. It would also be maintained or recreated in "hot spot" areas such as in the vicinity of the Boyett and 137 Group parcels, and extending west of the SCWA ramp.
- Cut-off Walls: In areas where concrete is removed, use cut-off walls to extend 2 feet below the base of the low-flow channel--particularly in two areas where "free floating oil product" was found in shallow borings.
- Excavation and Removal of Contaminated Soils: Soil would be removed to achieve profile modifications. Some additional material may need to be excavated in the vicinity of known contaminants⁷ in locations that would not be isolated with cut-off walls or other protective mechanisms. This soil would be removed and hauled to an appropriate landfill or treatment location. The addition of impermeable linings would be utilized, as needed, to ensure that additional contaminants do not enter the channel. The creek bed or bank would be backfilled in these locations with clean soil and rock.
- Erosion Protection Measures: Low level ambient pollution control in sideslope soils would be mitigated through implementation of erosion protection systems including geo-fabric, rock, ornamental hardscape, and other possible flexible liners.

⁷For discussion of known contaminants in the project area, see Section 3-4, Hazardous Materials, and Appendix A.

- Marsh Areas: Marsh areas would help to create a more natural channel appearance while also serving as water filters for low-level non-point sources seasonally discharged to the creek via stormwater runoff. Marsh areas would be developed to the extent feasible while meeting the required "n" value (roughness) of the channel (to ensure that the channel meets the design discharge with adequate freeboard (See Hydrology and Water Quality, Section 3-3)).

2.5 Relationship to Other Projects

Creek Interface with the Grace Brothers Project: It is anticipated that the Grace Brothers site would be developed as a hotel/conference center and that it would be designed to in a manner that would be integrated visually with the creek restoration project. A grassy slope would extend down from the Grace Brother site to the creek path, and eventually, some creek oriented uses might be developed at the site such as a cafe that would serve the public as well as hotel guests.

Boyett Park: There is a proposal to include the Boyett parcel as part of the Prince Memorial Greenway project. If included in the project, it would be developed as a park, reterraced, and developed with a winding path leading down to the creek and observation tower. The tower would also function as an eddy flow dissipator (See Preferred Concept Plan, Figure 2-3).

Alternate Concept for the Boyett Parcel

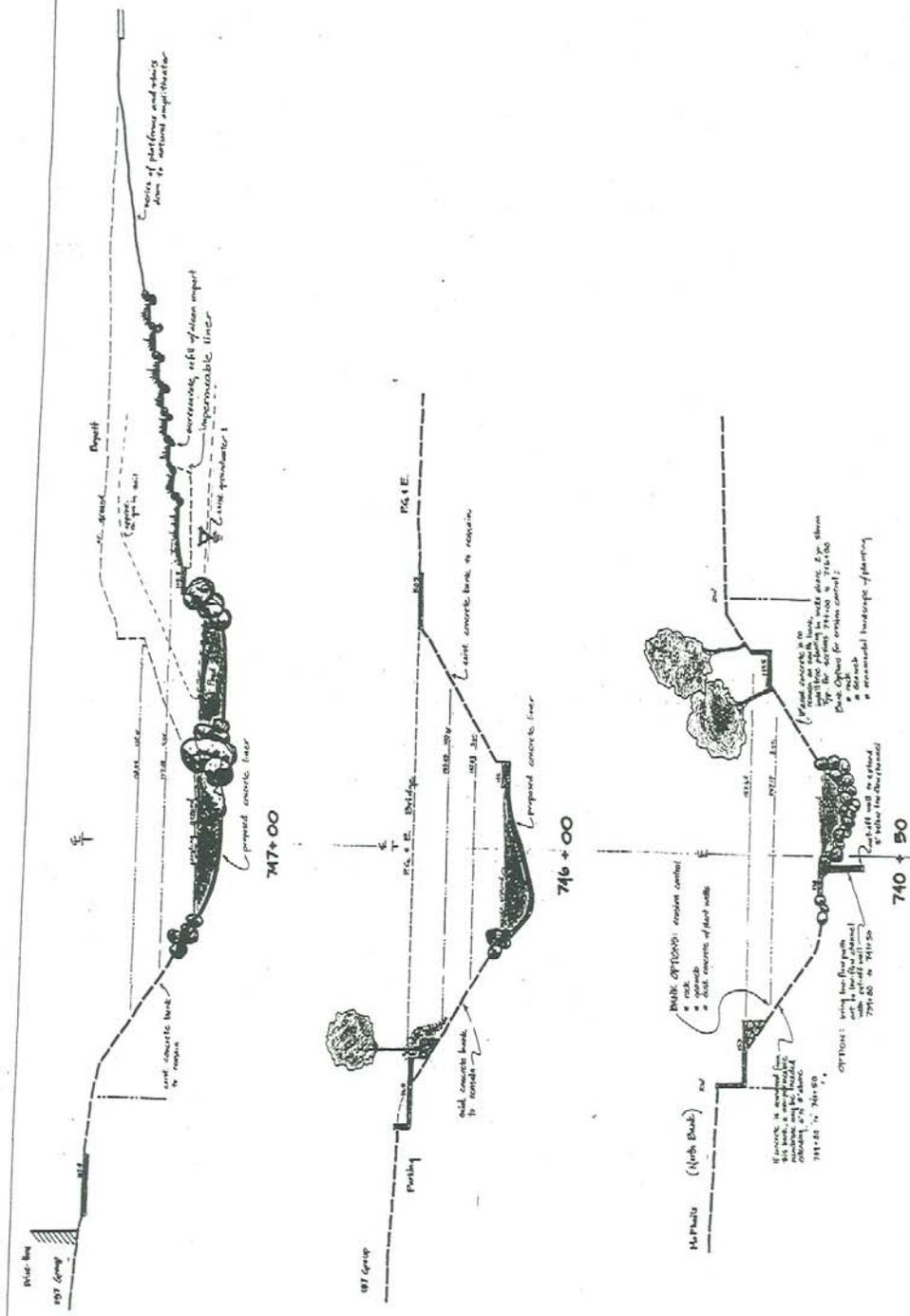
If the Boyett parcel is not included in the project, the path would proceed adjacent to the creek, within the back ten feet of the Boyett parcel, at the existing grade (See Boyett Alternate Concept Plan, Figure 2-11).

2.6 Project Background

The Santa Rosa Creek Master Plan was adopted in 1993 to establish a blueprint for establishing a community vision to preserve the healthy portions of the creek, restore the degraded areas, and reestablish parts of the creek as a place for human use and appreciation. The Master Plan is a statement of public policy and a conceptual plan for realizing restoration and enhancement goals. It covers the westernmost portion of the Santa Rosa Creek watershed, a 12.8 mile stretch from Highway 12 near Los Alamos Road to the Laguna de Santa Rosa.

The downtown segment of this restoration plan is identified in the Master Plan as "Reach C". Reach C is the subject of this environmental analysis. It is referred to as the Prince Memorial Greenway, because the Prince

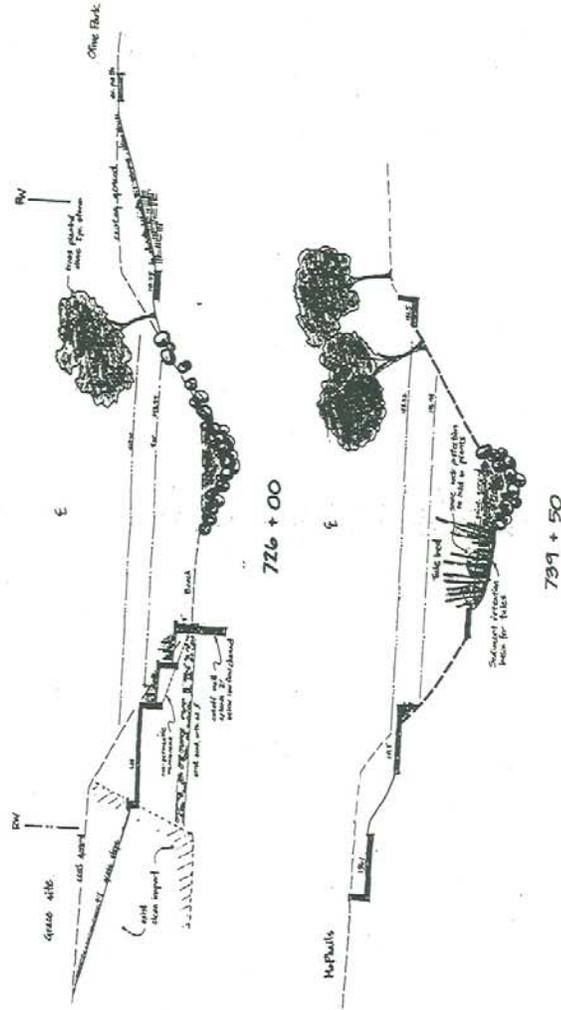
Figure 2-9



Hazardous Materials Mitigation Developed As Part of the Project Design

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Figure 2-10

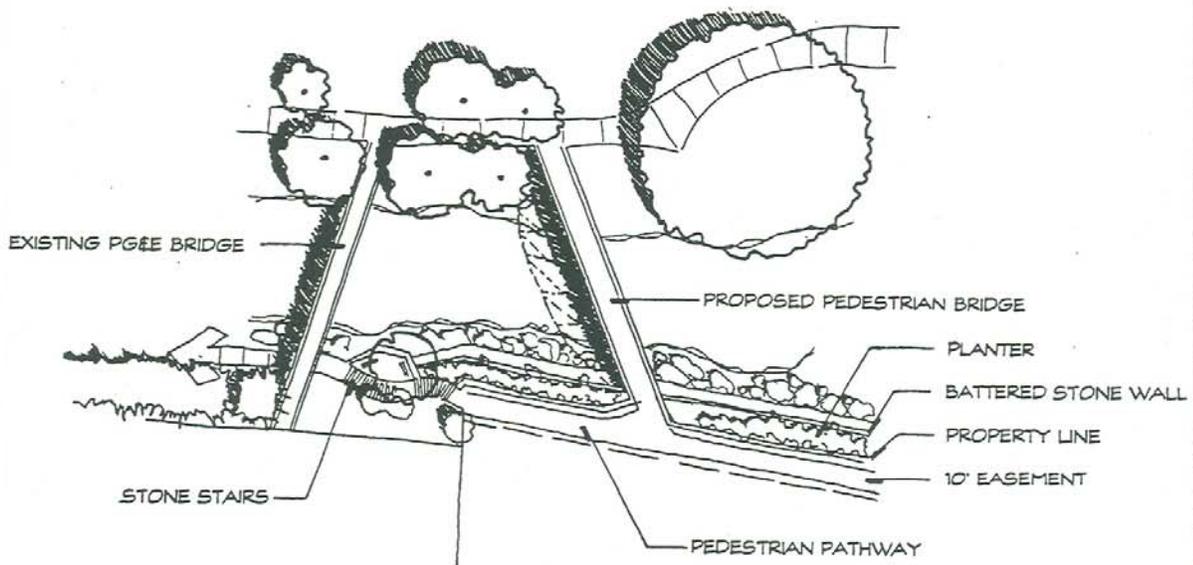


SOURCE: CH2M HILL and Hillier, Inc.

Hazardous Materials Mitigation Developed As Part of the Project Design

PRINCE MEMORIAL GREENWAY • CITY OF SANTA ROSA

Figure 2-11



SOURCE: CMM&H and RRM Design Group

Boyett Alternate Concept Plan

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family left funds to the City of Santa Rosa for public use for a park project. These funds have been set aside for this downtown portion of the creek project.

2.7 Phasing and Other Project Characteristics

The project is divided into two phases and contracts. The first phase involves the development of a proposed project design for a portion of the 2/3 mile stretch, referred to in the Master Plan as Stretch "C", and the associated environmental documentation. The second phase would involve development of construction drawings. The budget for design, environmental, permits and construction is approximately \$5.6 million⁸.

It is anticipated that the design phase would be completed during July 1997, and that the construction drawings would be prepared during the late summer and fall of 1997 and processed by January/February 1998.

Due to the need to avoid the winter rains, project construction would require two construction seasons extending from May 15 through October 15 during 1998 and 1999. The Western Reach extending to U.S. Highway 101 would be constructed during the first construction season in 1998. The Eastern Reach extending from U.S. Highway 101 to Santa Rosa Avenue would be constructed during the second construction season in 1999. Development of creek improvements under U.S. Highway 101 would be coordinated with the Caltrans widening project, and might, therefore need to be developed in conjunction with the widening project.

Even though the project would be constructed during the dry season, some flow is anticipated in the channel, even during summer months. Project construction would involve construction of one or more temporary coffer dams and pipes that would divert water away from active construction areas to resume its downstream course.

As indicated above, construction of the project is anticipated during the 1998 and 1999 construction seasons. However, phasing of some components could be affected by development of final cost estimates and might require identification of additional funding sources for some specific project components.

⁸The \$5.6 million dollars allocated for this project is comprised of \$3 million dollars from the Prince family, \$2 million dollars from the Redevelopment Agency, and \$.6 million dollars from City funds.

2.8 Required Permits and Approvals

A series of project permits, approvals and determinations of project consistency would be required for the proposed project as follows:

- A Streambed Alteration Agreement with the California Department of Fish and Game (Sections 1601-1603 State Fish and Game Code) would be required for removal of existing riparian vegetation in Santa Rosa Creek, for placement of boulders and for creating temporary water diversions during project construction.
- Two permits would be required from the U.S. Army Corps of Engineers. A Nationwide Permit 27 (permit for riparian restoration) for discharges into the Waters of the United States (including wetlands) would be required. A Nationwide Permit #33 would be required for placement of a coffer dam.
- Depending on the outcome of the potential listing of steelhead (a federally proposed endangered species), it may be necessary to obtain a Section 9 permit from the National Marine Fisheries Service (NMFS). Formal or informal consultation could also be required with the U.S. Fish and Wildlife Service.
- A Caltrans encroachment permit would be required for the work done to and under the U.S. Highway 101 bridge structure.
- Concurrence from Caltrans and the Federal Highway Administration (FHWA) would be required to confirm that cutting a hole through the wall adjacent to Burbank School for a pathway would not affect noise attenuation.
- Offsite waste storage of material excavated from the project area for any period of time would require Waste Discharge permitting with additional site control measures instituted.

2.9 Linkages with Other Trails and Bike Routes

The proposed project would eventually connect with the following other trails and bike paths:

- Proximate linkage with the trail along Santa Rosa Creek from Pierson Street to the Laguna de Santa Rosa; Joe Rodota Trail; and eventually a route extending from Sebastopol to Spring Lake.
- Proximate linkage with D Street, the main bike route in the Downtown area. D street connects with Humboldt Street to the north, and Santa Rosa Avenue and Petaluma Hill Road to the south.
- Eventually the route will extend east along Santa Rosa Creek to 2,000 feet beyond Mission Boulevard.

2.10 Other Projects in the Vicinity

The following additional projects are anticipated in the project vicinity, and are therefore, included in the analysis of cumulative impacts under each environmental issue area (See Chapter 3, Environmental Evaluation).

- Improvements to the Boyett parcel (that may ultimately be included in the Prince Memorial Greenway Project).
- The proposed reconfiguration of Courthouse Square.
- The proposed Hotel and Conference Facility at the Grace Brothers site.
- Olive Park improvements including play equipment to be implemented by the Santa Rosa Department of Recreation and Parks.
- Development and implementation of the Santa Rosa Creek Master Plan.
- Future widening of Highway 101 and removal of the footbridge extending from Burbank School to the west side of the freeway in the vicinity of Olive Park.
- Development of a multi-use path undercrossing and access on the north side of the Railroad Street bridge.
- Potential improvements to Juilliard Park and possible relocation of the Church of One Tree.

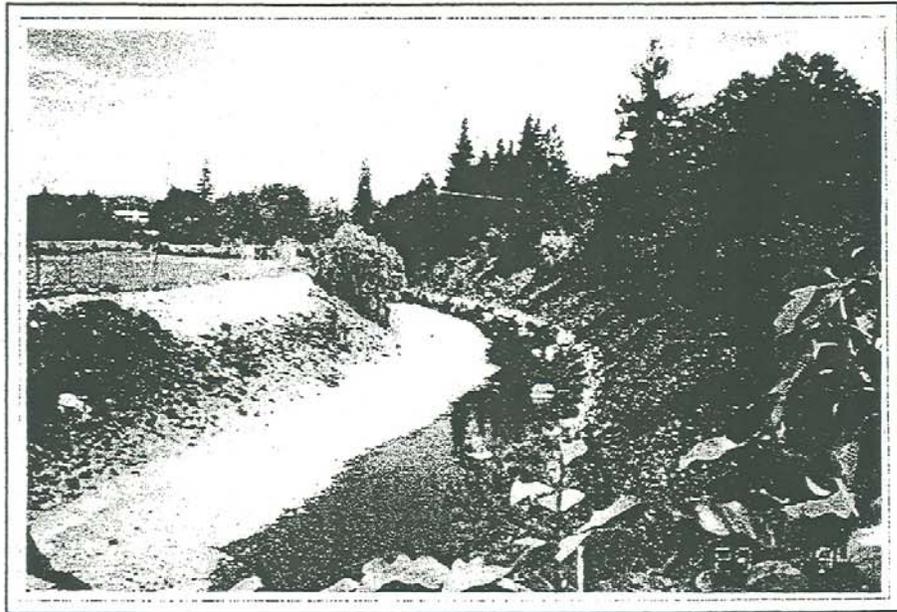
Additional Public "Visioning" for the Project Vicinity

A series of Public Workshops were conducted throughout the design process for the Prince Memorial Greenway Project, and provided the opportunity for members of the public to indicate preferences for the types of features they would like to see along the creek. Many of these features went beyond the scope and budget of the Prince Memorial Greenway project under review in this environmental document; they represent a "vision" for possible additional public or private improvements that may be considered in the future. **Therefore, the following projects are specifically excluded from the environmental analysis for the Prince Memorial Greenway Project:**

- The sidewalk along Railroad Street linking Santa Rosa Creek with Third Street could consist of a path with trees on both sides. The width of Railroad Street could be reduced to accommodate planting areas interspersed with parallel parking along the length of this walkway from Railroad Bridge to Third Street.
- Removal of underground culverts containing Santa Rosa Creek and

- Removal of underground culverts containing Santa Rosa Creek and Matanzas Creek on the east side of Santa Rosa Avenue leading up to City Hall. This area might serve as a trailhead at City Hall, with paths under the bridge connecting to the Prince Memorial Greenway.
- Intersection improvements at Santa Rosa Avenue and Sonoma Avenue might be developed to create more pedestrian-friendly crossings. Creation of increased pedestrian spaces at corners reduce the pedestrian walking distance across the streets. Creation of a center circle containing a focal point such as a statue of Luther Burbank as a terminating vista to Santa Rosa Avenue might also be considered, as well as the introduction of special paving.
- Creation of outdoor dining areas and other uses along the Creek within existing buildings.
- Removal of the parking area behind McPhails and the addition of diagonal parking along 1st Street.
- Large fountain elements, sculpture and spaces for vendors and newsstands, would be provided for increasing activity in the area.
- With the exposed creek on both sides of Santa Rosa Avenue, the opportunity exists to recreate a visually attractive iron bridge reminiscent of the previous Santa Rosa Avenue bridges in this location. A bridge structure would further identify the creek below and function as an entry statement for the Downtown.
- Increase in the space provided for pedestrians across the Santa Rosa Avenue bridge. This would serve as a "neck-down" feature to slow traffic to create a more pedestrian friendly crossing.
- Additional improvements to Olive Park that might include restrooms, bocce ball, game kiosks and walkways.

3. Environmental Evaluation



3. ENVIRONMENTAL EVALUATION

3.1 Biological Resources - General

a. Setting.

(1) General Overview of Santa Rosa Creek Ecosystem. The course of Santa Rosa Creek is largely in a natural state before entering the Prince Memorial Greenway (PMG) study area. East of Melita Road, the creek is basically wild, emerging from a steep forested canyon in a relatively pristine condition. From Melita Road west to E Street, it displays dense canopy cover with large trees, but has been encroached upon by backyards and disturbed in the past by gravel mining operations. At E Street, the creek enters a culvert for two city blocks until it emerges again at Santa Rosa Avenue, where it enters the Prince Memorial Greenway project area. At this point, it emerges into a concrete, rip-rapped trapezoidal channel virtually devoid of riparian vegetation (except for isolated trees and ivy). From Pierson Street to its western terminus at the Laguna de Santa Rosa, the stream remains a rip-rapped trapezoidal sans the concrete. The density of trees increases westerly until a sparse riparian woodland has begun to develop west of Willowside Road due to the absence of routine channel maintenance.

(2) Biological Setting of Prince Memorial Greenway. The original riparian habitat was completely removed when channelization occurred in the early 1960's. What remains is a riverine system fringed with marsh at the bottom of a trapezoidal, concrete rip-rapped channel. The flood control project drastically altered the ecosystem and adversely affected species associated with the former riparian woodland habitat. Today, the predominant environmental characteristics of the project area are a grouted channel surface with infrequent trees, rows of non-native trees at the top of bank and a lack of cobbles and gravel in the channel bottom. Adjacent habitats are urban (industrial, commercial) with backyards, empty lots and parking lots.

Description of Habitat Types, Vegetation and Wildlife

For the entire stretch between Santa Rosa Avenue, hereafter referred to as the "project area" (formerly referred to a "Reach C" in the Master Plan)

only two habitats are present. A riverine habitat exists bounded by the grout and riprap of the channelized creek. Beyond the channel banks, adjacent habitats are largely urban in character.

Riverine. The riverine habitat provides a continuous thread throughout the length of Santa Rosa Creek. As the creek emerges from the cool riparian canopy and the City Hall culvert, the exposed, reflective surface of the grout material allows intense solar radiation to increase water temperatures, as high as 29.4°C (79°F), well above the lethal limit for salmonid species such as steelhead and coho salmon. The decrease in gradient and the increasingly fine sediments cause a transition from faster water organisms to those adapted to slower moving, warmer water. Mollusks and crustaceans replace the rubble dwelling insects. Backswimmers, water boatmen and diving beetles inhabit sluggish stretches. However, this riverine habitat is still a viable creek ecosystem in which egrets and herons are often found feeding.

The summer low-flow channel varies in width, but can narrow to three feet in width with sluggish flows. A marshy fringe of emergent vegetation can occur between the shore and may extend up to the bottom of the channel banks. Water plantain, water speedwell, marsh seedbox, swamp smartweed, water cress, nut-sedge and white sweetclover, are the primary constituents. Large rafts of algae can appear in the slower moving portions of the this stretch.

The riverine habitat can provide prey for osprey, but belted kingfisher, waterfowl, herons and shorebirds are more commonly found utilizing food resources. Insectivorous birds, such as swallows, swifts and flycatchers, hawk their prey over the open water. Mammals found in riverine habitat include river otter and mink, which may temporarily use or pass through the project study area. Western pond turtles, garter snakes, bullfrogs and pacific treefrogs are inhabitants of the creek in the project area.

Urban. Urban habitats occur adjacent to the top of bank in backyards, residential and commercial landscaping and associated development. Included in this habitat are upper tree and shrub specimens which were planted by the Sonoma County Water Agency, because most of the species chosen were not native plants. This habitat consists of mostly ornamental, non-native species that serve primarily an aesthetic purpose and can have incidental wildlife value. Eucalyptus, cypress, and pines are typical. Redwood trees are occasionally encountered along the top of bank. Although a native tree species, it probably only occurred along the creek rarely, if at all, prior to European settlement of the area. Bare expanses of

exposed rip-rap and grout and expanses of ivy are included in this habitat type.

SCWA produced vegetative planting plans for approximately 140 trees, 98 shrubs and 234 ground cover and bottom plants in the project area. Of these, 308 were to be planted in containers of various sizes, the rest were planted in the ground above top-of bank. Many of the containers are evident today, but many have no plants in them or have been colonized by other, often weedy species. The planting plans indicate approximately 238 plants were to be located below the 100 flood elevation, including a total of 5 trees and 54 shrubs. The rest were to be ground cover and bottom plants such as dwarf willows, sedges, rushes, and reed grasses. Presumably, the roughness added to the flow by this vegetation was accounted for in establishing the 100 year flood elevation.

Native wildlife species diversity is likely to be extremely low in the downtown area compared to the natural eastern stretches of the creek. Wildlife in the downtown reaches would include the common, nonnative starling, pigeon and house sparrow. Opossum and raccoon migrate from the creek to adjacent backyard areas.

(3) Regulatory Context

The project site is located within the regional geographic range of several sensitive plant communities and habitats and several special status plant and wildlife species. It is generally recognized that virtually all of the major biological resources are found within the aquatic habitat formed by the actual flowing water in the channel, since all remnants of original vegetation have been eliminated. This aquatic habitat, particular that within Ordinary High Water (OHW) is subject to State Department of Fish and Game (DFG) 1603 Streambed Alteration regulations and U. S. Army Corps of Engineers (USACE) Section 404 permit requirements under the Clean Water Act. Depending on the outcome and timing of the proposed listing of steelhead it may be necessary to obtain a Section 9 permit from the National Marine Fisheries Service (NMFS).

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS)

These agencies have jurisdiction over species that are formally listed as threatened or endangered under the Federal Endangered Species Act (FESA). The Endangered Species Act provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered in the U.S. or elsewhere. Provisions are made for listing

species, as well as for recovery plans and the designation of critical habitat for listed species. The Act outlines procedures for federal agencies to follow when taking actions that may jeopardize listed species, and contains exceptions and exemptions.

California Department of Fish and Game (DFG)

It is state policy to conserve, protect, restore, and enhance any endangered or threatened species and its habitat. DFG has jurisdiction over species that are formally listed as threatened or endangered under the California Endangered Species Act (CESA). The Endangered Species Act provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered in the state. In addition to CESA, the California Native Plant Protection Act (NPPA) provides protection to endangered and rare plant species. DFG also maintains an informal list of *species of special concern*. DFG also has jurisdiction over streams and requires a *Streambed Alteration Agreement* for the fill or removal of any material from a natural watercourse.

California Native Plant Society (CNPS)

CNPS has developed lists of plants of special concern in California (Skinner and Pavlik, 1994): List 1A - Presumed Extinct in California, List 1B - Rare or Endangered in California and Elsewhere, List 2 - Rare and Endangered in California, More Common Elsewhere, List 3 - Species For Which More Information is Needed, List 4 - Plants of Limited Distribution (A Watch List). Impacts to CNPS List 1B and 2 plants are considered significant under CEQA.

U. S. Army Corps of Engineers (USACE)

Section 404 of the Clean Water Act requires approval prior to discharging dredged or fill material into the waters of the United States. Waters of the United States include essentially all surface waters such as all navigable waters and their tributaries, all interstate waters and their tributaries, all wetlands adjacent to these waters, and all impoundments of these waters. "Wetlands" are areas characterized by growth of wetland vegetation (bulrush, cattails, rushes, sedges, and willows) where the soil is saturated during a portion of the growing season or the surface is flooded during some part of most years. Wetlands generally include swamps, marshes, bogs, and similar areas.

Typical activities requiring Section 404 permits are:

-
- Depositing of fill or dredged material in waters of the U.S. or adjacent wetlands.
 - Site development fill for residential, commercial, or recreational developments.
 - Construction of revetments, groins, breakwaters, levees, dams, dikes, and weirs.
 - Placement of riprap and road fills.

This project will apply for a nationwide permit for the placement of material in the USACE's jurisdiction. A nationwide permit is a form of general permit which authorizes a category of activities throughout the nation. These permits are valid only if the conditions applicable to the permits are met. If the conditions cannot be met, a regional or individual permit will be required.

Nationwide Permit 27. Wetland and Riparian Restoration and Creation Activities. This project qualifies for the Nationwide Permit 27 which applies to: "Activities in waters of the United States associated with the restoration of former non-tidal wetlands and riparian areas, the enhancement of degraded wetlands and riparian areas, and creation of wetlands and riparian areas....*on any public or private land, provided the permittee notifies the District Engineer in accordance with the "Notification" general condition.*"

"Such activities include, but are not limited to: installation and maintenance of small water control structures, dikes, and berms; backfilling of existing drainage ditches; removal of existing drainage structures; construction of small nesting islands; plowing for seed bed preparation; and other related activities. This NWP applies to restoration projects that serve the purpose of restoring "natural" wetland hydrology, vegetation, and function to altered and degrade non-tidal wetlands and "natural" functions of riparian areas."

The Prince Memorial Greenway project is entirely consistent with all of the activities stated for riparian restoration. It appears that Nationwide Permit # 27 anticipates the need for small coffer dams where it identifies "installation and maintenance of small water control structures, dikes, ..." as sometimes necessary elements to achieve riparian restoration. Nationwide 27 should cover all these activities but, if it is necessary, an application would also be submitted for a Nationwide Permit # 33, for coffer dams and water diversions.

Table 1 (cont.). Special Status Plant Species with the Potential to Occur in Habitats Present at the Project Site.

Species	Legal Status	CNPS List	Habitat	Blooming Period
CAREX CALIFORNICA August "California sedge"		2	Bogs and fens, Closed-cone coniferous forest, Coastal prairie, Meadows, Marshes and Swamps (margins)	May-
CASTILLEJA ULIGINOSA July "Pitkin Marsh Indian paintbrush"	CE/C2	1A	Marshes and Swamps (freshwater)	June-
CEANOTHUS CONFUSUS February-April "Rincon Ridge ceanothus"	/C2	1B	Closed-cone coniferous forest, Chaparral, Cismontane woodland / volcanic or serpentine	
CEANOTHUS DIVERGENS February-March "Calistoga ceanothus"	/C2	1B	Chaparral (serpentine or volcanic, rocky)	
CEANOTHUS FOLIOSUS VAR. VINEATUS May "Vine Hill ceanothus"	/C2	1B	Chaparral	March-
CHORIZANTHE VALIDA August "Sonoma spineflower"	CE/FE	1B	Coastal prairie (sandy)	June-
CLARKIA IMBRICATA August "Vine Hill clarkia"	CE/PE	1B	Chaparral, Valley and foothill grassland / acidic sandy loam	June-
DELPHINIUM LUTEUM May "yellow larkspur"	CR/C1	1B	Chaparral, Coastal prairie, Coastal scrub	March-
DOWNINGIA PUSILLA May "dwarf downingia"	/C3c	2	Valley and foothill grassland (mesic), Vernal pools	March-

Notes for Tables 1.**Explanation of Terms for Table 1:****Federal Status Definitions****Endangered (FE)**

Any species which is in danger of extinction throughout all or a significant portion of its range.

Threatened (FT)

Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Candidate

Taxa for which the Service currently has sufficient information on biological vulnerability and threats on hand to support the issuance of a proposed rule to list, but issuance of the proposed rule is precluded. Only those species for which there is enough information to support a listing proposal will be called "candidates." These were formerly known as "Category 1 Candidate Species." The Service will no longer maintain a list of species formerly known as "Category 2 Candidates." These are species for which the Service does not have enough scientific information to support a listing proposal. Both Category 2 and Category 3 no longer exist. The former Category 3 was a mix of non-candidate species, either thought to be extinct (3A), taxonomically invalid (3B), or too widespread to be considered at risk (3C).

Species of Concern (C1)

Former Category 1 Candidate, now considered a "Species of Concern". Taxa which should be given consideration during planning for projects.

Species of Concern (C2)

Former Category 2 Candidate, now considered a "Species of Concern". Taxa which should be given consideration during planning for projects.

Proposed

Taxa for which a general notice has been published in a local newspaper and a proposed rule for listing has been published in the Federal Register.

State Status Definitions**Endangered (CE)**

A native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.

Threatened (CT)

A native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. (Chapter 1.5 of the California Fish and Game Code.)

Rare

A species, subspecies, or variety is rare when, although not presently threatened with extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens.

Candidate

A native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to either list.

Species of Special Concern

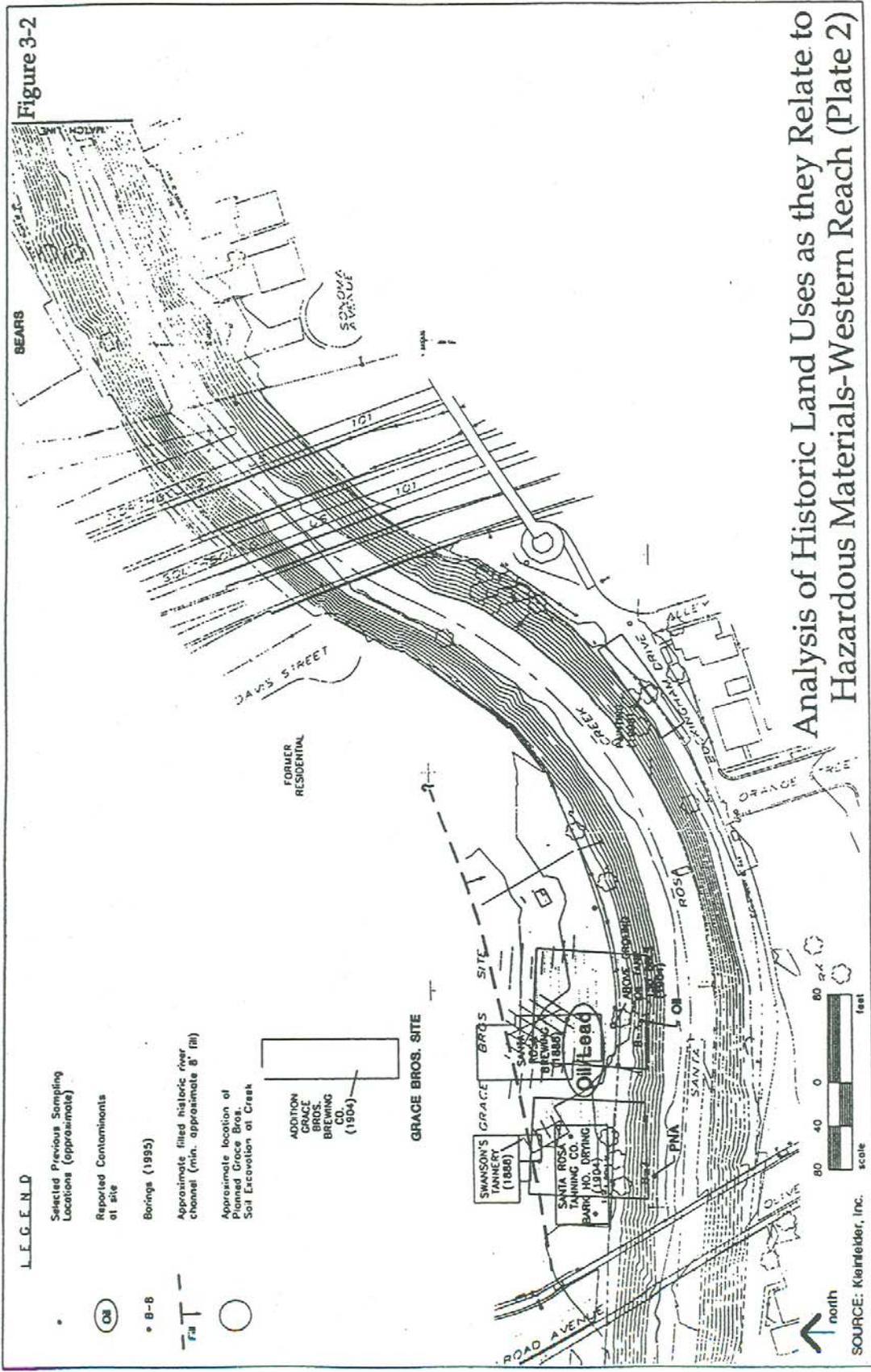
Native species or subspecies that have become vulnerable to extinction because of declining population levels, limited ranges, or rarity. The goal is to prevent these animals from becoming endangered by addressing the issues of concern early enough to secure long term viability for these species. Bird Species of Special Concern appear in Remsen, 1978.

CP = CDFG "fully protected" species (Sec. 4700, Chapt. 8; Sec. 5050, Chapt. 2; Div 6, Chapt. 1, Sec 5515)

California Native Plant Society Rare and Endangered Plant Lists

- List 1A. Presumed Extinct in California
- List 1B. Rare or Endangered in California and Elsewhere
- List 2. Rare and Endangered in California, More Common Elsewhere
- List 3. Species For Which More Information is Needed.
- List 4. Plants of Limited Distribution- A Watch List

Figure 3-2



Analysis of Historic Land Uses as they Relate to Hazardous Materials-Western Reach (Plate 2)

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The area investigated by Kleinfelder consisted of the section of the creek that is currently subject to planning and design by the project team. It is referred to as "Reach C"¹¹, between Santa Rosa Avenue to the east and Railroad Street to the west (See Figures 3-3 and 3-4).

Phase 1 field sampling involved drilling 18 bore holes for sampling spaced at regular intervals and key locations along the project length adjacent to several sites, where in-ground contamination was known or suspected to occur, to assess groundwater and saturated soil conditions underlying the concrete floor of the present Santa Rosa Creek channel. Bore holes were drilled to a maximum depth of 7 feet below the ground surface and penetrated shallow groundwater.

The Phase 2 field sampling (which involved a total of 42 bore holes along banks of creek) focused on obtaining soil quality information under the concrete/rock rip-rap sidebanks of the channel at elevations above the channel floor, particularly in areas where soil removal is anticipated to be the greatest for the Preferred Concept Plan.

In addition, during Phase 2, Santa Rosa Creek surface water samples were collected at 5 designated sampling stations identified in the WorkPlan.

(3) Findings of Phase 1 and Phase 2 Sampling Regarding Existing Conditions. Soils underlying the concrete floor and sidebank of the channel and throughout the project length consisted of a mix of silt, clay, sand and gravel intermixed with various rubble and debris, including brick fragments and concrete. The soils sampled beneath the floor of the channel were typically more coarse-grained consisting of more significant amounts of sand and gravel, which are characteristic of normally distributed creek sediments.

In borings K-1 through K-3 in the easternmost portion of the creek bottom, some fill material containing greater quantities of fine-grained silts and clays were observed along with some miscellaneous debris. In the shallow soils recovered in borings K-2 and K-3, an organic odor was noted along with some minor soil discoloration. Subsequent chemical analysis of these samples suggest that the observations were due to the presence of poly-nuclear aromatic (PNA) compounds and petroleum hydrocarbons. The presence of these compounds at those sampled locations are believed to be connected with the residual in-ground waste materials associated with the historic PG & E

¹¹The Prince Memorial Greenway Project consists of Reach "C" as identified in the Santa Rosa Creek Master Plan (1993). However, the Prince Memorial Greenway extends only to the east side of Railroad Avenue rather than all of the way to Pierson Street, as shown in the Master Plan.

Figure 3-3

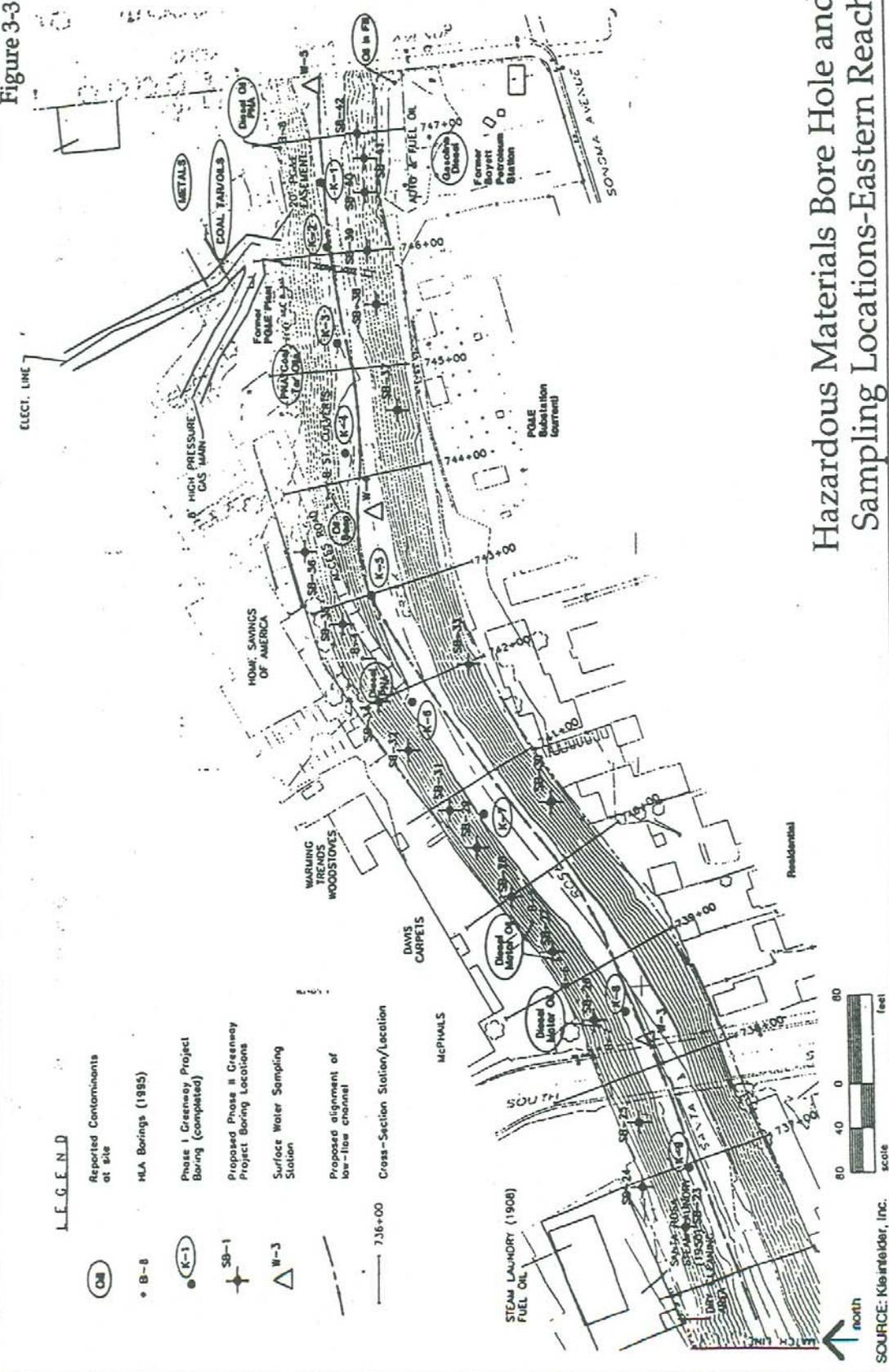
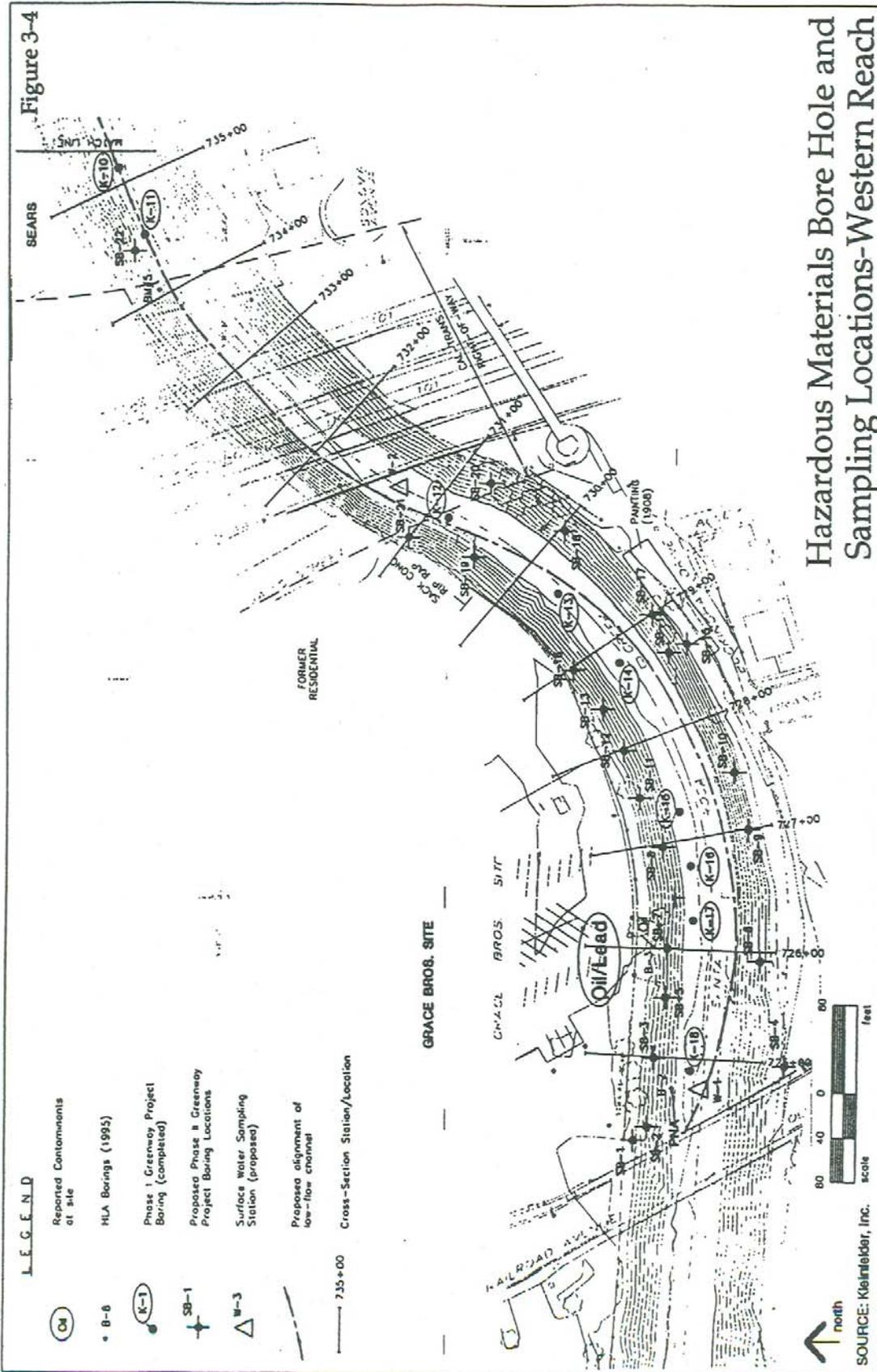


Figure 3-4



Hazardous Materials Bore Hole and Sampling Locations-Western Reach

PRINCE MEMORIAL GREENWAY • CITY OF SANTA ROSA

coal gassification plant once located on the adjoining the Group 137 Site property. Previous soil sampling by others in 1995 under the face of the creek sidebank above Kleinfelder borings K-1 through K-3, also uncovered petroleum hydrocarbons and PNA compounds associated with coal tar residues in the shallow fill material.

At boring locations K-7 and K-17 (See Figures 3-4 and 3-5) drilled at the bottom of the creek channel adjacent to the McPhail's property and the Grace Brothers site, respectively, immiscible globules of dark oil product emanated from saturated soils immediately underneath the concrete lining at those locations. The oil product was observed to float on the shallow water table exposed by the bore hole and consisted of several small 1/4-inch to 1-inch diameter globules.

Groundwater Conditions

Except as noted above, there were no obvious signs of water pollution in groundwater samples collected during fieldwork on this project. The odors and visual observations of oil on the shallow groundwater surface at boring locations K-7 and K-17 were the only recognizable field evidence that some level of shallow groundwater quality impairment may be present.

An overview of the general hydrologic conditions of shallow groundwater encountered during Phase 1 sampling activity was previously reported in Kleinfelder's November 12, 1996, Phase 2 Workplan. In that WorkPlan, it was noted that the groundwater levels observed in each boring K-1 through K-18 were similar to levels observed in the adjoining creek channel. Exceptions to this were noted at boring K-6 and possibly K-5 where the elevation drop of the creek channel bottom through this area is greatest. As a result, it is suspected that upstream creek waters escaping under the concrete floor of the channel become confined through this section and tended to rise further inside the exposed concrete cut during bore hole preparation. At boring location K-6, the water level rose slightly above the top of the concrete cutout and spilled overland. Elsewhere around boring K-6, water seeps were observed emanating from cracks in the concrete at the base of the sidebank.

Based upon background research and relevant experience on properties adjoining the creek, including observations made during Phase 1 field sampling work, it appears that groundwater elevations closely approximate those of the creek stage. Although communication between creek waters and surrounding groundwater is limited by the presence of the existing concrete channel lining, cracks and pipe penetrations (PVC pipe drains and tree wells) placed during original construction near the base of the channel allow for

some transmission between surface waters of the creek and local groundwater. During peak flood stage, a hydraulic gradient from the creek channel outward to adjoining unconfined groundwater bearing sediments would likely be generated. During low-flow conditions in the creek during summer stage, the hydraulic gradient would likely be reversed with surrounding shallow groundwaters more prone to recharge creek surface waters. During extreme drought years, it is possible that the surrounding groundwater table, and in-stream waters originating from the upper reaches of the Santa Rosa Creek watershed, would be insufficient to recharge the creek channel along this reach of the project. Lowering the elevation of the creek low-flow channel as part of creek restoration work may aid in reducing the likelihood of this occurring.

Surface Water Conditions

General surface water conditions of the creek were observed throughout the environmental assessment activity including during the low flow months of late summer through the two peak flood events beginning on December 10, 1996, and again on January 1, 1997. The significant rise in flood stage was accompanied by debris and high turbidity created by runoff. During the flood events, Kleinfelder staff observed petroleum hydrocarbons discharging from the B Street stormdrain culverts located on the north bank of the creek below the SCWA channel access roadway (See Figure 3-3). A recognizable rainbow-colored sheen on the culvert discharge waters and petroleum odor in the area was observed. The observed sheen persisted in the creek water approximately 30 feet downstream from the culvert.

Stormwater runoff entering the creek from various points throughout the Santa Rosa Creek watershed is expected to contain some amount of non-point source pollution, particularly early in the rainy season as accumulated pavement oils are first liberated. The discharge at the B Street culvert, however, is a point-source condition whose origin is reported to be an underground fuel release site near the Empire Building at Courthouse Square several blocks north of the creek. According to NCRWQCB staff, an old heating oil fuel tank at that location has reportedly been connected to the source of oil discharging from the B Street Culvert. NCRWQCB staff were notified about the observed discharge during the 1996-97 flood events and witnessed the condition themselves.

During low water conditions in late summer, oil residues were observed in pockets within the concrete sidebank beneath the discharge point of the B Street culvert. The minor quantity of water discharge observed periodically during summer months from these culverts was not observed to contain a rainbow sheen as was observed during winter flow conditions. A petroleum

odor was noticed in the air, however, during the summer months within approximately 20 to 30 feet downwind of these culverts.

Soil Conditions

The sample analysis program for both Phase 1 and Phase 2 work was completed in general conformance with the approved WorkPlans. Sample analysis included testing for the presence of a variety of light to heavy molecular-weight petroleum hydrocarbons ranging from "gasoline" (light fraction), to "motor oil" (heavy fraction) on nearly all samples collected. These samples were also analyzed for the presence of the light petroleum fraction product purgeable aromatic constituents which include benzene, toluene, xylenes, and ethylbenzene (BTXE). Selected samples were also analyzed for volatile or semi-volatile organic constituents. These include the chlorinated halocarbons (solvents) and poly-nuclear aromatic (PNA) compounds commonly associated with coal tars, respectively. Selected samples were also analyzed for various heavy metal content including lead, chromium, nickel, zinc, and cadmium. These samples were analyzed using approved EPA test procedures.

The results of these sample analyses are included with the groundwater sample results on data tables provided in Appendix A. See also Kleinfelder's *Environmental Assessment and Conceptual Remedial Alternatives Report*, Prince Memorial Greenway Project (March 18, 1997), which summarizes the Phase 1 and 2 sampling programs and results.

Summary of Analytical Results (For more detailed information and summary tables, see Appendix A)

- Petroleum Hydrocarbons: Petroleum hydrocarbons were the predominant pollutant type detected in samples throughout the project reach. While certain source sites are suspected of contributing a portion of the petroleum hydrocarbons detected within the project boundary, the majority of the petroleum hydrocarbons detected likely originate from non-specific historic sources, probably from within the fill material deposited along the creekbank over the past 100 years.
- Metals: The analytical results of soil and groundwater samples analyzed for heavy metals were generally reported in samples within the range of normally distributed background concentrations observed elsewhere throughout the Santa Rosa area and do not appear to pose a concern. In one sample collected from boring K-17, total lead was reported at a concentration of 180 mg/kg and total zinc was reported at a concentration of 160 mg/kg. These results are anomalous only in that they are several times greater than ambient

concentrations. These results appear consistent with data obtained during Grace Brothers Site investigation and remedial activity which identified that elevated lead and zinc was present in fill material in that area.

- Volatile Organics: One groundwater sample collected at boring K-10 during Phase 1 work at the bottom of the creek channel below the Sears Automotive Center was found to contain chlorinated volatile organic compounds (VOC). The reported concentrations of VOC (i.e. TCE, PCE, and cis-1,2, DCE) in the sample are slightly above minimum laboratory detection levels and ranged from 0.5 - 3 ug/l. These concentrations do not appear to pose environmental concerns or require remedial action measures.

The reported concentrations of these respective compounds are less than the primarily drinking water quality goal for these parameters. The presence of these volatile compounds may be attributable to historic nearby land uses which once included a former dry-cleaning operation at the site of the existing Sears Automotive Center. Volatile organic compounds such as PCE (tetrachloroethane) include the dry-cleaning solvents are commonly detected in connection with these types of operations.

- Semi-Volatile Organics: These compounds include the majority of polynuclear aromatic (PNA) hydrocarbons (i.e. anthracene, phenanthrene, benzopyrene, naphthene, etc.) commonly found in asphalts, coal tars, creosotes and other heavy molecular-weight petroleum products. The more significant concentrations and larger suite of PNA compounds detected were found in samples collected from borings drilled at the base of the creekbank on the channel floor below the Group 137 Site (boring K-2 and K-3). This finding is consistent with former historic Group 137 site uses as a coal gassification plant where PNAs and coal tar wastes are commonly found. Previous data collected on that site by others has confirmed the presence of residual PNAs and coal tars in fill soils. Elsewhere throughout the project area, sporadic detection of low concentrations of selected PNA constituents appears largely affiliated with the detected heavy molecular-weight oils in these same samples, except at boring SB-22 drilled adjacent to the A Street overcrossing, where PNA constituents were detected in a soil sample at slightly greater concentration.

b. Significance Criteria.

According to both CEQA and City of Santa Rosa Checklist of Environmental Significance, a project will have significant environmental impact if it would increase the risk of an explosion or the release of hazardous substances in the event of an accident or upset conditions, or result in possible interference with an emergency response plan or an emergency evacuation plan. In addition,

a project will result in a significant environmental impact if it would locate people on or adjacent to a potential health, or safety risk or violate any published federal, State or local standards pertaining to hazardous waste, solid waste or litter control.

c. Impacts.

Based on sampling data acquired within the two phases of field sampling described in the setting section above, Kleinfelder, Inc. developed remedial approaches to address specific environmental conditions in conjunction with developing creek renovation plans. Several meetings were held both internally, and with City personnel and with members of the Santa Rosa Creek Implementation Advisory Committee to review project developments.

Impact HAZ-1 (Potential Exposure of Contaminated Soils): Excavating portions of the creekbed and banks to achieve new channel profiles would result in excavation and exposure of some areas of contaminated soil.

With mitigation incorporated into project design (HAZ-1 (a)), and monitoring and potential supplemental sampling (HAZ-1 (b) and (c)), the potential impact would be reduced to a less than significant level.

Mitigation Measure HAZ-1:

- (a) *Excavation and Removal of Contaminated Soils:* As described in the project description, soil would be removed to achieve profile modifications. Some additional material may need to be excavated in the vicinity of known contaminants in locations that would not be isolated with cut-off walls or other protective mechanisms. This soil would be removed and hauled to an appropriate landfill or treatment location. The addition of impermeable linings would be utilized, as needed, to ensure that additional contaminants do not enter the channel (See Mitigation Measure HAZ-2). The creek bed or bank would be backfilled in these locations with clean soil and rock.
- (b) *Monitoring:* Construction field monitoring of the creek project would be conducted to observe soil conditions at the time of concrete removal to appropriately respond to possible field conditions not previously discovered during the course of previous site assessment.

- (c) *Potential Supplemental Sampling:* Exposed areas where soil character appears to differ substantially from that described in the pre-approved in-ground sample data may require supplemental sampling to achieve off-site disposal acceptance of materials generated. A contingency plan would be prepared that would include allowances for off-site stockpiling of a limited quantity of soil (if soils must be excavated and removed from the creek corridor immediately), or avoidance of the area until such time as supplemental in-ground sample data can be obtained for subsequent pre-approval with the selected landfill(s). Contingency plans, temporary soil stockpiling location(s) would be reviewed by local agency officials for their concurrence.

Impact HAZ-2 (Contaminants Entering Stream Channel): Removal of the concrete lining could allow contaminants in soils under the existing lining to enter the stream channel through erosion.

With the following approaches to mitigation built into the project design, this potentially significant impact would be reduced to a less than significant level.

Mitigation Measure HAZ-2: As described in the project description, the following mitigation would be built into project design:

- (a) *Concrete Lining:* The concrete channel would be replaced at the east end of the project area to minimize stream scour, and isolate known contaminants, similar to the existing condition. The east portion of the project represents the area where potentially more significant residual soil pollution would remain in-ground following project construction.
- (b) *Slope Stabilization and Separation:* Over the balance of the project reach where residual low concentration petroleum hydrocarbon may remain within underlying sidebank soils, standard slope stabilization and appropriate separation measures would be incorporated in the project to include:
- engineered terraces and slopes
 - rock placement
 - retention and enhancement of existing concrete liner
 - Geotextile fabric
 - Ornamental landscape (both hard and soft; i.e. railway pavements and planting zones)

Impact HAZ-3 (Floating Oil Product): Floating oil product under the existing concrete liner was observed on shallow groundwater at two locations along the project reach and could be discharged to creek surface waters during, and after, project construction.

Mitigation measures to address this potential impact were incorporated into project design and construction plans, as follows:

Mitigation Measures HAZ-3: As described in the project description, the following mitigation measures are built into the project design:

- (a) *Removal and Control During Construction*: Areas around borings K-7 and K-17, free-floating oil product observed in exposed sediments upon concrete liner removal will be removed by pumping/skimming devices and/or through the use of adsorbent materials as appropriate. Oil affected shallow sediments in these areas will be excavated and disposed offsite at appropriate landfills as necessary. Adsorbent booms will surround the perimeter of these construction zones to contain and protect against fugitive floating oil discharges, and surface flow will be diverted around these work areas.

- (b) *Construction of Cut-off Walls*: As described in the project description, in areas where floating oil product has been identified, creek improvements will include the placement of cut-off walls beginning at the base of the creek channel in these areas. In the absence of a concrete liner, these cut-off walls would reinstate the barrier element that the concrete liner provided in isolating floating oil product to shallow groundwaters adjacent to the base of the creek channel, thereby preventing its discharge into surface waters of the creek. The cut-off walls will be constructed of compatible/impermeable material and extend below saturated sediments to depths of 2 feet below the elevation of the base of the adjacent low flow channel. The cut-off walls will extend laterally beyond the limit of observed oil impact parallel to the creek and key back into, and under, the sidebank slope. The depth of the cut-off walls are anticipated to be approximately 7 feet and will penetrate 5 feet, or more, beneath the shallow groundwater table surface (e.g. elevation of sediment surface under present concrete liner) which exists during normal dry summer months. This should provide sufficient depth margin during significant drought years when lowering of the shallow water table (and any floating product) might occur.

Impact HAZ-4 (Commingling Groundwater/Surface Water): Removal of the concrete lining could increase the potential for low-level non-point source groundwater pollution to commingle with creek surface waters along the project reach through increased surface area contact between these waters.

Significant point source (i.e. B Street Stormdrain discharge) and lesser non-point source pollution discharges to the creek have been documented or suspected from stormdrain effluent along portions of the watershed. As a consequence of rapid dispersion and/or dilution in surface waters to below levels of analytical instrument detection, sampling at five designated surface water sampling stations did not result in reportable concentrations of possible chemicals of concern.

This potentially significant impact would be reduced to a less-than-significant level with the following mitigation measure:

Mitigation Measure HAZ-4:

- (a) *Monitoring:* On-going monitoring of surface water quality would be conducted as part of post-construction maintenance of the renovated creek corridor. A surface water quality program would be included to evaluate seasonal performance of project mitigation measures. Monitoring program plans would be reviewed and approved by appropriate local regulatory agencies.
- (b) *Marsh Areas:* Restoration plans include the planting of aquatic macrophytes (to the degree feasible while monitoring maintenance of the "n" value (channel roughness) to maintain flood control capacity) such as cattails and other reed plants in slower water ponding areas to encourage nutrient uptake and filtering of available organic compounds in the water column. The use of aquatic macrophytes in strategic efforts to treat nutrient-rich waters and decrease biological oxygen demand (BOD) is well established. Primarily used as a tertiary treatment of wastewater, aquatic macrophytes are also recognized as adding a dimension of treatment to waters affected by organics such as chlorinated and petroleum hydrocarbons, as well as inorganic compounds such as heavy metals. While not a primary treatment element, development of marshes in the creekbed is anticipated to have an overall beneficial impact on water quality and habitat improvement.

Boyett Alternate Concept

If the Boyett parcel is not developed as a park as part of the Prince Memorial Greenway project, impacts related to hazardous materials would be reduced. The site would not be subject to grading; the existing condition would be maintained and soils containing hydrocarbons would not be further exposed. It is likely, however, that any future use of the site would involve some level of clean-up or capping to allow for subsequent use.

Cumulative Impacts

Development of the Prince Memorial Greenway project together with other projects in the vicinity would result in clean-up or removal of soils in some areas, and isolation of contaminated soils in other areas, such that the overall effect would be comparable or improved as compared to the existing condition.

3.5 Geology and Seismicity

a. Setting.

(1) Local Geologic Setting. The site is located along the Santa Rosa Creek within the Santa Rosa Valley area of central Sonoma County. The Santa Rosa Valley is underlain by several hundred feet of unconsolidated alluvium consisting of stratified sands, clays, silt and gravel. Soil borings in the vicinity of the U.S. Highway 101 bridge over Santa Rosa Creek indicate soil that is consistent with the alluvium described above. Groundwater in the valley is generally less than 30 feet below the ground surface and fluctuates significantly seasonally.

(2) Site Conditions. The site is located in downtown Santa Rosa on the Santa Rosa Creek. In general the project area is highly developed. Box culverts form a part of the Creek upstream of the project. Aerial photographs indicate that the current creek channel was wider in the past and significant fills have been placed as development has encroached on the creek. Within the project area the stream bed is partially lined with grouted rock and cement. A number of overhead structures (bridges) have foundations and piers or bents in the Creek channel.

(3) Seismicity. The site vicinity is considered seismically active. The junction of the Healdsburg and Rodgers Creek Faults is located within the vicinity of the project site. The San Andreas fault is approximately 20 miles to the southwest and the Macaama fault - 6 miles to the north. Numerous

other faults lie relatively close to the project. The "Planning Scenario for a Major Earthquake on the Rogers Creek Fault and in the Northern San Francisco Bay Area" prepared by the California Department of Conservation - Division of Mines and Geology (Special Publication 112) indicates that a moment magnitude 7.1 earthquake on the Rodgers Creek Fault has a reasonable probability of occurrence within the next 50 years. The design event may result from an earthquake on the Rodgers Creek Fault due to its proximity.

Based on geotechnical studies for nearby highway projects, the maximum credible rock acceleration (a seismic design parameter) is expected to be on the order of 0.6 g. Because of the high potential rock acceleration, deep alluvium and high groundwater conditions, the site seismicity is an important consideration in engineering and design.

(b) Significance Criteria.

CEQA indicates that a project results in a significant impact to the environment if it would:

- 1) result in fault rupture, seismic ground shaking, and/or seismic ground failure including liquefaction; seiche, tsunami, or volcanic hazard;
- 2) result in landslides or mudflows; erosion, changes in topography or unstable soil conditions from excavation, grading or fill; subsidence of land; or expansive soils;
- 3) involve modifications to unique geological or physical features.
- 4) be located in an Alquist Priolo Act Special Study Zone.

c. Impacts.

Impact GEO-1 (Slope Movement): The channel side slopes are, in places, relatively steep and may slip out during a major earthquake.

While this is considered a less than significant impact, the following mitigation measure is recommended to further reduce the level of impact.

Mitigation Measure GEO-1: A Standard Soils Report, including a detailed engineering investigation, would be prepared as part of the improvement plan to ensure adequate reinforcement of the channel banks.

Impact GEO-2 (Bridge Damage): Bridges in the project area could be subject to damage in a major earthquake, creating potentially hazardous conditions for trail users.

Caltrans reviewed the condition of all bridges in the State (including local agency bridges) following the Northridge Earthquake. The only bridge in Santa Rosa that was determined to require seismic retrofitting was over Santa Rosa Creek at E Street, near the Federal Building in downtown Santa Rosa.¹²

Mitigation Measure GEO-2: None required.

Impact GEO-3 (Sound Wall Damage): An earthquake in the project area could affect the structural integrity of the sound wall adjacent to Burbank School, creating a potential hazard for trail users in this vicinity.

The City would follow standard practices following a major earthquake, closing access to any locations or structures considered to be unsafe. While not considered a significant impact, the following mitigation measure is recommended to further reduce the level of impact.

Mitigation Measure GEO-3: As part of the Standard Structural Report for the project, the method of drilling a portal through the bottom of the existing sound wall, and the potential need for additional reinforcement would be evaluated to ensure structural stability is not compromised.

3.6 Land Use and Planning

a. Setting.

At Santa Rosa Avenue, Santa Rosa Creek emerges from the box culvert and extends downstream in a grouted rock trapezoidal channel that currently serves primarily as a flood control channel.

For Reach "C", the channel and the adjacent maintenance roads are owned by the Sonoma County Water Agency. Private property lines border these maintenance roads, except for the Lawry/Group 137 property, the location of the National Bank of the Redwoods, where the property line extends to the

¹²Telephone communication with Ed Baker, Supervising Engineer, City of Santa Rosa Department of Public Works, July 1, 1997.

centerline of Santa Rosa Creek.

(1) Existing Land Uses in the Project Vicinity. Land uses adjacent to the creek corridor include commercial, residential and public/institutional uses. Most of these uses "back onto the creek" at this time.

Reach "C" is characterized by downtown commercial businesses and sites within the City redevelopment district along the north side of the creek, and mostly residential and light manufacturing uses on the south side. On the north side of the creek, existing uses consist of the Home Savings Bank of America and other office uses, McPhails Appliances, and Sears Auto Center. On the south side, the Boyett site adjacent to Santa Rosa Avenue is vacant and was used previously as a gas station. Proceeding west along the creek, land uses consist of a PG&E substation (with a bridge supporting gas and electric lines spanning the creek from south to north), and single and multi-family residences fronting onto Sonoma Avenue extending to "A" Street. Many of the residences fronting on to Sonoma Avenue have carriage units and garages at the rear of the property adjacent to the creek. On the south side of Sonoma Avenue, the Church of One Tree provides a public access link from Sonoma Avenue to Juilliard Park, a public park to the south. Between "A" Street and US Highway 101, land uses consist of single and multi-family housing on both sides of Sonoma Avenue with Burbank School at the end of Sonoma Avenue adjacent to U.S. Highway 101. An existing pedestrian overcrossing with spiral ramps links Burbank School with the Olive Park neighborhood.

US Highway 101 divides this reach into eastern and western segments, with the three-block eastern segment skirting downtown, and the roughly two-block western segment where the planned hotel/conference center site (within the Redevelopment District) lies vacant to the west of the freeway. On the south side of the creek, the Olive Park Neighborhood and Olive Park are located adjacent to the creek, but currently dense vegetation screens the creek from view.

Because the creek is screened from most adjacent land uses, the corridor is currently cut off from private and public view; and, particularly in the vicinity of the U.S. 101 overpass, is used by homeless people seeking shelter in an area where they will not be disturbed.

(2) Relevant Plans and Policies: Plans and policies that provide a framework with which the proposed project must be consistent include the following:

- General Plan Land Use Designations: On the east side of U.S. Highway 101, land north of the creek and a small area to the south of the creek

bordering Santa Rosa Avenue is designated Retail and Business Service. The remaining acreage on the south side is designated as Medium-Density Residential (8-18 units per acre) and Public/Institution at the location of the Burbank School. On the west side the freeway, the Grace Brothers site is designated Retail and Business Service, and the Olive Park Neighborhood is designated as a Low-Density Residential area (2-8 units per acre), with Olive Park as a designated park bordering the creek.

Key policies from the *General Plan Vision of Santa Rosa in 2020* that relate to the Prince Memorial Greenway project include the following:

- Open Space areas are preserved around the City. Pathways follow waterways which are restored to a natural state.
- The City is livable, well designed and maintained. Entries into the City along the freeways and arterial streets welcome motorists to Santa Rosa and provide views to the surrounding hillsides. Trees, landscaping and riparian habitat along waterways enhance the visual quality of the community.
- Citizen and volunteer participation are extensive in governance and service provision.

General Plan Goals and Policies that are applicable to the proposed project:

- *Goal LUR4: Protect Santa Rosa's landscape and natural environment.*
 - *Policy LUR-4b:* Ensure that all new structures abutting creek corridors are appropriately designed and oriented with respect to the creek and enhance its appearance. Promote design modifications in existing buildings to achieve the same result.
- *Goal LUD3: Restore and improve Santa Rosa Creek.*
 - *Policy LUD-3a:* Restore Santa Rosa Creek as a naturalistic environment for use as a valuable access and circulation function for bicyclists and pedestrians between railroad square and downtown.
 - *Policy LUD-4b:* Strengthen the pedestrian linkages throughout the Core Area, particularly between and within Railroad Square and Downtown.

■ *Goal OSC1: Conserve and enhance waterways.*

• *Policy OSC-1a:* Preserve waterways by educating residents not to dump yard waste into creeks or other wastes such as motor oil, into storm drains which empty into creeks.

• *Policy OSC-1b:* Avoid modification to waterways, except for restoration or enhancement, unless no other alternative is available to protect human health, safety and welfare.

• *Policy OSC-1c:* Ensure construction adjacent to creek channels is sensitive to the natural environment.

■ *Goal H2: Provide housing for household with special needs.*

• *Policy H-2a:* Continue existing programs for persons with special needs, including disabled persons, elderly persons, the homeless, large families, and single parent households. Such programs include those noted in the previous section such as rehabilitation loans, rental assistance, and Section 8 certificates and vouchers.

• *Policy H-2d:* Provide funding to groups providing shelter and other services to the homeless.

• *Policy H-2e:* Obtain available federal and state funds to increase the number of beds in homeless shelters, with a goal of providing shelter for 200 persons to meet Santa Rosa's unmet need.

• *Policy H-2g:* Support use of the National Guard Armory for wintertime shelter for homeless adults.

■ Core Area Development Plan and Policies: The City of Santa Rosa's Core Area Development Plan (CADP), September 17, 1991, is applicable to creek planning in Reach "C". The CADP land use plan designates the creek frontage from Santa Rosa Avenue to Pierson Street as "Central Downtown Retail Business", allowing commercial development of regional importance, with development of up to eight to ten stories. Also permitted are higher density residential uses above 30 units per acre where special circumstances prevail. Mixed uses involving commercial on the ground floor and residential units above are also encouraged. The Santa Rosa Creek is designated as a park. The Plan also proposes a parking garage adjacent to the creek on the convention center site (See Figure 3-5).

Figure 3-5

Land Use Designations in the Project Vicinity



SOURCE: Core Area Development Plan, City of Santa Rosa

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- **Santa Rosa Creek Master Plan:** The Santa Rosa Creek Master Plan is a long-range document establishing a broad "blueprint" for attaining a community vision to preserve healthy portions of Santa Rosa Creek, restore degraded areas, and reestablish parts of the creek as a place for human use and appreciation. The Plan addresses fish and wildlife habitat, flood control, recreational opportunities, and a transportation alternative to the automobile.

As stated in the Master Plan:

Creek Promenade: Reach "C" is the commercial core of the City and the Master Plan offers the opportunity to integrate commercial uses with the restored creek environment. A "creek promenade" will be created as the creek is integrated into the design and function of adjacent uses, as paths are constructed to connect downtown and Railroad Square, as lighting and benches are placed on trails, as businesses open to the creek and draw people to the creek, and as the creek is restored. It will be a place to stroll, to get to shops and businesses, to get from downtown to Railroad Square, a place to watch nature be reestablished in the creek, a place to rest and a place to eat.

Hotel/Conference Center Site (Grace Brothers Site): The hotel/conference center site is located on the north side of the creek between Highway 101 and Railroad Street by the Days Inn Hotel. This is a Santa Rosa Redevelopment Agency site, which is currently in the process of attracting a hotel/conference center use. It will be important for the creek promenade to incorporate the creek into the design of the site using one or more of the design options. For example, a terraced urban plaza could provide access down to the creek for both the public and hotel visitors. Other amenities, such as fountains and a small amphitheater, could also enhance this urban creek frontage. The objective, as with all adjacent land uses, is to have a mutually beneficial interaction between the Greenway and the site.

b. Significance Criteria.

The CEQA Guidelines and the Santa Rosa Initial Study of Environmental Significance state that a project would result in a significant land use impact if:

- 1) there is substantial incompatibility between the proposed project and existing adopted plans and policies;
- 2) the project would result in an adverse change in land use;

- 3) the project would result in potential incompatibility between the proposed project and existing development.

c. Impacts.

The project is consistent with existing plans and policies and is anticipated in the City's planning documents. While the Master Plan EIR identified a potential significant impact relating to removal of three residences in the vicinity of Olive Park, the project as proposed would not affect these residences.

Restoration of the creek is anticipated to create a public amenity that would serve to draw people to the area, and that overtime, many uses along would reorient themselves toward the creek with restaurants, cafes, and other creek-oriented development.

Creating a greenway corridor, linking the downtown with Railroad Square, and encouraging creek-oriented development along the corridor would all result in beneficial land use impacts. The greenway corridor would likely create a positive synergistic effect on the redevelopment of underutilized parcels in the vicinity.

As described in the EIR on the Santa Rosa Creek Master Plan, the change in land use within Reach "C" is anticipated to result in a beneficial impact; use of the creek corridor would be converted from exclusive flood control use to the multiple uses afforded by a greenway corridor.

Impact LU-1 (Loss of Privacy/Unauthorized Access): Residences along the creek would experience some loss of privacy and unauthorized access due to the addition of creek corridor paths.

The residences that would be most affected by the creek corridor, consist of the single and multi-family units along Sonoma Avenue. However, the pedestrian path on the south side of the creek is located at the 2-year storm level at an elevation. The houses adjacent to the creek corridor are at the top of the bank above the 100-year storm level; therefore, site distance between the path and residences would be interrupted by the bank, and thus protect the privacy of the residences.

The bicycle/pedestrian path at the top of the bank on the north side of the creek channel would not be anticipated to result in adverse impacts to commercial uses, and would encourage creek-oriented development such as restaurants or cafes in the future.

Potential developers of a hotel/conference facility on the Grace Brothers site have also raised concerns about privacy and the relationship of their facility with the creek project. At this time, connection of the Prince Memorial Greenway to Railroad Square is anticipated along Railroad Street (as part of a future project), rather than through the Grace Brothers site. However, more creek-oriented development occurs over time, it is anticipated that developers of the hotel/conference facility would create greater opportunities for the site to relate to the greenway corridor.

Along Reach C, loss of privacy is a less-than-significant impact; however, the following mitigation measure is recommended to further reduce the level of impact.

Mitigation Measure LU-1:

- (a) Screening with vegetation or fencing would be provided where needed along the pathway to protect the privacy of adjacent uses and discourage unauthorized access. In addition, patrols by the Police Department, or other entities could provide security along the pathway.
- (b) In order to prevent people from continuing in the creek corridor beyond the limits of the project, warning signs would be posted and fencing installed where feasible.
- (c) Proposed lighting along the multi-use trail would be designed to minimize impact on adjacent or nearby residential uses.

Impact LU-2 (Greater Public Access): Development of the greenway corridor would provide greater public access to the creek.

Providing greater access to the creek is considered a beneficial impact of the proposed project. In areas where paths would cross public property, such as adjacent to McPhail's Appliances and the National Bank of the Redwoods, the granting of access would be at the discretion of private property owners, and access easements or direct purchase of the path area would be required.

While not considered significant, the following mitigation measure would further reduce the level of impact.

Mitigation Measure LU-2: Provision of access through private property to the creek corridor would be at the discretion of private property owners. Easements or direct purchase would be negotiated with willing property owners.

Impact LU-3 (Catalyst for Creek-Oriented Development): The Prince Memorial Greenway creek promenade would serve as a catalyst for encouraging future creek-oriented development.

Development of the greenway corridor and encouraging greater public use would serve as a catalyst for the development of future uses that would benefit from location along the creek. This impact is a beneficial impact of the project.

Mitigation Measure LU-3: None required.

Impact LU-4 (Homeless): Proposed project would discourage the existing, unofficial use of the U.S. Highway 101 undercrossing and vicinity by the homeless.

Development of the proposed project would draw members of the public to the creek corridor. By opening up the corridor for public use, the project would make the area less attractive to homeless people currently living in the vicinity of the U.S. Highway 101 overpass/undercrossing. However, as a well designed public space, the Prince Memorial Greenway project would provide public spaces for all members of the community to enjoy.

As stated above, the General Plan sets forth goals and policies to provide a framework for addressing the needs of the homeless population in Santa Rosa, which is estimated to be 673 persons.¹³ Of this number, approximately 144 are unsheltered. According to the General Plan, comparing the estimated number of homeless persons in Santa Rosa to the number of beds, there is a remaining need of 83 beds during winter months when the Armory¹⁴ is open, and 203 the rest of the year. The following is included of the City's list of Housing Needs and Qualified Goals (1996-1999):

Promote development of 200 beds in a transitional housing setting. This addition will allow Santa Rosa to meet its currently estimated unmet need for housing for homeless people.

Mitigation Measure LU-4: None required.

¹³The City of Santa Rosa General Plan indicates the U.S. Department of Housing and Urban Development estimated this number in 1995

¹⁴Ongoing use of the Armory is uncertain. The City of Santa Rosa is in the process of trying to identify additional facilities. (Telephone Communication with Karen Weeks, Housing and Community Development Department, July 2, 1997)

Boyett Alternate Concept Plan

If the Boyett Park is not developed as part of the Prince Memorial Greenway project, access and opportunities for channel enhancement would be more limited; however, this alternate would not result in a significant impact.

Cumulative Impacts

Implementation of the proposed project together with other projects in the vicinity would create public amenities and, therefore, have the tendency to draw greater numbers of the public into the downtown.

Encouraging greater public use of the creek corridor, strengthening the link between downtown and Railroad Square, and the linkages with other parks such as Juilliard Park, Luther Burbank Park, and Olive Park and facilities such as City Hall and Santa Rosa Plaza, would all would contribute to creating an increasingly vital and bicycle/pedestrian-friendly city center.

3.7 Transportation, Circulation and Bikeways

a. Setting.

The proposed Prince Memorial Greenway consists of both bicycle and pedestrian facilities within the Santa Rosa Creek channel between Santa Rosa Avenue and Railroad Street. The project is one component of the Santa Rosa Creek pathway system, part of which (2.7 miles) is already constructed and in use from Fulton Road to Pierson Street. The project would complete a major gap in the pathway system and in the City's bikeway system, as identified in the 1994 Santa Rosa Bicycle Master Plan. The project was the highest ranked pathway identified in that Plan. The project is also identified and evaluated in the Santa Rosa Creek Master Plan and EIR, including an evaluation of circulation and parking impacts.

The project would serve a vital transportation function by providing access between west and east Santa Rosa for bicyclists, pedestrians, and others. Currently non-motorized movement between west and east central Santa Rosa must occur along the Third Street undercrossing, or a pedestrian bridge. These crossings are either difficult to access, are indirect, do not comply with the Americans with Disabilities Act (ADA), and/or require pedestrians and bicyclists to cross busy intersections. The project would address all of these deficiencies, while providing an aesthetic experience.

Roadways

Santa Rosa Creek bisects the center of Santa Rosa and crosses under virtually all of the major north-south arterial streets. The project begins at Santa Rosa Avenue, a major north-south arterial that links downtown with southeast Santa Rosa including a major commercial strip area. The project crosses under "A" Street, a local serving street, U.S. Highway 101, a major north-south highway, and terminates at Railroad Street, another local serving street on the west side of Santa Rosa.

Pedestrian Access

Within the project boundaries, Santa Rosa Creek is currently fenced and not accessible by pedestrians. Pedestrians must use either an existing overhead bridge immediately south of the creek, or sidewalks along Third Street as it crosses under U.S. 101. Where the creek is accessible by pedestrians on the western and eastern parts of the City, pedestrians enjoy the quality walking environment. The Santa Rosa Creek Master Plan states that the project has a "greater potential (for) pedestrian accessibility (...) than any of the other reaches, because of the number of bridges which cross the creek in this vicinity." (p. 108).

Bicycle Facilities

As was mentioned previously, the project has already been identified by a Bicycle Advisory Committee, the general public, and City staff as a top bicycle priority for Santa Rosa in the 1994 Bikeway Master Plan. There is no existing bicycle access along the corridor at this time.

b. Significance Criteria.

CEQA indicates that a project will normally have a significant impact on transportation and circulation if it would result in:

- 1) the potential for loss of privacy and unauthorized access to properties made more accessible by proposed paths;
 - 2) physical disruption to existing transportation facilities or barriers for pedestrians or bicyclists;
 - 3) potential for bodily harm due to the placement or design of proposed facilities (would introduce sharp curves, etc.);
 - 4) significant increases in vehicular traffic or demand for parking.
-

- 5) inadequate emergency access or access to nearby uses;
- 6) conflict with adopted policies supporting alternative transportation;

c. Impacts.

The project would not conflict with adopted policies supporting alternative transportation; it would provide an essential element in the City's alternative transportation system.

Impact TRANS-1 (Loss of Privacy/Unauthorized Access): The proposed project could result in the loss of privacy and unauthorized access to properties made more accessible by the proposed pathways.

The Santa Rosa Creek Master Plan EIR addresses this issue and states that the "impacts (to private properties) would be minor (...) because the housing and businesses were built with the full knowledge of the existence of maintenance roads lining the publicly-owned creek channel. With the exception of a few single-family units and multi-family projects, housing is oriented to streets rather than the creek, and rear yards adjacent to the corridor are lined with fences which now provide some measure of privacy."

The Master Plan also correctly states that problems with criminal activity are directly linked to surveillance, and that a well-designed and well-used pathway would not only enjoy exposure to the general public but be more accessible by the Police Department.

This impact is not considered significant, but the following mitigation measure would further reduce the level of impact:

Mitigation Measure TRANS-1: See Mitigation Measure LU-1.

Impact TRANS-2 (Effects of Future Widening of US 101): The proposed project could be affected by plans for future widening of US 101.

The project may be impacted by future plans to widen U.S. 101, which are not defined at this juncture.

While not considered significant, adherence to the following mitigation measure would further reduce the level of impact.

Mitigation Measure TRANS-2: Caltrans would review the proposed design and identify, to the extent feasible, how the future widening may affect the proposed pathway and creek improvements.

Construction and phasing impacts and agreements should also be identified early in the process to minimize impacts to the project and future widening.

Impact TRANS-3 (Bicycle Safety): The proposed project could result in greater risk of bodily harm due to the placement or design of proposed facilities.

The project would generally enhance connectivity for pedestrians and bicyclists and would have no appreciable impact on existing streets or parking facilities. The project does, however, identify new crosswalks, and alterations to the U.S. 101 undercrossing, and has the potential to have an impact on existing transportation facilities.

The project would be designed to accepted standards for bikeways and trails and would provide a reasonable level of safety for users. The following mitigation measures would ensure that in the process of developing construction drawings from the conceptual plans, that all safety issues are adequately addressed.

Mitigation Measure TRANS-3 (a): The "multi-use trail" identified on the north side of Santa Rosa Creek would be designed and operated to meet accepted standards, as set forth below.

- (1) All advisory and warning signs, striping, and pavement markings would be provided to meet standards developed for Class I bikeways in Section 2376 of the Streets and Highway Code and the Manual on Uniform Traffic Control Devices (MUTCD). Supplementary informational or regulatory signs (such as hours of operation, closure during flood conditions, etc.) may also be included as needed.
- (2) Street crossings shown at Santa Rosa Avenue would be designed to City of Santa Rosa and Caltrans standards, including crosswalk location, width, striping, and warning signs. The need and location of warning lights or traffic lights would be determined by the City. Signal controls are generally recommended at all mid-block trail crossings where the average daily traffic (ADT) volumes exceed 15,000 vehicles per day, average speeds are 45mph or over, street widths exceed 40 feet, and the nearest existing signalized intersection is over 350 feet. All new street crossings should have adequate overhead lighting.

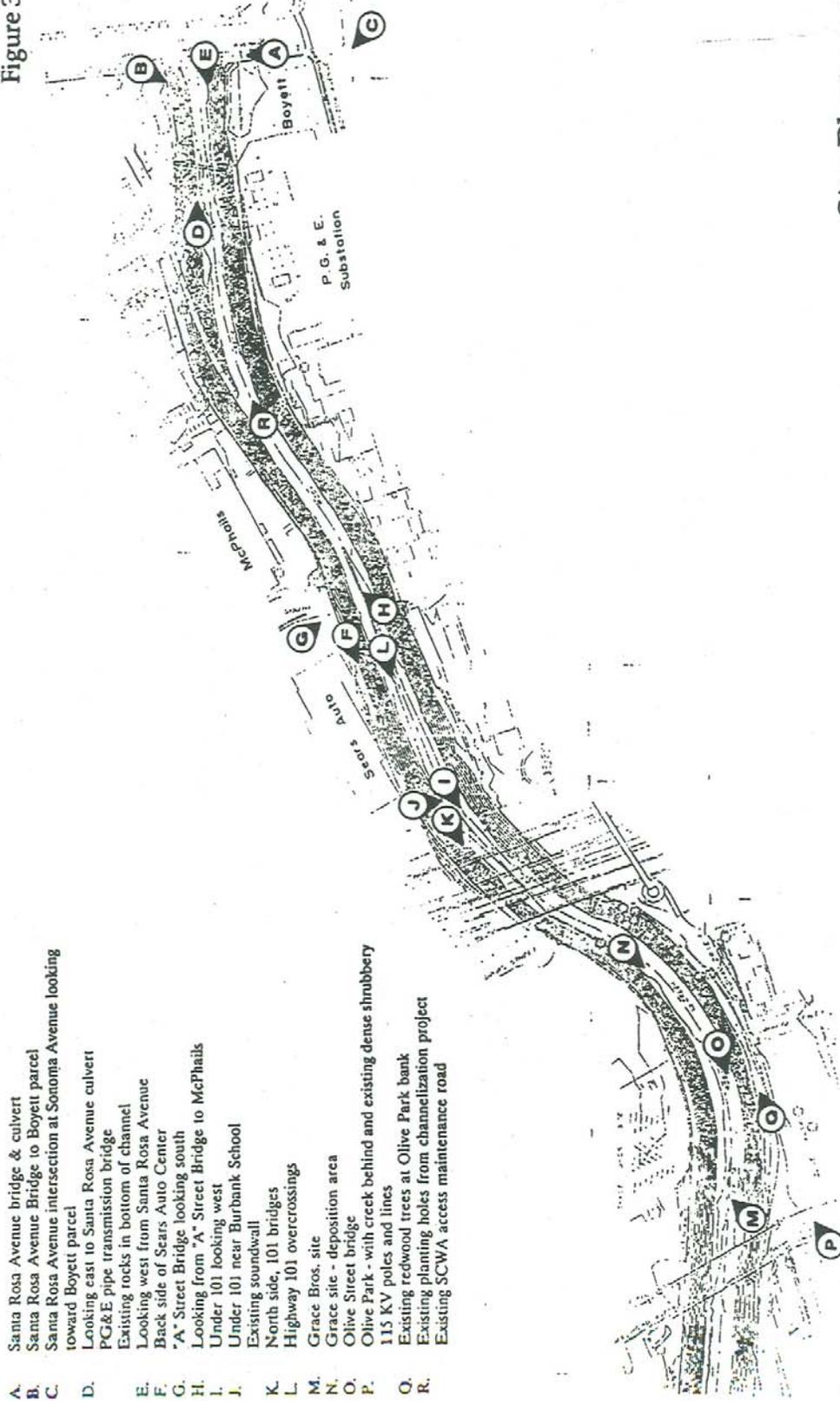
-
- Existing sound wall
 - K. North side, 101 bridges
 - L. Highway 101 overcrossings
 - M. Grace Bros. site
 - N. Grace site - deposition area
 - O. Olive Street bridge
 - P. Olive Park - with creek behind and existing dense shrubbery
115 KV poles and lines
 - Q. Existing redwood trees at Olive Park bank
 - R. Existing planting holes from channelization project
Existing SCWA access maintenance road

b. Significance Criteria.

The CEQA Guidelines and the Santa Rosa Initial Study of Environmental Significance indicate that a project will result in a significant environmental impact if it would result in any of the following:

- 1) have a substantial, demonstrable negative aesthetic effect.
- 2) conflict with applicable design criteria of state and local agencies;
- 3) degrade or obstruct existing public viewsheds from or across the project site, including scenic features associated with designated scenic highways;
- 4) change the existing visual quality and character at the project site in a manner that is inconsistent with other uses which currently exist or have been approved for the area;
- 5) increase light and glare in the project vicinity so as to cause a hazard or nuisance condition;
- 6) significantly reduce sunlight or introduces shadows in public areas.

Figure 3-6

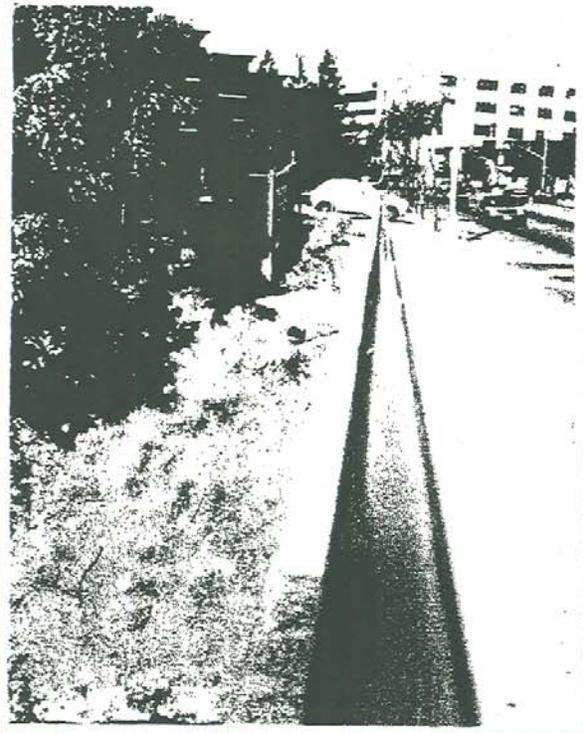


Site Photograph Locations

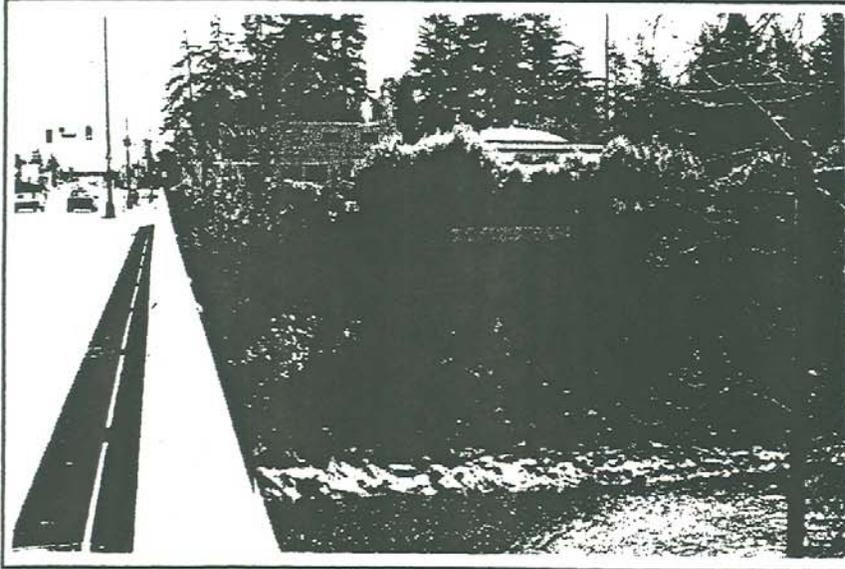
- A. Santa Rosa Avenue bridge & culvert
- B. Santa Rosa Avenue Bridge to Boyett parcel
- C. Santa Rosa Avenue intersection at Sonoma Avenue looking toward Boyett parcel
- D. Looking east to Santa Rosa Avenue culvert
- E. PG&E pipe transmission bridge
- F. Existing rocks in bottom of channel
- G. Looking west from Santa Rosa Avenue
- H. Back side of Sears Auto Center
- I. "A" Street Bridge looking south
- J. Looking from "A" Street Bridge to McPhails
- K. Under 101 looking west
- L. Under 101 near Burbank School
- M. Existing soundwall
- N. North side, 101 bridges
- O. Highway 101 overcrossings
- P. Grace Bros. site
- Q. Grace site - deposition area
- R. Olive Street bridge
- S. Olive Park - with creek behind and existing dense shrubbery
- T. 115 KV poles and lines
- U. Existing redwood trees at Olive Park bank
- V. Existing planting holes from channelization project
- W. Existing SCWA access maintenance road

↑ north
SOURCE: CMM&H

Figure 3-7



A. Santa Rosa Avenue bridge and culvert



B. Santa Rosa Avenue Bridge to Boyett parcel

SOURCE: CMM&H

Site Photographs

PRINCE MEMORIAL GREENWAY • CITY OF SANTA ROSA

Figure 3-8



C Santa Rosa Avenue intersection at Sonoma Avenue looking toward Boyett parcel



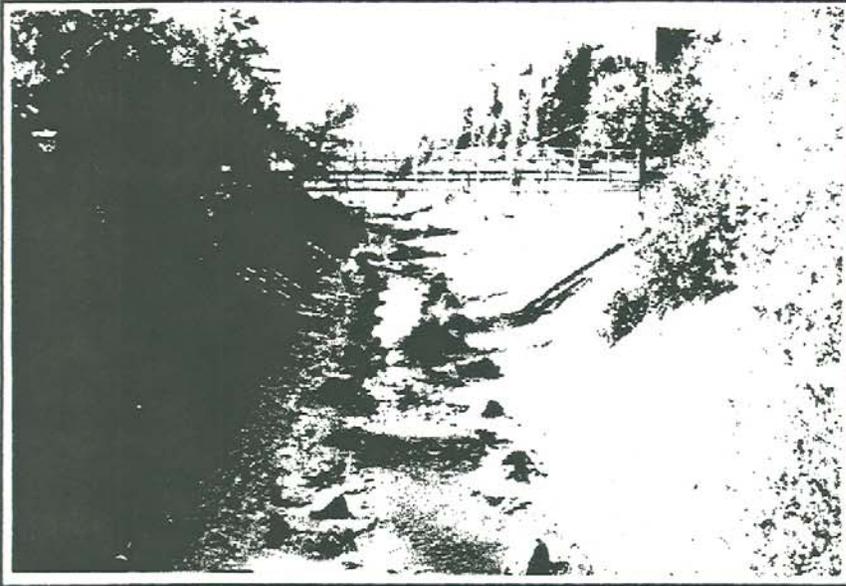
D. Looking east to Santa Rosa Avenue culvert and PG&E pipe transmission bridge. Existing rocks in bottom of channel.

SOURCE: CMM&H

Site Photographs

PRINCE MEMORIAL GREENWAY • CITY OF SANTA ROSA

Figure 3-9



E. Looking west from Santa Rosa Avenue



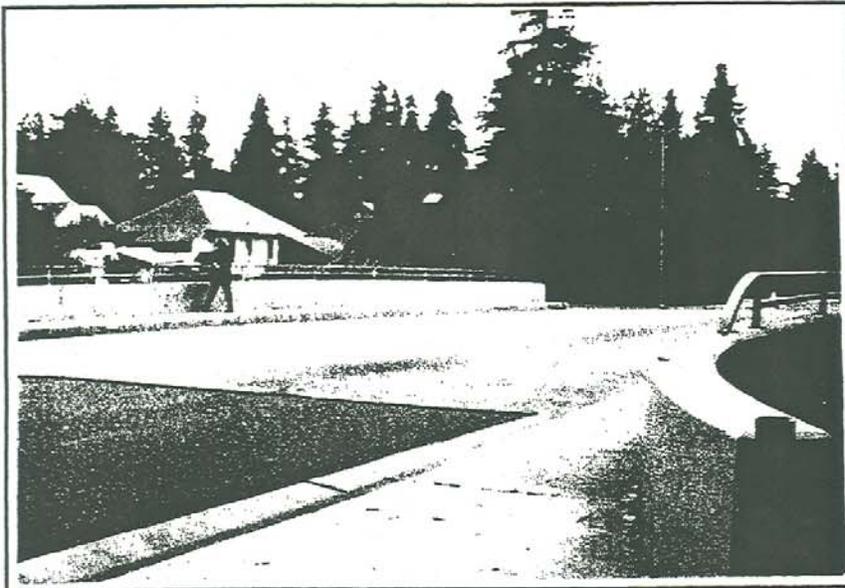
F. Back side of Sears auto Center

SOURCE: CMM&H

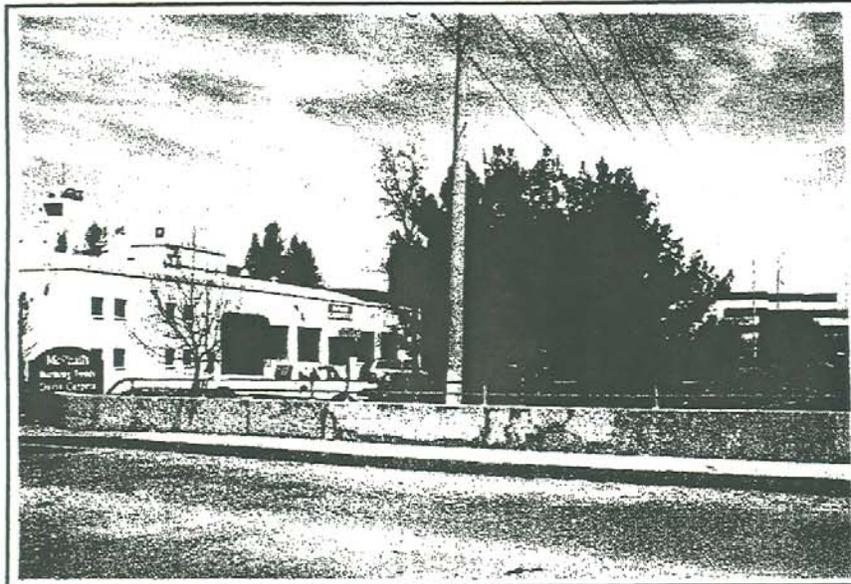
Site Photographs

PRINCE MEMORIAL GREENWAY • CITY OF SANTA ROSA

Figure 3-10



G. "A" Street Bridge looking south



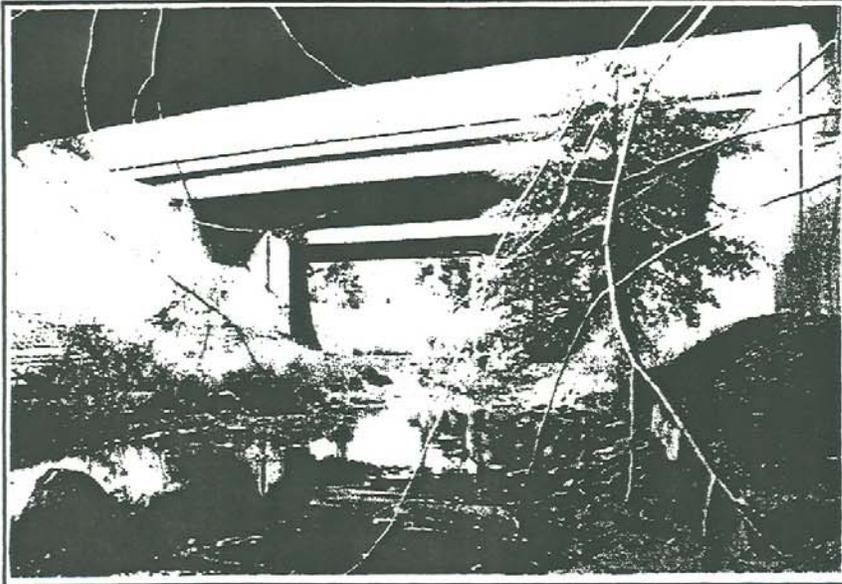
H. Looking from "A" Street Bridge to McPhails

Site Photographs

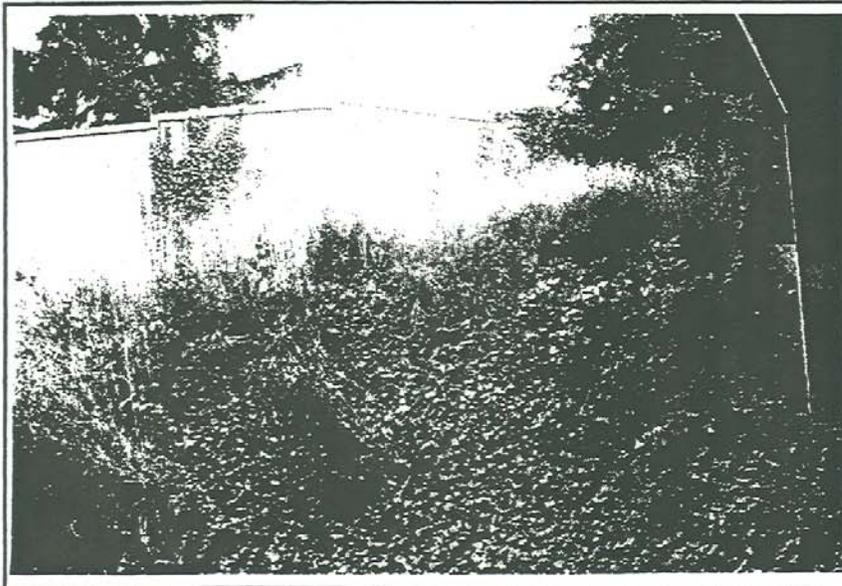
SOURCE: CMM&H

PRINCE MEMORIAL GREENWAY • CITY OF SANTA ROSA

Figure 3-11



I. Under 101 looking west



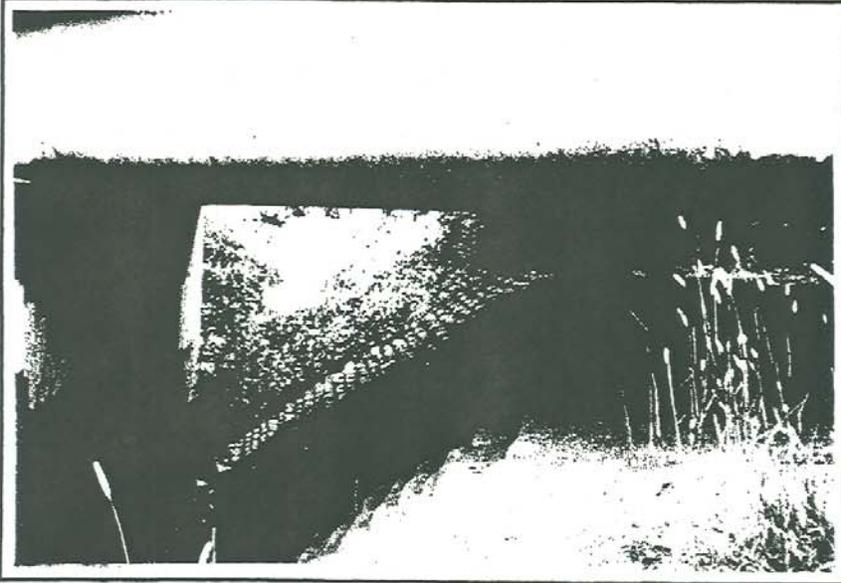
J. Under 101 near Burbank School. Existing soundwall.

SOURCE: CMM&H

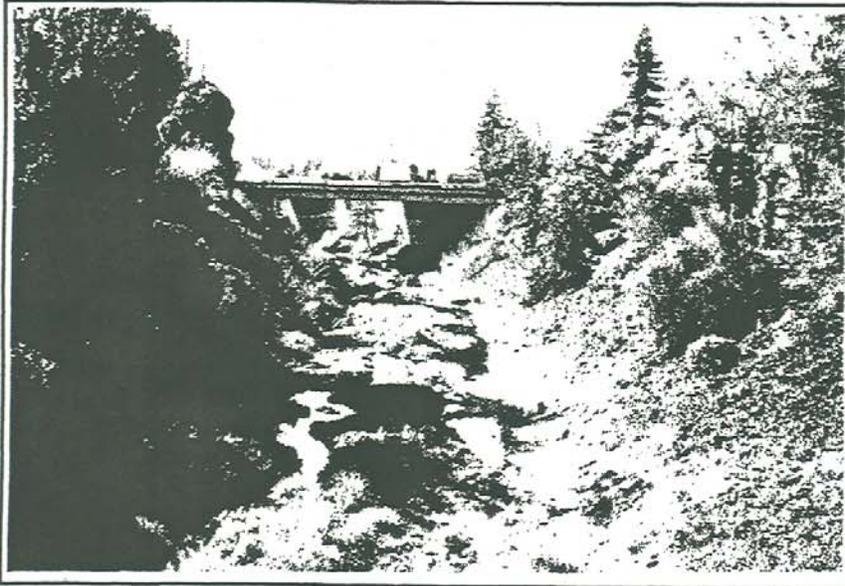
Site Photographs

PRINCE MEMORIAL GREENWAY • CITY OF SANTA ROSA

Figure 3-12



K. North side, 101 bridges



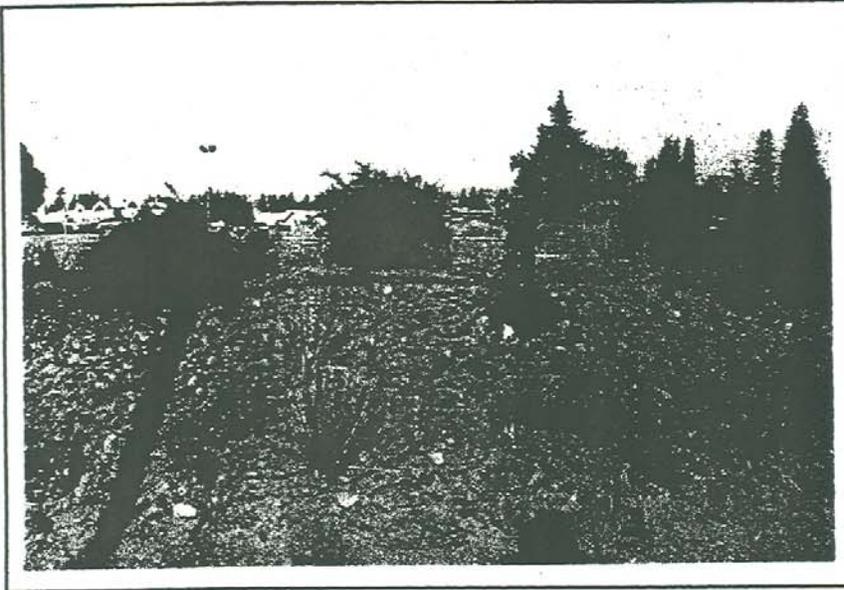
L. Highway 101 overcrossings

SOURCE: CMM&H

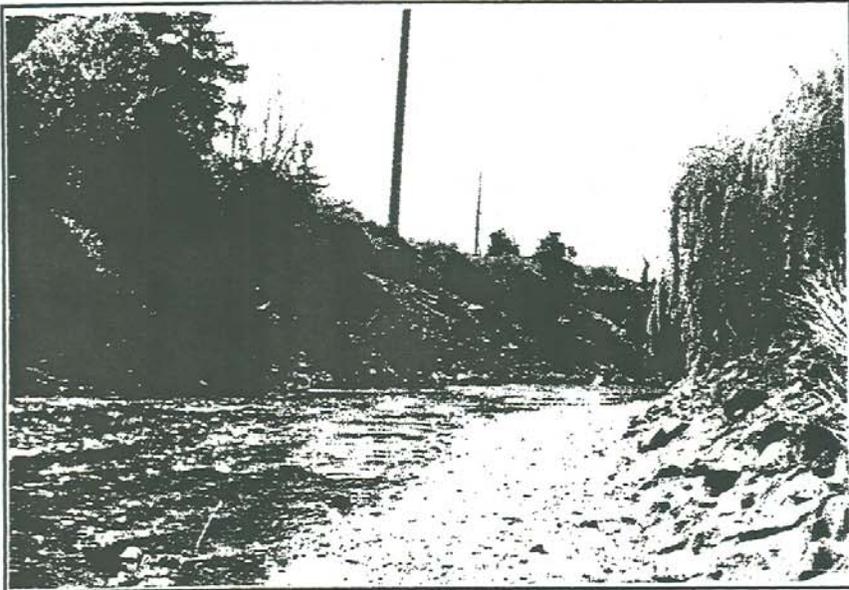
Site Photographs

PRINCE MEMORIAL GREENWAY • CITY OF SANTA ROSA

Figure 3-13



M. Grace Brothers site



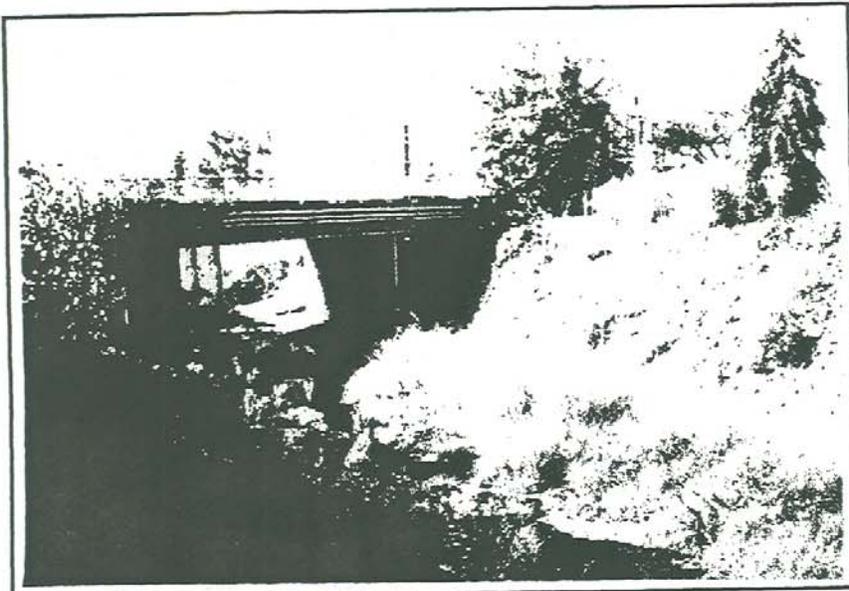
N. Grace site-depositon area

Site Photographs

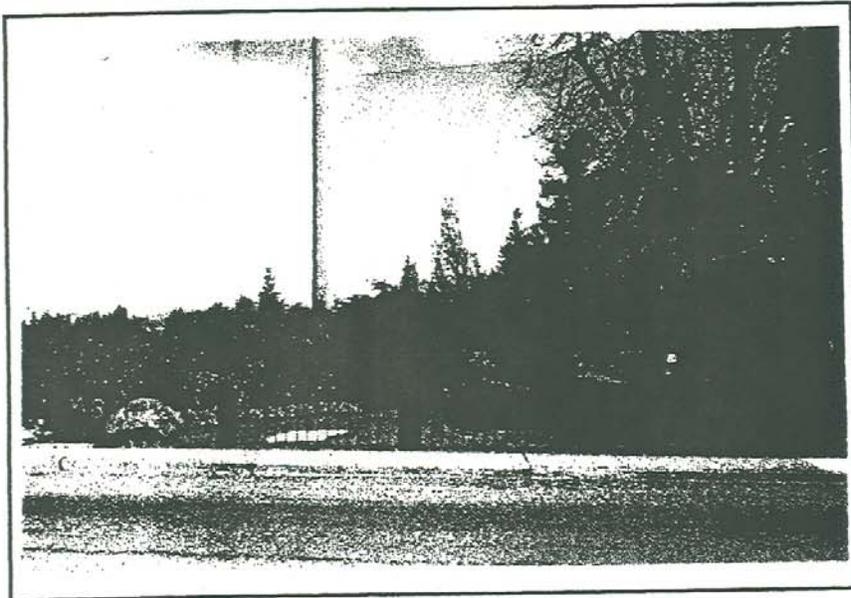
SOURCE: CMM&H

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Figure 3-14



O. Olive Street bridge



P. Olive Park-with creek behind and existing dense shrubbery. 115KV poles and lines

Site Photographs

SOURCE: CMM&H

PRINCE MEMORIAL GREENWAY • CITY OF SANTA ROSA

Figure 3-15



R. Existing planting holes from channelization project.
Existing SCWA access Maintenance road.



Q. Existing redwood trees at Olive Park bank

Site Photographs

SOURCE: CMM&H

PRINCE MEMORIAL GREENWAY • CITY OF SANTA ROSA

c. Impacts:

Impact VIS-1 (Potential Conflict with Design Standards): The proposed project could conflict with applicable design standards and criteria.

The project has the potential to conflict with design criteria of Caltrans and the City approved Santa Rosa Creek Master Plan approved in 1993, if construction documents do not conform with such plans applicable at the time of approval.

The following mitigation measure would reduce this potential impact to a less-than-significant level.

Mitigation Measure VIS-1: Project construction documents would be reviewed by the City of Santa Rosa Design Review Board for conformance with the Creek Master Plan, September 21, 1993, as well as the Draft Santa Rosa Creek Design Manual, December 5, 1996, which has not been adopted at this time. Construction documents concerned with improvements to the Caltrans right-of-way would need approval by that agency.

Impact VIS-2 (Change in Existing Public Viewshed): The project would alter the existing public viewshed by the improvements proposed.

One of the goals of this project is to upgrade the visual quality of this stretch of creek. Due to the generally poor existing visual quality and lack of aesthetics, there should be an overall positive visual impact from the project. The project is being designed to conform to the Santa Rosa Creek Master Plan and Creek Design Manual.

Public workshops held throughout this preliminary design process have pointed out design alternatives that were either offensive, or preferred, by the Public. These workshops indicated general support for the design components within the Preferred Concept Plan.

The Santa Rosa General Plan designates U.S. Highway 101 as a scenic highway. Santa Rosa Creek as seen from U.S Highway 101 is a concrete rip rap lined trapezoidal channel devoid of significant riparian habitat. This project would enhance the appearance of the Creek.

Dependent upon Caltrans approval and FHWA concurrence, an arch (portal) would be cut into the existing sound wall to connect the pathway from under the Freeway, on the south bank, to Sonoma Avenue and Burbank School.

No adverse visual impacts have been identified from these changes.

Mitigation Measure VIS-2: None required.

Impact VIS-3 (Change in Existing Visual Quality): The project could affect the existing visual quality of the project area.

The project has the potential to change the existing visual quality and character at the site from a concrete lined channel to a more natural looking streambed, with multi-use paths connecting downtown sites. This is consistent with the approved Santa Rosa Creek Master Plan, September 21, 1993.

Additional trees would be planted as part of this project to recreate a more natural streambed. There is potential for tree planting under the existing 115 KV pole lines to be inconsistent with this existing use. Undergrounding of this line is not a part of this project.

A few significant redwoods, oaks and various other trees currently exist along the top of bank along some stretches of Creek. These few mature trees provide a good basis for initial vegetation and will contribute toward the initial positive visual impact of the Creek project. Retaining these trees would be a beneficial impact.

Mitigation Measure VIS-3: Landscape Plan construction documents would be reviewed by PG&E prior to plan approval. Existing, mature trees along the Creek top of bank would be preserved to the extent feasible to reasonably construct the pathway system.

Impact VIS-4 (Increase in Light and Glare): Proposed lighting has the potential to disrupt nighttime aquatic habitat as well as contribute to glare onto south bank residences.

Lighting is proposed along the entire north bank multi-use trail, pedestrian bridge crossings, and access points from public roads, including lighting on the Boyett Park Alternative.

This impact would be reduced to a less-than-significant level with the following mitigation measure.

Mitigation Measure VIS-4: Lighting fixtures would be designed to direct the light downward, and minimize glare into adjacent properties, and the low flow channel. Light fixtures would be placed no higher

than 12 feet, with bollard type lighting on trails other than the multi-use trail.

Impact VIS-5 (Reduce Sunlight and Introduce Shadows): The project has the potential to reduce sunlight and introduce shadows along the riparian habitat, low flow channel and pedestrian walkways.

The project proposal is to plant as many trees as possible, based upon hydraulic analysis, along the banks of the Creek to create a healthy riparian habitat as well as shade pedestrian walkways. Reducing sunlight over the creek is a positive habitat and visual environmental impact.

Mitigation Measure VIS-5: None required.

Beneficial Visual Impacts

The following impacts constitute beneficial impacts of the project and would not require mitigation.

Impact VIS-6 (More Natural Appearance): The proposed project would create a more natural appearing streambed.

Installation of a low flow channel, pools and riffles, creek bank reconfiguration where feasible, and planting of native vegetation, including marshes would result in the creation of a streambed with a more natural appearance. The proposed project would create attractive, concrete multi-use paths and retaining walls.

Large rock outcroppings would create pools and riffles, and the area of creek that is required to be relined, for water quality reasons, would be lined with rock to replicate a more natural streambed.

The existing SCWA access road would be retained for maintenance access as well as a pedestrian walkway down to the channel, with a pedestrian node and steps down into the water.

A small seat wall would be installed along the north bank of the Grace Bros. site next to the multi-use pathway. A grassy slope would be planted behind the seat wall which would slope back to conform to grade at the Grace site.

The Olive Park bank would be cut back to the existing pathway on Olive Park to open up the site and create a grassy terrace along that bank. A large pool would be cut into the channel bottom by Olive Park with additional tree plantings of alder and oak for shade on the pool.

Resting places with benches and viewing points will be located throughout the Prince Greenway. Existing trees will be retained to the extent feasible.

Impact VIS-7 (Enhancement with Architectural Themes): The project would be enhanced through the use of architectural themes from the project vicinity.

Some retaining walls would echo the architectural elements of rock work from Railroad Square. Light fixtures and site furnishings, pedestrian bridges and entry statements would be industrial in appearance, reminiscent of architectural elements from Railroad Square area as well. This constitutes a beneficial impact of the project and requires no mitigation.

Incorporation of an eddy dissipation structure as a tower element and look-out point over the created pools would also have an industrial theme. The existing redwoods surrounding the PG&E substation would be retained to screen the substation structures. A proposed cantilevered deck and pathway retaining structure adjacent to the 137 Group parcel would be faced with a rock texture similar to Railroad Square's basalt rock work. The existing PG&E pipe transmission bridge would be retained or replaced with a pedestrian bridge with a simple design.

A weathered steel pedestrian bridge would be installed connecting the end of Orange Street at Olive Park to the bank on the Grace Brothers site.

Impact VIS-8 (Development of a Grotto Under U.S. 101): The proposed project would result in the development of a grotto beneath the U.S. Highway 101 overcrossing.

Multi-use paths under the freeway would be well-lit for safety. Dependent upon Caltrans approvals, arch openings would be installed in the existing wall panels and finished off with rock work similar to arched openings in Railroad Square. The buttress wall side would be cut back and strengthened with large rock placement and recirculating water running over the rocks simulating a grotto. The water sound would further buffer the traffic noise from the Freeway.

An alternate to creation of arched openings in the freeway pier walls, would be to remove the pier wall in portions where there is no overcrossing. A third alternative is to maintain the existing pier walls and enhance those walls with a brick wainscoting, and vertical columns with murals between the columns consisting of a common theme. Extensive lighting would be installed with this alternative for safety concerns. Metal trusses installed in the ceiling with an historic railroad theme would add character to the undercrossing.

Impact VIS-9 (Potential Development of Park Features): The project may involve acquisition and development of the Boyett parcel as a park.

As described in the Project Description, the Boyett Park Alternative is dependent upon City or Open Space acquisition of the parcel, and, if acquired, would serve as a trailhead to the project. The parcel would be graded back to bring pedestrians comfortably down to the creek by way of a winding pathway and alternate stairways with terracing in places.

Boyett Alternate Concept Plan

If the Boyett parcel is not developed as a park, a pedestrian access would be installed as a connection to Santa Rosa Avenue and running along the rear 10-foot of the Boyett parcel, with a stairway connection to the lower pathway on the south bank.

Opportunities for enhancing the visual quality of the creek access without the Boyett park would be diminished; conditions on the Boyett parcel would remain the same until the site is used at some time in the future. Beneficial visual impacts of the proposed project would be more limited, but the Boyett Alternate Concept Plan would not result in significant visual impacts.

Cumulative Impacts

The existing creek area within the Prince Memorial Greenway project is a concrete lined trapezoidal channel devoid of significant vegetation. An objective of this project to revegetate and create a more natural streambed. Due to the existing generally poor visual quality and lack of aesthetic features, it is anticipated that the project, together with other planned projects in the vicinity, would result in beneficial cumulative visual impacts.

3.9 Public Services and Safety

a. Setting.

(1) Police Protection. Police protection for the project area is provided by the City of Santa Rosa Police Department. Police patrols include bicycle and foot patrols in the downtown area. No special enforcement is provided to the Santa Rosa Creek corridor, with the exception of occasional sweeps of homeless encampments along the creek in the downtown area.¹⁶

¹⁶Draft EIR on the Santa Rosa Creek Master Plan, (January, 1992), p. 183.

(2) City of Santa Rosa Parks and Recreation Department. The Parks and Recreation Department is responsible for development and maintenance of park facilities in the City. Maintenance includes irrigation, repair of equipment, mowing and trimming of plantings.

(3) City of Santa Rosa Department of Public Works. Maintenance responsibilities of the department include street cleaning, and path cleaning, repair and maintenance of bridges.

(4) Sonoma County Water Agency (SCWA). The SCWA is currently responsible for flood control along the Prince Memorial Greenway. Maintenance includes removal of debris from channel, trimming and removal of vegetation which would have an adverse effect on stream flow, and repair of flood control structures.

b. Significance Criteria.

According to the CEQA Guidelines, a project result in a significant public services impact if it would:

- 1) result in a demand for services that the City is not able to provide.
- 2) interfere with emergency response plans or emergency evacuation plans.

According to the CEQA Guidelines, a project would result in a significant public safety impact if it would:

- 1) expose people or structures to major geologic hazards.
- 2) create a potential public health hazard.

c. Impacts.

Public Services

Impact PUBLIC SERV-1 (Police Services). The proposed project area would require additional patrol by the Santa Rosa Police Department.

The City of Santa Rosa Police Department has two officers assigned to the downtown area that would patrol the area which is located in Zone 7. The Santa Rosa Police Department anticipates using existing staff to patrol the

project area.¹⁷ Over time, as the Greenway becomes popular, additional staff might be required to assist in patrolling the area. Additional surveillance of the creek corridor would not result in a significant impact; enhancement of the Greenway could even reduce the need for occasional sweeps of the homeless encampments.

Mitigation Measure PUBLIC SERV-1: None required.

Impact PUBLIC SERV-2 (Park Personnel): Maintenance of the proposed project would require additional park personnel.

The Parks and Recreation Department estimates that two additional park personnel would be required to maintain the Prince Memorial Greenway¹⁸. The Parks and Recreation Department would maintain the landscaping along the creek on an ongoing basis, and, particularly after periods of high water flow when there may be some uprooting of landscaping. A more naturalized channel would also require a greater level of maintenance in the channel than the existing concrete trapezoidal channel.

While this is not a significant impact, the following mitigation measure is recommended as a condition of project approval.

Mitigation Measure PUBLIC SERV-2: The City of Santa Rosa Department of Parks and Recreation would hire two additional park employees to maintain the Prince Memorial Greenway creek corridor.

Impact PUBLIC SERV-3 (DPW Personnel): The proposed project would require some additional staff-time from DPW personnel for maintenance of paths and structures, particularly during and after periods of high flow.

The Department of Public Works would cooperate with other City departments and the SCWA to maintain the creek channel, particularly the paths and bridges. DPW would be involved in closing creek paths during periods of high flow and assisting with rebuilding paths and structures, as needed. Following periods of high flow, some evidence of washouts, slope slippage, and excess sediment and other debris on paths is anticipated.

Given the periodic nature of the work that would be required within the

¹⁷Telephone conversations with Paul Messerschmitt, Detective, and Sergeant Tony Wynne, Santa Rosa Police Department, July 8, 1997.

¹⁸Telephone communication with Bill Montgomery, Assistant Director, Department of Parks and Recreation.

Prince Memorial Greenway, DPW would likely use the Department's existing staff for these tasks; however, depending on the level of work required, and the assigned areas of responsibility, additional staff could be needed for this function in the future.

Mitigation Measure PUBLIC-SERV-3: None required.

Impact PUBLIC SERV-4 (Coordinated Maintenance): Maintenance of the proposed project would involve coordination and cooperation of several City departments and the Sonoma County Water Agency.

Mitigation Measure PUBLIC SERV-3: The City of Santa Rosa and the Sonoma County Water Agency would develop an agreement relating to ongoing and period maintenance of the Prince Memorial Greenway. The agreement would clarify the responsibilities of Sonoma County Water Agency and the City of Santa Rosa, and its departments including, but not limited to, Community Development, Parks and Recreation, Public Works and Transit and Parking.

Public Safety

Impact PUBLIC-SAFETY-1 (Flood Hazard Public Safety Risk): The proposed project would draw members of the public to the creek, and resulting in some additional public safety risks, particularly during periods of high water flow.

As a public greenway, the proposed project involves bringing members of the public to the creek to walk, bicycle, shop and enjoy a park-like setting within the downtown area. It would provide a key link between the downtown and Railroad square. It would also provide a route for school children that currently use the pedestrian bridge over U.S. Highway 101 that links Olive Park and Burbank School. During periods of high water flow, the pedestrian paths built at the two-year storm elevation would routinely flood and would have to be closed to public access. In addition, the bicycle/pedestrian paths built at the 100-year storm elevations could be inundated during extreme events.

The following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure PUBLIC SAFETY-1: A flood hazard signage program would be developed to warn the public about hazards at the creek during flood events, and staff responsible for maintaining the

Prince Memorial Greenway would also post notices and/or limit access to channel paths through use of flagging and sawhorses when flood hazards threaten use of the pathways.

Impact PUBLIC-SAFETY-2 (Storm Drain Safety): Opening up the creek corridor for public access could result in increased risk of people, especially children, crawling into storm drains.

As discussed in the EIR for the Master Plan (Section 6.1), several large storm drains exist within the project reach. With the development of the channel as a public recreational feature, there is increased risk of people, especially children, crawling into the storm drains. This activity is hazardous because of risks of unexpected increases in flow and falls.

The hazards posed by open storm drains must be weighed against the costs, maintenance, and appearance effects of making them more difficult to enter.

This impact is considered potentially significant, however, but would be reduced to a less-than-significant level with implementation of the following mitigation measure.

Mitigation Measure PUBLIC SAFETY-2: The culvert exits could be modified or the slope design adapted as needed to make the culverts more difficult to enter from the walkways. Signage could also be used to discourage entrance of the culverts.

Boyett Alternate Concept Plan

If the Boyett parcel is not developed as a park as part of the Prince Memorial Greenway project, public service and safety impacts would be slightly reduced due to the slightly smaller project area that would require surveillance and patrol.

Cumulative Impacts

Development of the proposed Prince Memorial Greenway, together with other reaches of the Santa Rosa Creek, would result in an increase in demand for City services. However, restoration and enhancement of the different reaches of the creek would be phased in a manner that would allow the City to address increased demand for services, and all impacts would be reduced to a less-than-significant level.

3.10 Noise

a. Setting.

The noise environment along the creek bed and at the adjacent land uses results primarily from vehicular traffic. Beginning at the eastern end, the first segment would run from Santa Rosa Avenue to A Street. Vehicular traffic on Santa Rosa Avenue affects the eastern portion of this segment and vehicular traffic on A Street affects noise levels along the western portion of this segment. Noise levels were monitored along the creek during the afternoon of April 28, 1997. The first location was at the end of the existing Water District ramp below the Home Savings building. The average noise level (L_{eq}) was 53 dBA. Noise levels ranged from a low of 51 dBA to a high of 54 dBA. The levels resulted from the steady sound of distant traffic and the sound of water running in the creek.

The next segment runs from the A Street bridge to U.S. Highway 101. The noise environment along the creek and at sensitive receptors in this area is dominated by vehicular traffic on the highway. The highway is elevated about 25 feet above the existing ground on either side of the creek, about 15 feet above the two-year storm level, and about 10 feet above the 100-year storm level. The elevated structure provides a substantial amount of attenuation of the highway noise at locations along the existing creek. At a point approximately 75 feet east of the bridge along the existing beach on the north shore of the channel, the measured average noise level (L_{eq}) was about 61 dBA during the mid-afternoon. Sound levels ranged from a low of 59 dBA to a high of 63 dBA.

Sound levels were monitored at a location near the end of Sonoma Avenue, where residences occur on the north side of the roadway and the Burbank School is located on the south side. An existing freeway sound wall runs along the northbound side of U.S. Highway 101. Sound levels were measured in the parking lot on the north side of the cul-de-sac adjacent to a residence. The measured average sound level at 2:30 pm was 64 dBA. Sound levels ranged from 60-69 dBA during the measurement. Vehicular traffic on U.S. Highway 101 was the only significant source of noise at this location. This monitoring site was selected to establish baseline conditions for these existing sensitive receptors which could be affected by structural changes to the sound wall required to accommodate the path along the south side of the creek.

Noise levels were monitored on the west side of U.S. Highway 101 on the south side of the creek adjacent to a residence located next to Olive Park on Buckingham Drive. This site was exposed to noise from U.S. Highway 101.

The average noise level was 65 dBA. Sound levels ranged from 63-69 dBA during the mid-afternoon measurement.

b. Significance Criteria.

The California Environmental Quality Act (CEQA) states that a project will normally have a significant adverse effect on the environment if it would increase substantially the ambient noise levels for adjoining areas or conflict with adopted environmental plans and goals of the community where it is located. The Noise and Safety Element of the Santa Rosa General Plan sets forth land use compatibility standards for community noise environments. The proposed project would fall in the Playground and Neighborhood Park category where noise levels are considered "normally acceptable" up to an L_{dn} of 70 dBA.

Caltrans enforces the Federal Highway Administration's noise abatement criteria through Chapter 1100 of the Caltrans Highway Design Manual. The noise abatement criteria are applicable to land uses adjacent to new or improved state highways. The park would be a Category B land use under the state and federal guidelines. This land use type has a noise abatement criterion level of a peak hour average L_{eq} of 67 dBA. According to the Caltrans interpretation of the federal guidelines, a noisiest hour L_{eq} of 65 dBA from the highway, as predicted in the park, would be considered to approach or exceed the noise abatement criteria.

Short-term construction noise impacts are assessed somewhat differently. The primary impact from the construction activities would be on outdoor and indoor activity areas. If hourly average construction noise levels exceed 75 dBA outside a commercial office building or 60 dBA outside of a residence, then noise levels could cause speech and activity interference inside the office building and outside or inside the residence.

c. Impacts.

Impact NOISE-1 (Noise Standards): Noise levels along the proposed Park would be compatible with local and state guidelines.

Based on the short-term noise measurements conducted along the creek bed and taking into account the relationship between mid-afternoon noise levels and 24-hour average noise levels, it is estimated that the L_{dn} ranges from about 55-65 dBA within the study area along the creek. The noise levels would, therefore, be considered "normally acceptable" according to the noise and land use compatibility standards set forth in the City of Santa Rosa Noise Element of the General Plan. The park will be a new "Category B" land use

adjacent to U.S. Highway 101 following the state's noise abatement criteria. It is likely that noise levels in the park would be below the noise abatement criteria due to the natural shielding provided by the elevated roadway section and the existing sound wall. The park would be included in any subsequent environmental review conducted by Caltrans for mainline highway improvements through this area.

The impact is less-than-significant.

Mitigation Measure NOISE-1: None required.

Impact NOISE-2 (Sensitive Receptors): The noise generated by users of the park is not anticipated to substantially increase ambient noise levels at sensitive receptors in the area.

The primary path would be located along the north side of the creek. No noise sensitive receptors adjoin the north side of the creek in the study area. There are single-family residences located along the south side of the creek just east of Santa Rosa Avenue, A Street, and U.S. Highway 101. While the sounds of people utilizing the trails would be intermittently audible at these residences, the ambient noise levels would not increase substantially as a result of these activities.

This impact is less-than-significant.

Mitigation Measure NOISE-2: None required.

Impact NOISE-3 (Portal through Sound Wall): The construction of the path along the south side of the creek at U.S. Highway 101 (the end of Sonoma Avenue) would require a portal to be cut through the bottom of the existing sound wall.

This opening in the sound wall is not expected to result in a substantial increase in noise at the existing residences or the Burbank School at the end of Sonoma Avenue.

The portal that would be cut through the sound wall would be at an elevation below the level of U.S. Highway 101. This section of U.S. Highway 101 includes an exit ramp causing a wide elevated highway section for the northbound lanes. To determine the effect on the noise environment behind the sound wall, sound levels were estimated on the highway side of the sound wall where the opening would be made. The noisiest hour L_{eq} was calculated using the LEQV2 noise prediction model and traffic volumes for the roadway from the 1995 Caltrans Truck Volume book. The predicted noisiest hour L_{eq}

is 61 dBA. As noted in the previous section, the existing mid-afternoon noise level near the residents at the end of Sonoma Avenue is about 64 dBA. This results from sound which comes over the top of the existing soundwall. Sound energy which would come through the hole in the bottom of the wall is calculated to cause no increase in the measured noise level at the sensitive receptors. The effectiveness of the sound wall would not be reduced by the hole for the pathway because of its location tucked in below the freeway bridge.

This impact is less-than-significant.

Mitigation Measure NOISE-3: None required.

Impact NOISE-4 (Construction Noise): Noise resulting from these construction activities would cause a substantial short-term increase in noise levels at sensitive receptors adjoining the project site.

Construction activities would be required in order to implement the proposed creek improvements. The majority of the heavy construction work would occur at or near the bottom of the existing channel. The banks on either side would provide a substantial amount of acoustical shielding for sensitive receptors which do not have a direct line-of-sight into the bottom of the channel. Only those sensitive receptors, including occupants of office buildings and residences which immediately adjoin and overlook the channel, would be expected to experience substantial construction noise. Such sensitive receptors include the residences located along the south side of the creek west of Santa Rosa Avenue, the bank buildings located on the north side of the creek in the same segment, and single- and multi-family residences located along the south side of the creek on either side of A Street.

The noisiest activity would involve the use of jackhammers and other impact tools to demolish the existing concrete liner. Other heavy equipment may include backhoes, loaders, saws, and trucks. The jackhammers would be expected to generate maximum noise levels of 85-95 dBA measured at a distance of 50 feet. The internal combustion engine-driven equipment typically generates noise levels between 75-85 dBA at a distance of 50 feet. Construction noise that would be experienced by any sensitive receptor would be limited to the amount of time that work is occurring in the immediate vicinity of that receptor. That is, this is a linear project and the noise levels would diminish as the work moves along and occurs at further distances from a given receptor.

The construction noise would be similar to street work that is often required in an urban setting. While noise levels would intermittently and occasionally

substantially exceed ambient noise levels, and would for a short period of time intermittently exceed the speech interference threshold established in this section, the impacts would be considered to be adverse but less than significant because of the limited duration that any receptor would be exposed to the construction noise.

This impact is considered to be less than significant. However, the following mitigation measures are recommended to further reduce the level of impact, and should be included as conditions of project approval.

Mitigation Measure NOISE-4:

- (a) Limit noise-generating construction activities to the daytime (7:30 am - 7:00 pm), weekdays and some Saturdays, non-holidays.
- (b) Properly muffle all internal combustion engine-driven equipment.
- (c) Only use impact tools, such as jackhammers, near existing residences when there are no reasonable and feasible alternatives which are quieter.
- (d) Pile driving would be limited to a fewer number of hours in the day than other equipment. Noisy stationary equipment, such as compressors, would be placed away from residences and businesses, to the extent feasible, and/or provided with acoustical shielding.

Boyett Alternate Concept Plan

If the Boyett parcel is not developed as a park as part of the Prince Memorial Greenway project, noise levels on the Boyett parcel would be less than for the preferred alternative which includes the park at this location. Neither alternative, however, would result in significant noise impacts.

Cumulative Impacts

Development of the proposed project and other projects in the vicinity would be expected to draw additional members to the creek corridor and the downtown area. While additional voices might be audible from land uses in the vicinity on an intermittent basis, the level of change would not be considered significant.

3.11 Air Quality

The Santa Rosa Creek Master Plan EIR identified air quality as an issue area in which minor or no impacts were found. The EIR states that City and County ordinances will manage construction practices to minimize dust¹⁹. This environmental evaluation concurs with that statement, and, also recommends that the following mitigation measures be considered to supplement other existing ordinances, as needed.

Mitigation Measure AIR-QUAL-1: Basic Control Measures that should be implemented at all construction sites include the following:

- (a) Water all active construction areas at least twice daily.
- (b) Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard.
- (c) Pave, apply water three times daily, or apply (non-toxic) stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.
- (d) Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.
- (e) Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.

Mitigation Measure AIR-QUAL-2: Enhanced Control Measures

- (a) Hydroseed or apply (non-toxic) stabilizers to inactive construction areas (previously graded areas inactive for ten days or more)
- (b) Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.)
- (c) Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- (d) Replant vegetation in disturbed areas as quickly as possible.
- (e) Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.

¹⁹Santa Rosa Master Plan Draft EIR (January 1992), p. 199.

3.12 Cultural Resources

a. Setting.

Santa Rosa Creek has been a strong magnet for human settlement for thousands of years. The section of creek in this project area has undergone major changes since the first Europeans arrived in the 1820's. For several thousand years Native Californians settled along its banks. The major settlement for our purposes lay at the confluence of Santa Rosa and Matanzas Creeks, at the upstream end of our project area. This site, Son-11 originally, may be at least 6,000 years old. Additional settlements lay downstream. It is likely that the entire reach of Santa Rosa Creek we are examining was actively used by Native peoples. In the earliest part of the historic era the main settlement lay upstream, but this changed rapidly in the American era.

(1) Archaeological Resources.

CA-Son-11: This site is located at the confluence of Santa Rosa and Matanzas Creek. The City Hall building rests directly on top of the original site. The site was originally recorded in 1908 by Jesse Peters. Later described in 1973 by R. Melander, CA-Son-11 was characterized by the presence of obsidian flakes and shell remains. A single obsidian tool was recovered from the site. Melander notes that at the time of inspection, the area had been extensively modified by urban development. The site once extended for about two city blocks and may extend to the south into the property now occupied by Luther Burbank Gardens. The size and extent of the site indicates that CA-Son-11 was once a major village. Melander proposes that the site may have been Kabetciwa.

S. A. Barrett describes the village in his 1908 monograph as, "Kabetciwa, in the eastern edge of the town of Santa Rosa and at a point about a mile from the old village of Hukabetawi". The stratigraphic integrity of CA-Son-11 has been largely destroyed by the extensive development in the area. Due to the extent of the site, it likely that artifacts and other cultural evidences are present, and possible that areas with undisturbed features remain. In contrast to the site's considerable size and significance, very little archaeological work has been done.

CA-Son-11 is large prehistoric village site. The site probably occurs throughout the easternmost extent of the project area. The site has already been severely damaged by construction of the City Hall and federal buildings, as well as other work in the area. If intact features of this site remain, they are at great risk from any excavation activities.

Attempted Franciscan Mission Site: Robert A. Thompson states in his publication of 1884, Central Sonoma, "The principal rancheria was on the Smith farm, just below the bridge, at the crossing of Santa Rosa Creek, on the road leading to Sebastopol. Upon this site a Mission was commenced, probably by Father Amoroso. The Indians rose up and destroyed the incipient Mission buildings about the same time that the Mission of Sonoma was devastated." The bridge location referred to, is probably the bridge at the confluence of Santa Rosa Creek and Matanzas Creek.

The location of the Franciscan Mission, initiated along Santa Rosa Creek in the early 19th century, has not been accurately located. It is likely that the location is near the crossing of Santa Rosa Creek by Santa Rosa Avenue, at the eastern end of the project area. If the location is confirmed as being within the project area, any evidences associated with the Mission would be of great historical and archaeological value. Considering its brief tenure of only a few days, it is unlikely that any remnant of this short lived site exists.

CA-Son-860/H: Both prehistoric and historic components comprise CA-Son-860/H. Originally recorded in 1973 by Melander, Owen and King, this site has subsequently been documented by Fredrickson in 1976 and Mikkelsen in 1984. The site abuts the steep north bank of the Santa Rosa Creek channel, just to east of A Street.

The prehistoric component of the site is described as a seasonal settlement, characterized by the presence of shell, bone, and obsidian. The site has been found to be quite extensive and has yielded large quantities of artifacts and several features.

The site contains a substantial historical component. Dona Maria Ignacia Lopez Carrillo moved to the Santa Rosa area in 1837, the first historic occupation of Santa Rosa. The following year she applied for a land grant of approximately 8,800 acres. The land grant known as Rancho Cabeza de Santa Rosa was approved in 1841. Upon the death of Dona Carrillo, her son Julio Carrillo received all of the ranch north of Santa Rosa Creek. Julio created a partnership and began planning for the new town of Santa Rosa. That same year, 1853, Julio built a frame house for himself on the corner of Second and B Streets. That house was located in the present lot bounded by First and Second Streets to the south and north, and by B Street to the west. The property that originally pertained to Julio Carrillo's house included the entire southeast corner of the original Santa Rosa lots. The present day boundaries are U.S. Highway 101 to the west, B Street to the east, Third Street to the north, and First Street along Santa Rosa Creek to the south.

The oldest wooden residence in Santa Rosa, located on A Street, is another historic component of CA-Son-860/H. The house was constructed between 1854 and 1857, probably by John Ingram. A trash dump from under the house was excavated in 1984 by Adrian Praetzelis.

Grace Brothers Brewery (CA-Son-1276H): Located on the north bank of Santa Rosa Creek, to the southeast of the intersection of Wilson and Second Streets, is the former location of the Grace Brothers Brewery. This historic brewery was founded in 1872 as the Santa Rosa Brewery and continued operations into the mid-20th century. Pottery, glass, horse shoes and other artifacts were noted, in addition to vast quantities of glass and ceramic beer bottles in a survey of the site by Nelson B. Thompson in 1980.

CA-Son-1805H: Mid-19th century remains and features comprise CA-Son-1805H, located beneath the parking lot of the Days Inn, southwest of the corner of Railroad and Second Streets. The site is described as a probable drainage ditch and associated sump. These features have been directly associated with the historic Redmonds Clean House in an extensive report by Mary and Adrian Praetzelis in 1989.

Hukabetawi (ethnographic village site): S. A. Barrett describes the village in his 1908 monograph as, "Hukabetawi, on the south bank of the Santa Rosa creek at a point a short distance from the depot of the California Northwestern railway in Santa Rosa." In David Fredrickson's report of 1976, he locates the village on the south bank of the Santa Rosa Creek to the west of the railroad tracks. The railroad depot quoted by Barrett was located between Third and Fourth Street adjacent to the tracks.

CA-Son-ISO-19: During the renovation of the rear porch of the house at 226 West Seventh Street, a single obsidian biface was found. The artifact was not in a cultural soil, or otherwise associated with any larger deposit or feature.

(2) Architectural Resources.

Historic Districts near the project area

CA-Son-HR-25: The Westside District, roughly comprising 15 city blocks to the west of the railroad tracks and north of Santa Rosa Creek in central Santa Rosa, has been designated a historic resource. The neighborhood contains 19th and 20th century structures and contains the "Italian Town", Santa Rosa's only historic ethnic neighborhood.

CA-Son-HR-26: Just to the east of the railroad tracks and to the north of Santa Rosa Creek, is the North Railroad District. This area is the only surviving historic commercial district in Santa Rosa outside of Railroad Square. Historically, the area contained many Italian businesses serving the Italian community to the west.

CA-Son-HR-27: Just to the south of Santa Rosa Creek and bounded by Dutton Avenue and West Third Street is the West Third Street District. This residential neighborhood contains small houses from early in the 20th century. Still unincorporated, this neighborhood was created by the growing need for residential property. The residents were largely Italians, interacting with "Italian Town" just to the north across the creek.

Historic Districts In or Adjacent to the Project Area

CA-Son-HR-28: The Olive Park Neighborhood is isolated from adjacent neighborhoods by Santa Rosa Creek to the north, railroad tracks to the west, the U.S. Highway 101 to the east, and the State Highway 12 to south. Olive Park is focal point of the neighborhood and serves as a buffer to commercial and industrial district immediately across the creek. Except for lots along the creek, most of the parcels are intact from their original 50 by 134 foot survey lots. Most of the original turn of the century houses remain intact and are well preserved.

b. Significance Criteria.

The CEQA Guidelines indicate that a project will have a significant impact if it would disturb paleontological or archaeological resources; have the potential to cause a physical change which would affect unique ethnic cultural values or restrict religious or sacred uses within the potential impact area.

Archaeological resources can be historic or prehistoric. They are defined by their nature, as deposits or remnants, and not by a particular time period or culture. The Office of Planning and Research has indicated that, should an archaeological resource be identified, the lead agency is responsible for determining if the archaeological site is an "important archaeological resource." An "important archaeological resource" is defined under CEQA as a site which:

Is associated with an event or person of:

- 1. Recognized significance in California or American history, or*
- 2. Recognized scientific importance in prehistory.*

3. *Can provide information which is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable archaeological research questions;*
4. *Has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind;*
5. *Is at least 100 years old and possesses substantial stratigraphic integrity; or*
6. *Involves important research questions that historical research has shown can be answered only with archaeological methods.*

Under CEQA, significant historic properties are those which are listed in or are eligible for the California Register of Historic Resources (CRHC). These include properties eligible for the National Register of Historic Places (NRHP), State Historic Landmarks or Points of Historical Interest, and properties recognized by local (city or county) programs. CEQA also recognizes that a resource which is not listed in or determined to be eligible for listing, not included in a local register or historic resources, or not deemed significant in a historical resource survey may nonetheless be historically significant.

A project can have an impact on significant historic architectural resources either directly or indirectly. That is, it can result in direct physical changes, such as demolition, or it can indirectly affect the historic qualities of a significant property, such as the view of or from the property.

c. Impacts.

Impact CULT-RES-1 (CA-Son-11) Excavation and removal of previously built features is likely to disturb the soils of CA-Son-11.

If these soils have been previously disturbed, impact will be minor. If undisturbed soil deposits are encountered, major impacts may occur to highly significant prehistoric features. A possibility exists that human remains will be found in this part of the project area.

This village was of considerable size and was most likely the largest village in the area. Because it has only been documented minimally, any features with stratigraphic integrity should be considered significant.

The following mitigation measure would reduce this potential impact to a less-than-significant level.

Mitigation Measure CULT-RES-1: Evidences of this site would likely be visible after concrete removal is accomplished. Where it is possible to do so, archaeological testing could reveal the presence or absence of intact features within this site. Testing should consist of auger boring at regular intervals at set distances from the creek, or systematic trenching with a small backhoe or similar device. If intact prehistoric deposits are encountered, a program of recovery or avoidance can be developed. If no intact features are found, earth moving activities can proceed with an archaeological monitor present, once size and extent of the remaining site is determined. Any features observed should be excavated appropriately or preserved in place. If human remains are encountered, the county coroner should be notified, and all appropriate procedures followed.

Impact CULT-RES-2 (Spanish Mission Site): The proposed project could result in disturbance to the Spanish Mission site.

This ephemeral site may no longer exist in a physical form. If no evidence has survived, no impacts can occur from this project. There is a very slim potential for intact features to be discovered that associate with this brief attempt to extend Spanish influence into Santa Rosa. Any intact features that are discovered are likely to be severely damaged or destroyed by the planned project.

This is a less-than-significant impact. However, the following mitigation measure is recommended to further reduce the level of impact.

Mitigation Measure CULT-RES-2: If any remnant of this briefly established location can be identified, preservation in place, with appropriate markers, or recovery to an appropriate facility, such as the Sonoma County Museum, are the only appropriate choices.

Impact CULT-RES-3 (CA-Son-860/H): Disruption of the creekbank would result in the loss of part of the physical record of Santa Rosa as a 19th century town.

The creek bank throughout this recognized archaeological site has a high potential to contain intact features from the earliest part of Santa Rosa's

history. The precise locations of potentially significant features cannot be predicted at this time. The potential for disturbance would be reduced to a less-than-significant level with the following mitigation measure.

Mitigation Measure CULT-RES-3: Mechanized testing with a backhoe or similar excavator can be used to determine the soil conditions and recover encountered features. This method may succeed in eliminating areas requiring further work. Secondly, archaeological monitoring and recovery of discovered features may offer the most efficient method of approaching this area. There is a potential for highly interesting features to be encountered in this area. If the opportunity presents itself, consideration should be given to preserving at least one feature in place and making a permanent exhibit space of it.

Impact: CULT-RES-4 (CA-Son-1276/H): Excavation into the creek bed in the vicinity of the Grace Brothers site could result in disturbance to historic era deposits.

The Grace Brothers Brewery site has been demonstrated to contain large numbers of historic era deposits. Excavation into the creek bank would reveal deposits associated with the brewery site. These are mostly small to large trash deposits from the active life of the brewery. Not all features associated with this parcel will be considered significant, although a large number are likely to be so classified on discovery.

The following mitigation measure would reduce this potential impact to a less-than-significant level.

Mitigation Measure CULT-RES-4: Monitoring of excavation accompanied by removal of discovered features may be the most efficient method of approaching this site. The precise locations of significant features cannot be predicted at this time. Two avenues are open. Mechanized testing with a backhoe or similar excavator can be used to determine the soil conditions and recover encountered features. This method may succeed in eliminating areas requiring further work. Secondly, archaeological monitoring and recovery of discovered features may offer the most efficient method of approaching this area. There is a potential for highly interesting features to be encountered in this area. If the opportunity presents itself, consideration should be given to preserving at least one feature in place and making a permanent exhibit space of it.

Impact CULT-RES-5 (CA-Son-1805H): The proposed project could result in impacts to the former Redmond House.

As with other sites along the river, impacts to historic deposits associated with the former Redmond House may be found as part of this project. The creek bank throughout this recognized archaeological site has a high potential to contain intact features from the earliest part of Santa Rosa's history. Disruption of these features will result in the loss of part of the physical record of Santa Rosa as a 19th century town.

The following mitigation measure would reduce this potential impact to a less-than-significant level.

Mitigation Measure CULT-RES-5: The precise locations of significant features cannot be predicted at this time. Two avenues are open. Mechanized testing with a backhoe or similar excavator can be used to determine the soil conditions and recover encountered features. This method may succeed in eliminating areas requiring further work. Secondly, archaeological monitoring and recovery of discovered features may offer the most efficient method of approaching this area. There is a potential for highly interesting features to be encountered in this area. If the opportunity presents itself, consideration should be given to preserving at least one feature in place and making a permanent exhibit space of it.

Impact CULT-RES-6 (Ethnographic Village of Hukabetawi): The proposed project could result in disturbance to evidence of the Ethnographic village of Hukabetawi.

Evidences of this site would possibly be visible after concrete removal is accomplished. Excavation in the westerly end of the project area may reveal deposits from this site. If no physical evidence of the settlement is found, no impacts would occur. Intact deposits from this Pomo settlement are considered highly significant and should be either recovered archaeologically, or preserved in place. There is a small possibility that human remains would be found in association with this deposit, if intact areas are found.

This village was of considerable size and was most likely the largest village in the area. Because it has only been documented minimally, any features with stratigraphic integrity should be considered significant. The following

mitigation measure would reduce this potential impact to a less-than-significant level.

Mitigation Measure CULT-RES-6: Where it is possible to do so, archaeological testing could reveal the presence or absence of intact features within this site. Testing should consist of auger boring at regular intervals at set distances from the creek, or systematic trenching with a small backhoe or similar device. If intact prehistoric deposits are encountered, a program of recovery or avoidance can be developed. If no intact features are found, earth moving activities can proceed with an archaeological monitor present, once size and extent of the remaining site is determined. Any features with stratigraphic integrity should be excavated appropriately or preserved in place. If human remains are encountered, the county coroner should be notified, and all appropriate procedures followed.

Impact CULT-RES-7 (Son-HR-25): There is a remote chance that the proposed project could affect resources from the Westside Historic District.

The Westside Historic District lies north of Santa Rosa Creek and west of the railroad tracks. This is outside of the project area. No impacts to this district are foreseen as a result of the planned project.

This is a less-than-significant impact. No impacts are foreseen as a result of this project, and no mitigation measures are recommended.

Mitigation Measure CULT-RES-7: None required or recommended.

Impact CULT-RES-8 (Son-HR-26): There is a remote chance that the proposed project could affect resources from the North Railroad District.

The North Railroad District lies north of the Railroad Square National Register district, between Donahue and Davis Streets and north of Fifth Street. This is outside of the impact area of the proposed project.

This is a less-than-significant impact.

Mitigation Measure CULT-RES-8: None required or recommended.

Impact CULT-RES-9 (Son-HR-27): There is a remote chance that the proposed project could affect resources from the West Third Street Historic District.

The West Third Street Historic District lies south of Santa Rosa Creek, North of Highway 12, and west of Pierson Street. This is west of the project area.

This is a less-than-significant impact.

Mitigation Measure CULT-RES-9: None required or recommended.

Impact CULT-RES-10 (Son-HR-28): The proposed project could affect resources from the Olive Park District.

The Olive Park District lies adjacent to Santa Rosa Creek, on the south side of the creek, between Chestnut Street and Highway 101. Historic structures in this district are south of Buckingham Drive, outside of the impact area of this project. Historic archaeological deposits associated with existing and former structures in the district are likely to be located in the creek banks and along the upper edge of the existing channel. These areas are under concrete and cannot be inspected.

The following mitigation measure would reduce any potential impact to a less-than-significant level.

Mitigation Measure CULT-RES-10: Archaeological monitoring is recommended for all earth disturbing operations in or adjacent to the historic district. If any potentially significant deposits or features are discovered all work in the immediate vicinity of the discovery should be halted and the discovery evaluated by the monitoring archaeologist. Significant deposits should be removed using archaeological methods, or avoided and left in place.

Boyett Alternate Concept Plan

If the Boyett parcel is not developed as a park as part of the Prince Memorial Greenway project, potential impacts to cultural resources would be less than for the Preferred Park Concept due to reduced grading and disturbance that would be encompassed by the proposed project.

Cumulative Impacts

Restoration and enhancement of the Prince Memorial Greenway project together with plans for enhancing other reaches of Santa Rosa Creek would result in substantial cultural resource impacts due to the sensitivity of sites along creeks. However, mitigation measures similar to those recommended for Reach C, are available to reduce impacts to a less-than-significant level.

d. Definition of recommended mitigation measures

General Archaeological Recommendations

The following procedures should be implemented as general procedures for all earth disturbing operations undertaken for this project. They should not supersede recommendations made for specific identified resources, but should be implemented as general procedures to be followed when other instructions are lacking. The term "Agency", when capitalized, means the entity sponsoring the work under discussion. This may be a public agency, a private company, or any other sponsoring agency.

1. It should be required of all contractors and subcontractors that they inform all employees or others on the job site that no artifacts are to be removed from the area except through authorized procedures. In this usage "artifacts" means any item over fifty (50) years of age. It should be made clear to all individuals and companies associated with any project that any artifacts found in the course of work are the property of the Agency. It is not up to the contractor to determine what the Agency considers important. When defining artifacts so closely, the district retains the ability to determine whether or not to bring in an archaeologist to examine the find. As a general rule, artifacts greater than 100 years of age should be considered important unless a specific evaluation determines otherwise. Artifacts greater than fifty years old, but less than 100 years old should be considered important enough to be evaluated, but generally, the process of recording the discovery location will be an adequate "mitigation" of any potential negative impacts. Artifacts less than fifty years old are only important if they associate with a specific historic event of recognized significance.

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2. Any artifacts that are found on or near the project area are to be turned over to, or brought to the attention of, the inspector, project manager, or the individuals immediate supervisor. The inspector is the most likely interface for this task. He or she is on the job daily, and sees everything that is built. The most workable situation would probably see the individual workers turning things into their immediate supervisor, who would report the discovery to the inspector. The inspector should go to the discovery location and determine that the artifact is not part of a larger deposit. This may not be obvious. If the inspector is satisfied that other artifacts will not be found in the location, the artifact should be removed from the area and work continued. If the inspector cannot make the determination, an archaeologist should examine the area and make appropriate recommendations. Often, if a major archaeological site is found, it will be apparent to all that an important discovery has been made. More subtle deposits require professional evaluation to determine their importance.

 3. Whenever any artifact is found or reported, a tag should be included that indicates the following:
 - the identity of the finder and the date of discovery,
 - the identity of the inspector or other responsible individual to whom the artifact is given,
 - a description of the location where the artifact was found, such as the approximate distance and direction to the nearest measured point, identification of a point on the building plans, or other reliable, accurate method.
 - a description of the artifact that will allow it to identified if the tag and artifact are separated.

 4. If the inspector carries a supply of small plastic baggies and 3x5 cards, this process will be very simple. For large artifacts the tag can be attached with string or tape. Wrapping large artifacts with survey tape and writing on the tape is acceptable. The important thing is that the information be kept with the artifact. If the project is going to involve extensive excavation or ground disturbance, it is more likely that artifacts will be found. In these instances, preprinted cards can be used that prompt for the appropriate information.

 5. The artifact, if portable, should be transported to a safe location where it can be kept until it can be inspected by an archaeologist. When removed by the inspector or other responsible person, the artifact
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should be transported to a location such as the Agency office where it can be kept under secure conditions. At the beginning of any project, the location for artifacts to be brought, and the responsible individuals they can be turned over to, should be identified by the Project Manager. A log of artifacts should be maintained at the storage location.

Archaeological Monitoring

The following procedures constitute the archaeological monitoring procedures to be implemented wherever monitoring has been recommended.

- Monitoring will consist of directly watching the major excavation process. Monitoring will occur during the entire work day, and will continue on a daily basis until a depth of excavation has been reached at which resources could not occur. This depth is estimated as usually about five feet below grade at the beginning of the project, but may require modification in specific cases, and will be determined by the monitoring archaeologist based on observed soil conditions.
- Spot checks will consist of partial monitoring of the progress of excavation over the course of the project. During spot checks all spoils material, open excavations, recently grubbed areas, and other soil disturbances will be inspected. The frequency and duration of spot checks will be based on the relative sensitivity of the exposed soils and active work areas. The monitoring archaeologist will determine the relative sensitivity of the parcel.
- If prehistoric human interments (human burials) are encountered within the native soils of the parcel, all work should be halted in the immediate vicinity of the find. The County Coroner, project superintendent, and the Agency Liaison should be contacted immediately. The procedures to be followed at this point are prescribed by law.
- If significant cultural deposits other than human burials are encountered, the project should be modified to allow the artifacts or features to be left in place, or the archaeological consultant should undertake the recovery of the deposit or feature. Significant cultural deposits are defined as archaeological features or artifacts that associate with the prehistoric period, the historic era Mission and Pueblo Periods and the American era up to about 1900. A representative of

the Native American community must be contacted in all cases where prehistoric or historic era Native American resources are involved.

- Whenever the monitoring archaeologist suspects that potentially significant cultural remains or human burials have been encountered, the piece of equipment that encounters the suspected deposit will be stopped, and the excavation inspected by the monitoring archaeologist. If the suspected remains prove to be nonsignificant or non cultural in origin, work will recommence immediately. If the suspected remains prove to be part of a significant deposit, all work should be halted in that location until removal has been accomplished. If human remains (burials) are found, the County Coroner must be contacted so that he (or a designated representative) can evaluate the discovered remains and implement proper contacts with pertinent Native American representatives.
- Equipment stoppages will only involve those pieces of equipment that have actually encountered significant or potentially significant deposits, and should not be construed to mean a stoppage of all equipment on the site unless the cultural deposit covers the entire building site.
- During temporary equipment stoppages brought about to examine suspected remains, the archaeologist should accomplish the necessary tasks with all due speed.

e. Security considerations

Should any archaeological discoveries be made over the course of this project, a problem may occur with unauthorized excavation into unattended features. At the monitoring archaeologists discretion, it may be necessary to retain overnight security to prevent theft of important artifacts and disruption of the archaeological program.

f. Archaeological testing procedures

Two testing procedures have been recommended here: backhoe testing and auger testing.

Backhoe testing is carried out using a small backhoe to excavate into the soil at selected locations and examine the subsurface soil conditions. This procedure works well in locations where access is not a problem for the equipment, and where locating the entire deposit is a primary goal. Trenches are generally kept short and spread over the area of interest. The advantage of this procedure is in its ability

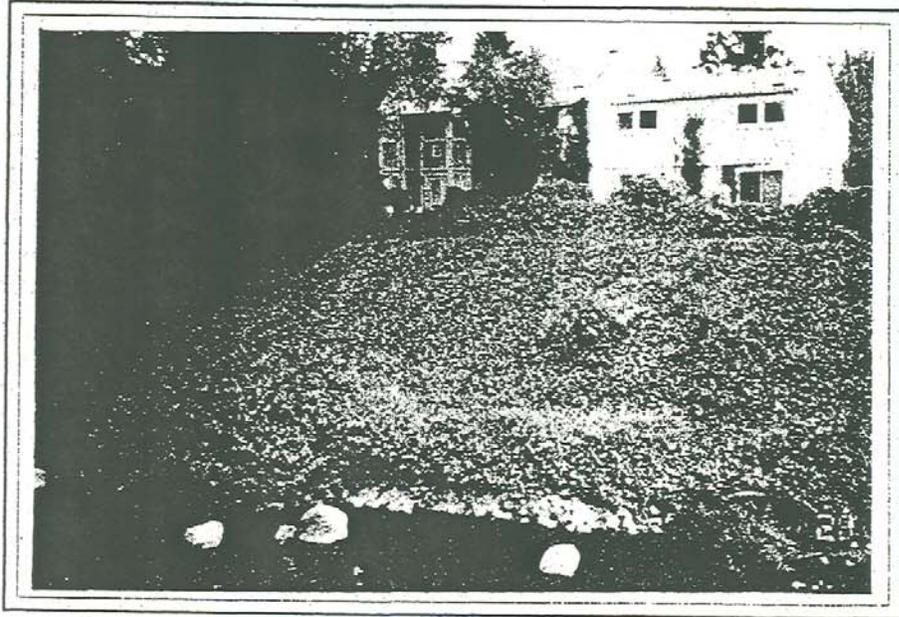
to reveal general information quickly. It can be determined if deposits are present or not, their depth, and general condition.

Auger testing is carried out with a 4 or 5 inch diameter hand auger. This procedure is slower than backhoe testing, but reveals more accurate information. Augering is particularly useful where it is desirable to determine the pattern of features within a recognized deposit, rather than when looking for the location of the deposit.

g. Interpretive exhibits

Discovery of intact archaeological deposits presents an opportunity to develop interpretive exhibits in place within the new project. If deposits are found in planned parks or greenways, they can become major amenities to this project. Should any appropriately located features be found, consideration should be given to sealing all or part of the beneath a Plexiglas (or other material) cover, so it may be seen. Appropriate signage can add to the educational experience and make the history and archaeology of the place a major attractant.

4. Initial Study Checklist



4. INITIAL STUDY CHECKLIST

PROJECT TITLE Prince Memorial Greenway Project
PROJECT LOCATION Santa Rosa Creek between Santa Rosa Avenue and Railroad Avenue
PROJECT DEVELOPER City of Santa Rosa Community Development Department

A. SUMMARY DETERMINATION

- Negative Declaration
Posting Period: July 11, 1997 - August 11, 1997
- Mitigation Measures (attached)
- Environmental Impact Report Required

B. PROJECT INFORMATION

1. Description: The project consists of creating a public greenway corridor and restoring the habitat within and along the banks of the creek (See Chapter 2 of this document for a detailed description).

The project ("activity") involves the following: Project activities include the creation of bicycle and pedestrian pathways, improved access from Santa Rosa Avenue, "A" Street, and Railroad Avenue, and a restored creek channel including a low-flow channel, marsh areas, and a grotto area under the US 101 overpass.

2. Environmental Setting: The original riparian habitat was completely removed when channelization occurred in the early 1960's. The existing channel consists of a riverine system fringed with marsh at the bottom of a trapezoidal, concrete, rip-rapped channel.

3. Character of Surrounding Area: The Prince Memorial Greenway is located in the center of the downtown area. Land uses adjacent to the creek corridor include commercial, residential and public/institutional uses that back on to the creek.

C. GENERAL CONSIDERATIONS

1. Does the project conform to General Plan proposals including the various adopted elements? (Land Use, Circulation, Urban Design, Housing, Open Space/Conservation, Noise, Seismic/Safety, Recreation, Scenic Highways, Community Facilities)(See appropriate impact sections for application of specific elements.)

General Plan Designation: Park

2. Does the project conform to existing (or proposed) zoning classification?

Classification: Flood Control Channel
(no separate zoning classification)

3. Does it appear that any feature of this project, including aesthetics, will generate significant public concern?

No

Nature of Concern: The public strongly supports implementation of this project.

4. Will the project require approval or permits by other than a City Agency?

Yes

Other Agency:

- 1) California Department of Fish and Game: Stream Alteration Agreement.
- 2) U.S. Army Corps of Engineers: A Nationwide Permit #27 (permit for riparian restoration) permit for discharges into the Waters of the United States (including wetlands) would be required. A Nationwide permit #33 required for placement of a coffer dam.
- 3) Caltrans: Encroachment Permit for work done beneath the US 101 overcrossing; and concurrence with Caltrans and

FHWA that a hole cut through an existing soundwall would not adversely affect sound attenuation.

Environmental Factors Potentially Affected:

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

Land Use and Planning	X	Transportation/Circulation	Public Services
Population and Housing	X	Biological Resources	Utilities and Service Systems
Geological Problems		Energy and Mineral Resources	X Aesthetics
X Water	X	Hazards	X Cultural Resources
Air Quality		Noise	Recreation
		Mandatory Findings of Significance	

ENVIRONMENTAL IMPACTS:

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
I. LAND USE AND PLANNING. Would the proposal:				
a) Conflict with general plan designation or zoning?				X
b) Conflict with applicable environmental plans or policies adopted by agencies with jurisdiction over the project?				
c) Be incompatible with existing land use in the vicinity?				X
d) Affect agricultural resources or operations (e.g., impacts to soils or farmlands, or impacts from incompatible land uses)?				X
e) Disrupt or divide the physical arrangement of an established community (including a low-income or minority community)?				X
f) Cause disruption of orderly planned development?				X
g) Be a first step toward a larger project (subdivision, planned development, or a large residential, commercial or industrial development)?				X
h) Entail a construction period that would disrupt normal activities of the neighborhood for a period exceeding six (6) months?				X
II. POPULATION AND HOUSING. Would the proposal:				
a) Cumulatively exceed official regional or local population projections?				X
b) Induce substantial growth in an area either directly or indirectly (e.g. through projects in an undeveloped area or extension of major infrastructure)?				X
c) Displace existing housing, especially affordable housing?				X
d) Affect lifestyles or neighborhood character or stability?				X
e) Affect minority, elderly, handicapped, transit-dependent, or other specific interest groups?				X

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
f) Affect existing housing, require the acquisition of residential improvements or the displacement of people or create a demand for additional housing?				X
g) Alter the location, distribution, density or growth rate of the human population of an area?				X
h) Provide for population growth beyond what is provided for in the existing Santa Cruz zoning regulations?				X
i) <u>Socioeconomics</u> : Affect employment, industry, or commerce, or require the displacement of businesses or farms.				X
j) Affect property values of the local tax base?				X
III. GEOLOGIC PROBLEMS. Would the proposal result in or expose people to potential impacts involving: to be inserted when geotech study is received.				
a) Fault rupture?				X
b) Seismic ground shaking?			X	
c) Seismic ground failure, including liquefaction?				X
d) Seiche, tsunami, or volcanic hazard?				X
e) Landslides or mudflows?			X	
f) Erosion, changes in topography or unstable soil conditions from excavation, grading, or fill?		X		
g) Subsidence of the land?				X
h) Expansive soils?				X
i) Unique geologic or physical features?			X	
j) Appreciably change the topography or ground surface relief features?			X	
k) Unstable earth conditions or changes in geologic substructures?				X

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
l) Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?			X	
m) Grading in excess of 50 cubic yards which could result in a hazard to adjacent properties, unstable slopes, or uncompacted fill?			X	X
IV. WATER. Would the proposal result in:				
a) Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?		X		
b) Exposure of people or property to water related hazards such as flooding or tidal waves?		X		
c) Discharge into surface waters or other alteration of surface water quality (e.g. temperature, dissolved oxygen or turbidity)?			X	
d) Changes in the amount of surface water in any water body?				X
e) Changes in currents, or the course or direction of water movements (in either marine or fresh water)?			X	
f) Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations, or through substantial loss of groundwater recharge capability?				X
g) Altered direction or rate of flow of groundwater?				X
h) Impacts to groundwater quality?				X
i) Substantial reduction in the amount of water or groundwater otherwise available for public water supplies?				X
j) Modify the channel of a river or stream or the bed of the ocean, or any bay, inlet or lake?			X	
k) Encroach upon a floodplain, or result in or be affected by floodwaters or tidal waves?		X		
l) Result in the use of water in large amounts or in a wasteful manner?				X

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
m) Violate or be inconsistent with Federal, State or local water quality standards?				X
n) Result in or be affected by soil erosion or siltation (whether by water or wind)?		X		
o) Alterations to the course of flow of flood waters?		X		
V. AIR QUALITY. Would the proposal:				
a) Violate any air quality standard or contribute to an existing or projected air quality violation?				X
b) Expose sensitive receptors to pollutants?			X	
c) Alter air movement, moisture, or temperature, or cause any change in climate?				X
d) Create objectionable odors?				X
e) Result in an increase in air pollutant emissions, adverse effects on or deterioration of ambient air quality?				X
VI. TRANSPORTATION/CIRCULATION. Would the proposal result in:				
a) Increased vehicle trips or traffic congestion?				X
b) Hazards to safety from design features (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?		X		
c) Inadequate emergency access or access to nearby uses?			X	
d) Insufficient parking capacity on-site or off-site?			X	
e) Hazards or barriers for pedestrians or bicyclists?			X	
f) Conflicts with adopted policies supporting alternative transportation (e.g., bus turnouts, bicycle racks)?				X
g) Rail, waterborne or air traffic impacts?				X
h) Have substantial impact on existing transportation systems or alter present patterns of circulation or movement of people and/or goods?			X	
i) Involve a substantial risk of an explosion, or the release of hazardous substances in the event of an accident or otherwise adversely affect overall public safety?	X			

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
j) Increase in traffic hazards to motor vehicles, bicycles or pedestrians.			X	
VII. BIOLOGICAL RESOURCES. Would the proposal result in impacts to:				
a) Endangered, threatened, or rare species or their habitats (including but not limited to plants, fish, insects, animals, and birds)?			X	
b) Locally designated species (e.g., heritage trees)?			X	
c) Locally designated natural communities (e.g., oak forest, coastal habitat, etc.)?			X	
d) Wetland habitat (e.g., marsh, riparian, and vernal pool)?			X	
e) Wildlife dispersal or migration corridors?				X
f) Affect wetlands or riparian habitat?		X		
g) Change in the diversity of species, or number of any species of plants or animals?				X
h) Reduction of numbers of, or encroachment upon the critical habitat of any unique, threatened or endangered species of plant or animal.				X
i) Introduction of new species of plant or animal into an area?				X
j. Result of a barrier to the normal replenishment of existing plant species, or a barrier to the migration or movement of animals?			X	
k. Deterioration to existing fish or wildlife habitat.				X

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. ENERGY AND MINERAL RESOURCES. Would the proposal:				
a) Conflict with adopted energy conservation plans?				X
b) Use non-renewable resources in a wasteful and inefficient manner?				X
c) Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?				X
d) Result in an increase in the rate of use of any natural resource?				X
IX. HAZARDS. Would the proposal involve:				
a) A risk of accidental explosion or release of hazardous substances (including, but not limited to: oil, pesticides, chemicals, or radiation)?		X		
b) Possible interference with an emergency response plan or emergency evacuation plan?				X
c) The creation of any health hazard or potential health hazard?		X		
d) Exposure of people to existing sources of potential health hazards?		X		
e) Increased fire hazard in areas with flammable brush, grass, or trees?				X
f) Violate any published federal, State or local standards pertaining to hazardous waste, solid waste or litter control?			X	
X. NOISE. Would the proposal result in:				
a) Increases in existing noise levels?				X
b) Exposure of people to severe noise levels?			X	
c) Result in an increase in noise levels or vibration for adjoining areas?			X	
d) Result in any federal, State or local noise criteria being equal or exceeded?			X	

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. PUBLIC SERVICES. Would the proposal have an effect upon, or result in a need for new or altered government services in any of the following areas:				
a) Fire protection?				X
b) Police protection?			X	X
c) Schools?				X
d) Maintenance of public facilities, including roads?			X	
e) Other governmental services?			X	X
XII. UTILITIES AND SERVICE SYSTEMS. Would the proposal result in a need for new systems or supplies, or substantial alterations to the following utilities:				
a) Power or natural gas?				X
b) Communications systems?				X
c) Local or regional water treatment or distribution facilities?				X
d) Sewer or septic tanks?				X
e) Storm water drainage?				X
f) Solid waste disposal?			X	
g) Local or regional water supplies?				X

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. AESTHETICS. Would the proposal:				
a) Affect a scenic vista or scenic highway?				X
b) Have a demonstrable negative aesthetic effect?			X	
c) Create light or glare?		X		
d) Affect any scenic resources or result in the obstruction of any scene vista or view open to the public, or creation of an aesthetically offensive site open to public view?			X	
XIV. CULTURAL RESOURCES. Would the proposal:				
a) Disturb paleontological resources?		X		
b) Disturb archaeological resources?		X		
c) Affect historical resources?		X		
d) Have the potential to cause a physical change which would affect unique ethnic cultural values?			X	
e) Restrict existing religious or sacred uses within the potential impact area?				X
XV. RECREATION. Would the proposal:				
a) Increase the demand for neighborhood or regional parks or other recreational facilities?				X
b) Affect existing recreational opportunities?				X
c) Affect wild or scenic rivers or natural landmarks?				X

Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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XVI. MANDATORY FINDINGS OF SIGNIFICANCE.

- a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory? **NO**
- b) Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? **NO**
- c) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.) **NO**
- d) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? **NO**

XVII. DETERMINATION: On the basis of this evaluation:

- I find the proposed project **COULD NOT** have a significant effect on the environment and a **NEGATIVE DECLARATION** will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A **NEGATIVE DECLARATION WILL BE PREPARED.**
- I find the proposed project **MAY** have a significant effect on the environment and a **ENVIRONMENTAL IMPACT REPORT** is required.

Date July 3, 1997

Nancy Dakin
Nancy Dakin, Environmental Planner

I concur with the findings and conclusions above.

Marie Meredith
Marie Meredith, Environmental Coordinator

XVII. EARLIER ANALYSES

Earlier analysis may be used where, pursuant to the tiering, program EIR, or other CEQA process, one or more effects have been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D).

a) **Earlier analyses used:**

- (1) DEIR and FEIR on the Santa Rosa Creek Master Plan, 1992, 1993
Santa Rosa Creek Master Plan Draft and Final Environmental Impact Report

b) **Impacts adequately addressed.**

c) **Mitigation measures.**

Other Resources Used for Purposes of this analysis:

- (1) Environmental Assessment and Conceptual Remedial Alternatives Report, Prince Memorial Greenway, Santa Rosa Creek, Santa Rosa, by Kleinfelder, Inc., March 18, 1997.

MITIGATION MONITORING PROGRAM
PRINCE MEMORIAL GREENWAY

The following environmental mitigation measures would be incorporated into the Conditions of Approval for this project in order to reduce identified significant environmental impacts to a level of insignificance. A completed and signed report for each mitigation measure indicates that this mitigation measure has been complied with and implemented.

MITIGATION MEASURES	Monitoring Agency	Show on Plans	Constructed/ Installed	Remarks
<p><u>Mitigation Measure BIO-4 (Exposure to Hazardous Materials):</u></p> <p>(a) Areas where concentrated contaminants occur would be resealed.</p> <p>(b) Marsh areas would be developed (to the extent that "roughness" is permitted, while still maintaining channel "n" values) to help to trap and remediate through natural treatment processes the pulse of low level contamination which may be released after construction.</p>	<p>S.R. Dept. of Community Development</p>			
<p><u>Mitigation Measure HYDRO-2 (Long Term Erosion and Sedimentation Impacts):</u></p> <p>(a) The channel would be protected from large scale slope failures by the use of one or more forms of revetment throughout the channel. In the channel bottom in the furthest upstream reach, near Santa Rosa Avenue, the bed would be fully lined both to provide scour protection and to limit the flow of contaminated groundwater into the channel. The banks would be fully lined on the north side. On the south side the bank would either be fully lined or—if the park option is established at the Boyett parcel—revetted with a combination of large rock, rock-faced concrete retaining walls, or vegetated, highly shear resistant erosion control fabric. The erosion control fabric</p>	<p>S.R. DPW, SCWA</p>			

MITIGATION MEASURES	Monitoring Agency	Show on Plans	Constructed/ Installed	Remarks
<p>would be limited to the elevations near or above the expected design flow (10,300 cfs, an estimated 100-year flow) water surface elevation. Downstream of the fully lined section, the revetment materials would be similar except that the bed of the channel would be protected by a buried layer made up of large pieces of the current lining material. Erosion control material might be used at relatively lower elevations as anticipated design shear stresses decreased, but would remain above the expected 2-year flow elevation. The size of rock to be used in the channel would be based on the anticipated shear stresses and would conform to standard sizing specifications for stability.</p> <p>(b) To reduce the amount of sediment movement that occurs when flows are returned to the channel bed, the new bed would be shaped to match the best available information on the expected equilibrium shape of the channel bottom. In selected locations, weir structures made of rock would be used to fix the channel grade. The location of the low flow channel would be largely controlled by planform conditions and the placement of buried "hard points" or spur dikes constructed of rock and rubble along the opposite bank of the channel.</p> <p>(c) If the park at the Boyett parcel is constructed, an observation tower with vertical support beams would reduce the potential for the formation of a strong eddy developing at the park as a result of the high velocity flows exiting the culverts. During development of construction drawings, physical testing of the hydraulic conditions at the Boyett parcel should be conducted if the park is constructed to refine the observation platform design to effectively disrupt formation of eddies at this location.</p>				

MITIGATION MEASURES	Monitoring Agency	Show on Plans	Constructed/ Installed	Remarks
<p>(d) The low flow portion of the channel, including the pools, is expected to be maintained by natural scour and deposition processes. It is possible that after project construction, some pools may not be maintained at the 2 - 3 foot level anticipated. Monitoring of the channel morphology would be conducted to determine if the pools are being maintained at this depth, which is expected to provide valuable fish habitat. If most pools are not successfully maintained at these depths after five years following construction, corrective modifications to the in-channel structure in the immediate vicinity of the expected pools should be carried out.</p>				
<p>Mitigation Measure HYDRO-6 (Flood Hazard - Vegetative Debris): The potential impacts of vegetative debris on bridge piers can be addressed by a two-pronged program: 1) regular maintenance prior to the high runoff season to remove or cut up any unsecured large woody debris, which poses the greatest risk; and 2) monitoring of bridge conditions as high flows develop to address any buildup that may be initiated. The first aspect of the program is already part of the regular channel maintenance conducted by the Sonoma County Water Agency, though the need for this activity would increase if the proposed project is built. The equipment necessary to remove debris from bridge piers may need to be acquired by the SCWA or the City (depending on the maintenance agreement developed by these Agencies) if the second strategy is required. It may be 5 - 10 years before vegetation within the channel is sufficiently large to consider the need for such a program.</p>	<p>S.R. DPW, SCWA</p>			

MITIGATION MEASURES	Monitoring Agency	Show on Plans	Constructed/ Installed	Remarks
<p>Mitigation Measure <u>HYDRO-7 (Flood Hazard - Changes in Hydraulic Conditions)</u>:</p> <p>(a) The testing conducted to date includes steady-state hydraulic analysis using the Corps of Engineers' computer simulation model, HEC-RAS. During development of construction drawings, plan-level protection from hazards created by changes in hydraulic conditions, including any possible weak hydraulic jump, should be tested with a physical model or other hydraulic analysis to allow for refinements in the placement of boulders and other elements of project design. The physical model or other hydraulic analysis would be used to test and refine the design for the proposed channel to ensure that a weak hydraulic jump does not form downstream of Santa Rosa Avenue at discharges at or less than the design discharges.</p> <p>(b) In addition, ongoing monitoring of the channel should be conducted through the installation of stream gages at Santa Rosa Avenue and another bridge downstream, such as Pierson Street. These gages would provide extremely valuable information about conditions in the channel and the hydrologic conditions in the creek. Only one of them would need to be correlated to discharge levels; stage data would be sufficient at the other gage for the purpose of monitoring the effect of natural changes in vegetation and channel conditions on peak flow elevations in the channel. Because vegetation and changes in the bed morphology that affect roughness would evolve over time, the "roughness" in the channel must be monitored on an ongoing basis. Through calibration of the hydraulic model to actual flood data, the means would also exist to compare the estimated channel roughness to actual</p>	<p>S.R. Dept. of Community Development, DPW, SCWA</p>			

MITIGATION MEASURES	Monitoring Agency	Show on Plans	Constructed/ Installed	Remarks
<p>channel conditions. If channel conditions are shown to be "rougher" than assumed in the hydraulic model used to develop the plan, construction or maintenance activities can be undertaken to reduce the calibrated channel "roughness."</p>				
<p>Mitigation Measure HAZ-1 (Potential Exposure of Contaminated Soils):</p> <p>(a) <i>Excavation and Removal of Contaminated Soils:</i> As described in the project description, soil would be removed to achieve profile modifications. Some additional material may need to be excavated in the vicinity of known contaminants in locations that would not be isolated with cut-off walls or other protective mechanisms. This soil would be removed and hauled to an appropriate landfill or treatment location. The addition of impermeable linings would be utilized, as needed, to ensure that additional contaminants do not enter the channel (See Mitigation Measure HAZ-2). The creek bed or bank would be backfilled in these locations with clean soil and rock.</p>	<p>S.R. Dept. of Community Development, DPW</p>			
<p>(b) <i>Monitoring:</i> Construction field monitoring of the creek project would be conducted to observe soil conditions at the time of concrete removal to appropriately respond to possible field conditions not previously discovered during the course of previous site assessment.</p>				

MITIGATION MEASURES	Monitoring Agency	Show on Plans	Constructed/ Installed	Remarks
<p>(c) <i>Potential Supplemental Sampling:</i> Exposed areas where soil character appears to differ substantially from that described in the pre-approved in-ground sample data may require supplemental sampling to achieve off-site disposal acceptance of materials generated. A contingency plan would be prepared that would include allowances for off-site stockpiling of a limited quantity of soil (if soils must be excavated and removed from the creek corridor immediately), or avoidance of the area until such time as supplemental in-ground sample data can be obtained for subsequent pre-approval with the selected landfill(s). Contingency plans, temporary soil stockpiling location(s) would be reviewed by local agency officials for their concurrence.</p>				
<p><u>Mitigation Measure HAZ-2 Contaminants Entering Stream Channel:</u> As described in the project description, the following mitigation would be built into project design:</p> <p>(a) <i>Concrete Lining:</i> The concrete channel would be replaced at the east end of the project area to minimize stream scour, and isolate known contaminants, similar to the existing condition. The east portion of the project represents the area where potentially more significant residual soil pollution would remain in-ground following project construction.</p>	<p>S.R. Dept of Community Development, DPW</p>			

MITIGATION MEASURES	Monitoring Agency	Show on Plans	Constructed/ Installed	Remarks
<p>(b) <i>Slope Stabilization and Separation</i>: Over the balance of the project reach where residual low concentration petroleum hydrocarbon may remain within underlying sidebank soils, standard slope stabilization and appropriate separation measures would be incorporated in the project to include:</p> <ul style="list-style-type: none"> • engineered terraces and slopes • rock placement • retention and enhancement of existing concrete liner • Geotextile fabric • Ornamental landscape (both hard and soft; i.e. trailway pavements and planting zones) 				
<p>Mitigation Measures HAZ-3 (Floating Oil Product): As described in the project description, the following mitigation measures are built into the project design:</p> <p>(a) <i>Removal and Control During Construction</i>: Areas around borings K-7 and K-17, free-floating oil product observed in exposed sediments upon concrete liner removal will be removed by pumping/skimming devices and/or through the use of adsorbent materials as appropriate. Oil affected shallow sediments in these areas will be excavated and disposed offsite at appropriate landfills as necessary. Adsorbent booms will surround the perimeter of these construction zones to contain and protect against fugitive floating oil discharges, and surface flow will be diverted around these work areas.</p>	<p>S.R. Dept. of Community Development, DPW</p>			

MITIGATION MEASURES	Monitoring Agency	Show on Plans	Constructed/ Installed	Remarks
<p>(b) <i>Construction of Cut-off Walls:</i> As described in the project description, in areas where floating oil product has been identified, creek improvements will include the placement of cut-off walls beginning at the base of the creek channel in these areas. In the absence of a concrete liner, these cut-off walls would reinstate the barrier element that the concrete liner provided in isolating floating oil product to shallow groundwaters adjacent to the base of the creek channel, thereby preventing its discharge into surface waters of the creek. The cut-off walls will be constructed of compatible/impermeable material and extend below saturated sediments to depths of 2 feet below the elevation of the base of the adjacent low flow channel. The cut-off walls will extend laterally beyond the limit of observed oil impact parallel to the creek and key back into, and under, the sidebank slope. The depth of the cut-off walls are anticipated to be approximately 7 feet and will penetrate 5 feet, or more, beneath the shallow groundwater table surface (e.g. elevation of sediment surface under present concrete liner) which exists during normal dry summer months. This should provide sufficient depth margin during significant drought years when lowering of the shallow water table (and any floating product) might occur.</p>				
<p><u>Mitigation Measure HAZ-4 (Commingleing Groundwater/Surface Water):</u></p> <p>(a) <i>Monitoring:</i> On-going monitoring of surface water quality would be conducted as part of post-construction maintenance of the renovated creek corridor. A surface water quality program would be included to evaluate seasonal performance of project mitigation measures. Monitoring program plans would be reviewed and approved by appropriate local regulatory agencies.</p>	<p>S.R. Dept. of Community Development, DPW</p>			

MITIGATION MEASURES	Monitoring Agency	Show on Plans	Constructed/ Installed	Remarks
<p>(b) <i>Marsh Areas</i>: Restoration plans include the planting of aquatic macrophytes (to the degree feasible while monitoring maintenance of the "n" value (channel roughness) to maintain flood control capacity) such as cattails and other reed plants in slower water ponding areas to encourage nutrient uptake and filtering of available organic compounds in the water column. The use of aquatic macrophytes in strategic efforts to treat nutrient-rich waters and decrease biological oxygen demand (BOD) is well established. Primarily used as a tertiary treatment of wastewater, aquatic macrophytes are also recognized as adding a dimension of treatment to waters affected by organics such as chlorinated and petroleum hydrocarbons, as well as inorganic compounds such as heavy metals. While not a primary treatment element, development of marshes in the creekbed is anticipated to have an overall beneficial impact on water quality and habitat improvement.</p>				
<p><u>Mitigation Measure TRANS-3 (a) (Bicycle Safety)</u>: The "multi-use trail" identified on the north side of Santa Rosa Creek would be designed and operated to meet accepted standards, as set forth below.</p> <p>(1) All advisory and warning signs, striping, and pavement markings would be provided to meet standards developed for Class I bikeways in Section 2376 of the Streets and Highway Code and the Manual on Uniform Traffic Control Devices (MUTCD). Supplementary informational or regulatory signs (such as hours of operation, closure during flood conditions, etc.) may also be included as needed.</p>	<p>City of Santa Rosa Depts. of Community Development, Transit and Parking, and DPW</p>			

MITIGATION MEASURES	Monitoring Agency	Show on Plans	Constructed/ Installed	Remarks
<p>(2) Street crossings shown at Santa Rosa Avenue would be designed to City of Santa Rosa and Caltrans standards, including crosswalk location, width, striping, and warning signs. The need and location of warning lights or traffic lights would be determined by the City. Signal controls are generally recommended at all mid-block trail crossings where the average daily traffic (ADT) volumes exceed 15,000 vehicles per day, average speeds are 45mph or over, street widths exceed 40 feet, and the nearest existing signalized intersection is over 350 feet. All new street crossings should have adequate overhead lighting.</p> <p>(3) The design of the multi-use pathway or bikeway would meet mandatory standards in Chapter 1000 of the Caltrans Highway Design Manual, i.e., minimum 8-feet of paved surface with 2-foot wide horizontal clearance and minimum of 8-foot vertical clearance. The pathway would also meet the requirements of the American with Disabilities Act (ADA), specifically in the design of curb cuts at access points, minimum width of entrance bollards, and maximum gradients (4.5%).</p> <p>(4) Railings (42") would generally be provided where the drop-off immediately adjacent to the path is in excess of 20% slope and a total vertical drop of over 15 feet.</p> <p>(5) The City would adopt a specific maintenance plan for the pathway, including regular and seasonal tasks. This plan would include keeping the surface clear of debris, restriping, weed and graffiti abatement, pavement repairs, and trimming of vegetation.</p>				

MITIGATION MEASURES	Monitoring Agency	Show on Plans	Constructed/ Installed	Remarks
<p>(6) While security is not anticipated to be a significant issue along the corridor, increased use of the corridor will additional surveillance and patrol by the Police Department or other agency, and consider installing cell-phones and/or panic buttons connected to the Police Department.</p> <p>(7) Twenty-four (24) hour lighting would be provided at the U.S. 101 undercrossing and along the full length of the bicycle/pedestrian path.</p> <p>(8) Where the multi-use path meets Railroad Street, A Street, and Santa Rosa Avenue, measures would be taken to prevent bicycles from riding directly into the street. A short barrier should be provided along the street at the path intersection and a sign directing bicyclists should be provided. Bollards, signs, and possibly other features such as a short curve or 'kink' in the pathway should be utilized to make bicyclists aware of the pathway termination.</p> <p>(9) The ramp from the multi-use path to "A" Street would be designed as close as possible to 90 degrees, with sufficient inside radius to permit bicycles to turn. The intersection would be controlled with appropriate warning and control signs, including a STOP and YIELD sign, as appropriate.</p> <p>(10) Maximum speed for bicyclists should be set at 10 mph, due to the design of the pathway and anticipated numbers of pedestrians.</p> <p>(11) Two pedestrian bridges are proposed as part of the project. The bridges are not intended to be used as part of the bicycle system. Signs would be placed at each end of the bridges indicating that bicycles must be walked across the bridges.</p>				

MITIGATION MEASURES	Monitoring Agency	Show on Plans	Constructed/ Installed	Remarks
<p>Mitigation Measure TRANS-3 (b) (Bicycle Safety): Pedestrian facilities should be designed and managed according to City and other accepted standards. A summary of these is listed below.</p> <p>(1) All pedestrian-only pathways would be signed to prohibit bicycles.</p> <p>(2) All pedestrian facilities would meet ADA standards, including the provision of ramps with a maximum gradient of 4.5%.</p> <p>(3) Minimum width of all pedestrian facilities would be four feet.</p> <p>(4) All pedestrian facilities would be closed prior to flood conditions. All pathways would be designed to withstand flooding and subsequent cleaning by heavy machinery.</p>	<p>S.R. Depts. of Community Development, Transit and Parking, DPW</p>			
<p>Mitigation Measure VIS-1 (Potential Conflict with Design Standards): Project construction documents would be reviewed by the City of Santa Rosa Design Review Board for conformance with the Creek Master Plan, September 21, 1993, as well as the Draft Santa Rosa Creek Design Manual, December 5, 1996, which has not been adopted at this time. Construction documents concerned with improvements to the Caltrans right-of-way would need approval by that agency.</p>	<p>S.R. Dept. of Community Development</p>			
<p>Mitigation Measure VIS-4 (Increase in Light and Glare): Lighting fixtures would be designed to direct the light downward, and minimize glare into adjacent properties, and the low flow channel. Light fixtures would be placed no higher than 12 feet, with bollard type lighting on trails other than the multi-use trail.</p>	<p>S.R. Dept of Community Development</p>			

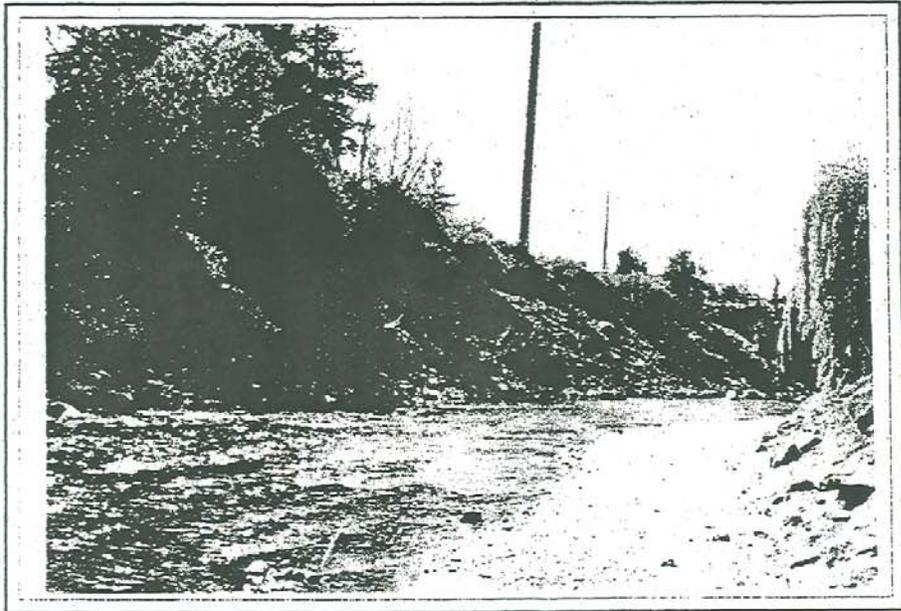
MITIGATION MEASURES	Monitoring Agency	Show on Plans	Constructed/ Installed	Remarks
<p><u>Mitigation Measure PUBLIC SAFETY-1:</u> A flood hazard signage program would be developed to warn the public about hazards at the creek during flood events, and staff responsible for maintaining the Prince Memorial Greenway would also post notices and/or limit access to channel paths through use of flagging and sawhorses when flood hazards threaten use of the pathways.</p>	<p>S.R. DPW</p>			
<p><u>Mitigation Measure PUBLIC SAFETY-2:</u> The culvert exits could be modified or the slope design adapted as needed to make the culverts more difficult to enter from the walkways. Signage could also be used to discourage entrance of the culverts.</p>	<p>S.R. DPW</p>			
<p><u>Mitigation Measure CULT-RES-1 (CA-Son-11):</u> Evidences of this site would likely be visible after concrete removal is accomplished. Where it is possible to do so, archaeological testing could reveal the presence or absence of intact features within this site. Testing should consist of auger boring at regular intervals at set distances from the creek, or systematic trenching with a small backhoe or similar device. If intact prehistoric deposits are encountered, a program of recovery or avoidance can be developed. If no intact features are found, earth moving activities can proceed with an archaeological monitor present, once size and extent of the remaining site is determined. Any features observed should be excavated appropriately or preserved in place. If human remains are encountered, the county coroner should be notified, and all appropriate procedures followed.</p>	<p>S.R. Dept. of Community Development</p>			

MITIGATION MEASURES	Monitoring Agency	Show on Plans	Constructed/ Installed	Remarks
<p>Mitigation Measure CULT-RES-3 (CA-Son-860/HJ): Mechanized testing with a backhoe or similar excavator can be used to determine the soil conditions and recover encountered features. This method may succeed in eliminating areas requiring further work. Secondly, archaeological monitoring and recovery of discovered features may offer the most efficient method of approaching this area. There is a potential for highly interesting features to be encountered in this area. If the opportunity presents itself, consideration should be given to preserving at least one feature in place and making a permanent exhibit space of it.</p>	<p>S.R. Dept. of Community Development</p>			
<p>Mitigation Measure CULT-RES-4 (CA-Son-1276H): Monitoring of excavation accompanied by removal of discovered features may be the most efficient method of approaching this site. The precise locations of significant features cannot be predicted at this time. Two avenues are open. Mechanized testing with a backhoe or similar excavator can be used to determine the soil conditions and recover encountered features. This method may succeed in eliminating areas requiring further work. Secondly, archaeological monitoring and recovery of discovered features may offer the most efficient method of approaching this area. There is a potential for highly interesting features to be encountered in this area. If the opportunity presents itself, consideration should be given to preserving at least one feature in place and making a permanent exhibit space of it.</p>	<p>S.R. Dept. of Community Development</p>			

MITIGATION MEASURES	Monitoring Agency	Show on Plans	Constructed/ Installed	Remarks
<p>Mitigation Measure CULT-RES-5 (CA-SON-1805H): The precise locations of significant features cannot be predicted at this time. Two avenues are open. Mechanized testing with a backhoe or similar excavator can be used to determine the soil conditions and recover encountered features. This method may succeed in eliminating areas requiring further work. Secondly, archaeological monitoring and recovery of discovered features may offer the most efficient method of approaching this area. There is a potential for highly interesting features to be encountered in this area. If the opportunity presents itself, consideration should be given to preserving at least one feature in place and making a permanent exhibit space of it.</p>	<p>S.R. Dept. of Community Development</p>			
<p>Mitigation Measure CULT-RES-6 (Ethnographic Village of Hukabetaivi): Where it is possible to do so, archaeological testing could reveal the presence or absence of intact features within this site. Testing should consist of auger boring at regular intervals at set distances from the creek, or systematic trenching with a small backhoe or similar device. If intact prehistoric deposits are encountered, a program of recovery or avoidance can be developed. If no intact features are found, earth moving activities can proceed with an archaeological monitor present, once size and extent of the remaining site is determined. Any features with stratigraphic integrity should be excavated appropriately or preserved in place. If human remains are encountered, the county coroner should be notified, and all appropriate procedures followed.</p>	<p>S.R. Dept. of Community Development</p>			

MITIGATION MEASURES	Monitoring Agency	Show on Plans	Constructed/ Installed	Remarks
<p>Mitigation Measure CULT-RES-10 (Son-HR-28): Archaeological monitoring is recommended for all earth disturbing operations in or adjacent to the historic district. If any potentially significant deposits or features are discovered all work in the immediate vicinity of the discovery should be halted and the discovery evaluated by the monitoring archaeologist. Significant deposits should be removed using archaeological methods, or avoided and left in place.</p>	<p>S.R. Dept of Community Development</p>			

5. Persons and Agencies Consulted



5. AGENCIES AND PERSONS CONSULTED

Lead Agency: City of Santa Rosa Department of Community Development

Mike Sheppard, Project Manager, Senior Planner*
Marie Meredith, Environmental Coordinator
Frank Kasimov, Planner*

1. Local Agencies

- a. City of Santa Rosa Public Works Department
Rick Moshier, Deputy Director of Engineering*
David Montegue, Associate Civil Engineer
Colleen Ferguson, Associate Civil Engineer
- b. City of Santa Rosa Recreation and Parks Department
Bill Montgomery, Assistant Director*
- c. City of Santa Rosa Redevelopment Agency
Stephen Burke, Executive Director
Jocelyn Lundgren, Redevelopment Program Specialist*
Bruce Scott, Housing Authority Commissioner and Redevelopment Authority Commissioner
- d. City of Santa Rosa Department of Transit and Parking
Bruce Eisert, Transit Planner*
- e. City of Santa Rosa Department of Administrative Services
Dianne Thompson, Facilities Planner*
- f. City of Santa Rosa Police Department
Tony Wynne, Sergeant
Paul Messerschmitt, Detective

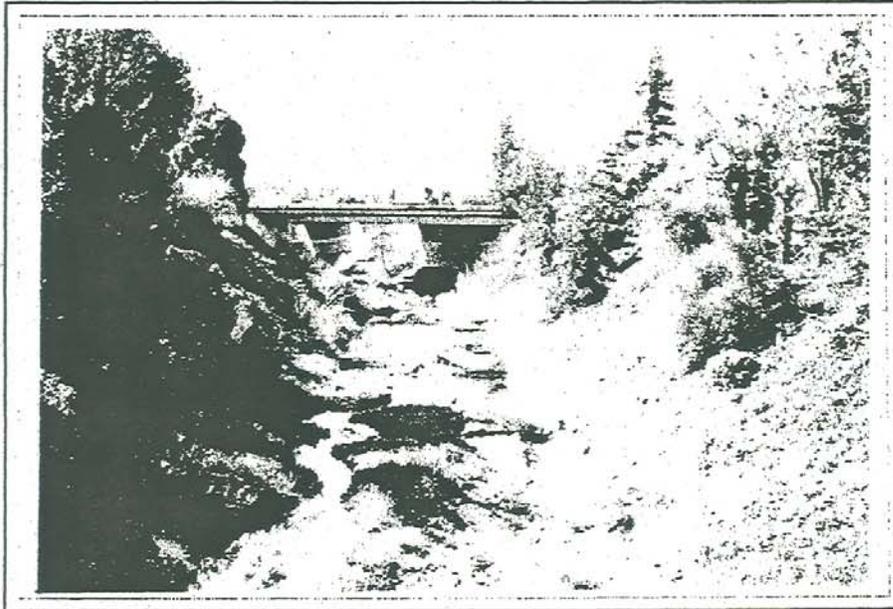
* Identifies agency staff participating in the Prince Memorial Greenway Task Force.

-
- g. Sonoma County Water Agency
Randy Pool, SCWA General Manager and Chief Engineer
M.J, Oliveri, Civil Engineer
Bill Stephens, Operations Maintenance Coordinator
 - h. Sonoma County Agricultural Preservation and Open Space District
David Hansen, General Manager
 - 2. **Regional Agencies**
 - a. Regional Water Quality Control Board
Susan Warner, Senior Engineering Geologist
 - 3. **State Agencies**
 - a. California Department of Fish and Game
Bill Cox, Fisheries Biologist
 - b. Caltrans District 5
Dianne Steinhauser, District 4 Division Chief
Katie Yim, Senior Transportation Engineer-Project Design, District 4
Wingate Lew, Caltrans Transportation Planning, District 4
 - 4. **Federal Agencies**
 - a. U.S. National Marine Fisheries Service
Jim Bybee, Northern Area Environmental Coordinator
Rick Wantuck, Fisheries Engineer
 - b. U.S. Environmental Protection Agency (EPA)
Mike Monroe, Biologist
 - c. United States Fish and Wildlife Service
Mark Littlefield, Wetlands Branch Chief
 - d. United States Army Corps of Engineers Regulatory Branch
Liz Varnhagn, Project Manager
-

- e. Federal Highway Works Authority, California Division
John Shultz, Chief-District Operations

- f. Natural Resource Conservation Service (formerly the U.S. Soil Conservation Service)
Walter Sykes, Watershed Planning Specialist
Lisa Shanks, District Conservationist

6. Report Preparation



6. REPORT PREPARATION

This report was prepared by Nancy Dakin, Environmental Planner, members of the Prince Memorial Greenway Environmental Consultant Team, and the City of Santa Rosa Department of Community Development.

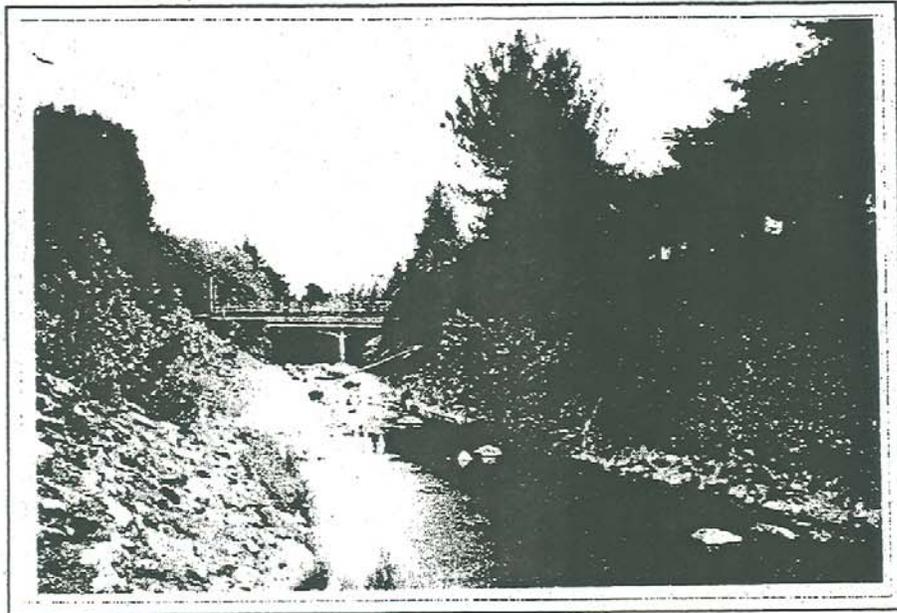
City of Santa Rosa Department of Community Development

- Wayne Goldberg, Director of Community Development
- Mike Sheppard, Project Manager and Senior Planner
- Marie Meredith, Environmental Coordinator

Environmental Consultant Team

- Marco Waaland, Golden Bear Biostudies: Biological Resources
- Michael Fawcett, Fisheries Biologist: Fisheries Analysis
- Betty Andrews, Philip Williams Associates: Hydrology and Water Quality
- Mark Klaver, Kleinfelder, Inc.: Hazardous Materials
- Mark Klaver and Richard Yahn, Kleinfelder, Inc.: Geology and Seismicity
- Nancy Dakin, Environmental Planner: Land Use Analysis
- Michael Jones, Transportation Consultant: Transportation, Circulation and Bikeways
- Jane Marx and Denise Peter, CMM&H: Visual Analysis
- Richard Rodkin, Illingworth and Rodkin: Noise Analysis and Construction-related Air Quality Mitigation.
- William Roop and Darren Milman, Archaeological Resource Service: Archaeological Evaluation

Appendices



Appendix A. Summary of Hazardous
Materials Sampling Findings
and Data by Kleinfelder, Inc.

mg/kg. As noted previously, oil product was also observed in shallow waters at boring K-7 and further east below the Lowry site at boring K-3.

As part of the environmental assessment activity for this project, Kleinfelder assembled historic site sampling data for the Boyett Parcel obtained during prior work conducted for the City of Santa Rosa and associated with the Luther Burbank Stormdrain replacement project completed in 1996. The Boyett Parcel will be subject to significant earthwork and creekbank profile modification in connection with the creek restoration project. The general limits of TPH as gasoline beneath the Boyett Parcel is illustrated in the CMMH cross-section diagram on Plate 5 (see section 747+00) along with the preferred design concept for the creek profile modification in that area. Appendix B of this report contains Kleinfelder-prepared graphic representation of the analytical data obtained by others on the Boyett Parcel and identifies the distribution of TPH as gasoline with increasing depth in the soil profile and in shallow groundwater. Figure B-4 in Appendix B provides a cross-section showing the inferred vertical distribution of TPH on this parcel as well as the conceptual creek profile modifications associated with the creek restoration project. As indicated in Appendix B figures, TPH concentrations beneath the Boyett Parcel are significantly greater than most all samples obtained elsewhere during Phase 1 and Phase 2 project sampling.

5.1.2 Metals

The analytical results of soil and groundwater samples analyzed for heavy metals are contained on Tables 3 and 4. Sample results generally reveal ambient concentrations of these parameters except in the shallow 3.5 foot deep sample collected from boring K-17. In this sample, total lead was reported at a concentration of 180 mg/kg and total zinc was reported at a concentration of 160 mg/kg. These results are anomalous only in that they are several times greater than ambient concentrations. These results appear consistent with data obtained during Grace Brothers Site investigation and remedial activity which identified that elevated lead and zinc was present in fill material in that area. The shallow sample from boring K-17 likely reflects the distal portion of

the fill talus, which at the top of the bank, once contained substantially higher concentrations of these metals before its cleanup in 1996. The cleanup goal for lead in the Grace Brother Remedial Action plan was established at a concentration of 400 mg/kg. This goal recognized that capping of the area with pavement would occur in conjunction with future site development. Groundwater samples collected from monitoring wells in the affected area of the Grace Brothers site have not revealed concentrations of dissolved lead in groundwater.

It should be noted that unlike the Phase 1 sample analyses, Phase 2 metals analyses were performed using the Toxic Characteristic Leaching Potential (TCLP) methods which test for the soluble or leachable quantity of a particular metal (see Table 4). Although fill soils collected from borings SB-3 and SB-7 (drilled along the creek bank above K-17) were not tested for total lead and cannot be compared to total lead data obtained during Phase 1 work, these sample results show that appreciable concentrations of soluble lead or zinc are not present. The reported concentrations for metals detected during Phase 2 sampling would not result in a hazardous or designated waste classification for these materials.

5.1.3 Volatile Organics

Volatile organic compounds (VOCs) were analyzed in 12 samples collected during Phase 1 fieldwork, and in 17 samples during Phase 2 fieldwork. Table 5 summarizes the analytical results of the volatile organic analyses on Phase 1 samples. There is no data table prepared for Phase 2 sample results for volatile organic compounds because none of the samples tested revealed detectable concentrations of the targeted parameters. For reference, all the Phase 2 samples analyzed for semi-volatile organic compounds (see Table 7) were also tested for volatile organics using EPA Test Method 8010.

As shown on Table 5, only the groundwater sample collected from boring K-1 and K-10 revealed detectable concentrations of volatile organic compounds. In boring K-1, butanone was reported at a concentration of 10 micrograms per liter (ug/l) and may be affiliated with the petroleum

hydrocarbons also detected in that area. As previously reported, in boring K-10, the chlorinated compounds trichlorethene (TCE), tetrachloroethene (PCE), and cis-1,2-dichloroethene (DCE) were detected at concentrations ranging from between 0.5 and 3.0 ug/l. The reported concentrations of these respective compounds are less than the primarily drinking water quality goal for these parameters. The presence of these volatile compounds may be attributable to historic nearby land uses which once included a former dry-cleaning operation at the site of the existing Sears Automotive Center. Volatile organic compounds such as PCE (tetrachloroethene) include the dry-cleaning solvents are commonly detected in connection with these types of operations.

5.1.4 Semi-Volatile Organics

The analytical results of Phase 1 and 2 soil and groundwater samples subject to semi-volatile organic compound analysis are listed on Tables 6 and 7, respectively. As shown, the detection of semi-volatile organic compounds is sporadic with generally low concentrations reported when found. Selected samples show a greater preponderance of these parameters including the soil and groundwater samples collected from Phase 1 borings K-2 and K-3 which were the highest in concentration (adjacent to the Lowry Site), and Phase 2 borings SB-22 and SB-41 located below the Sears Automotive Building and the Boyett Parcel, respectively.

Detectable concentrations of selected semi-volatile organic compounds was reported in several other samples in addition to those highlighted above. In these other samples, however, the reported concentrations are generally low and may be associated with the presence of the heavy molecular-weight TPH also reported in these samples.

As noted, the highest reported concentrations of semi-volatile organics, including the PNA constituents, were detected in the borings drilled adjacent to the known impact area on the Lowry property whose historic use included the former PG & E coal gassification plant operations.

Characteristic wastes connected with these types of operations include PNAs, and therefore, its presence in samples collected from borings K-2 and K-3 was not unexpected.

5.2 Surface Water Samples

Surface water samples collected from stations W-1 through W-5 were analyzed for total recoverable petroleum hydrocarbons using EPA test method 418.1, semi-volatile organics using EPA test method 8270, five heavy metals (Cd, Cr, Pb, Ni, and Zn) using EPA test method 6010, pH, and volatile/purgeable organics using EPA test methods 8010/8020. There is no data table prepared for these analytical results since there were no parameters reported of note above the respective method minimum analytical detection limits. The exception to this is a detectable concentration of dissolved zinc reported at concentration of between 6 ug/l and 13 ug/l in all surface water samples analyzed. Measurements of pH in surface water samples ranged from between 7.7 and 8.0. The ubiquitous detection of dissolved zinc in all samples would appear to be intrinsic of general surface water quality throughout this section of Santa Rosa Creek.

6.0 REMEDIAL ALTERNATIVES ASSESSMENT

During the course of this environmental assessment and final creek improvement concept plan development, Kleinfelder along with project team members have evaluated the significance of the soil and groundwater data relative to planned creek improvements. Alternative approaches to mitigating the potential environmental impacts posed by site conditions described in this report have been addressed by identifying remedial tasks to be performed concurrently, and as part of, other planned creek restoration work. This approach will minimize the duration of construction activity within the creek channel and also provide the most cost-effective and manageable method in implementing site mitigation.

The viable remedial methods to address soil and groundwater conditions for this site considered the following evaluation criteria:

- Nature and distribution of the various contaminant types uncovered,
- City of Santa Rosa staff objectives and goals.
- Regulatory agency objectives and guidance,
- Cost-effectiveness and implementability concurrent with overall project construction,
- Effectiveness of the alternatives in reducing potential threats,
- Prospective volume of impacted soil or water likely to be generated during construction in accordance with current creek restoration design concepts, and

- Creek improvement design features (trailways and pavement types, erosion protection elements) and anticipated construction methods to be used during creek restoration work

TABLE 1 (cont.)
 PHASE 1 SAMPLE RESULTS
 PRINCE MEMORIAL GREENWAY PROJECT
 41-3383-02/001
 ANALYTICAL RESULTS
 PETROLEUM HYDROCARBONS

BORING NO.	SAMPLE TYPE	DEPTH (feet)	CONCENTRATION (PPM)			CONCENTRATION (PPB)				REMARKS
			TPHg	TPHd	TPHmo	B	T	X	E	
K-16	W	-	ND	0.23*	0.69	ND	ND	ND	ND	TD = 7.0'
	S	3.5	-	17*	54	-	-	-	-	
	S	5.5	-	7.2*	15	-	-	-	-	
	S	3.5/5.5	ND	-	-	ND	ND	ND	ND	
K-17	W	-	0.07**	14*	30	ND	ND	ND	ND	TD = 7.0' Product Sheen
	S	3.5	-	1,500*	3,000	-	-	-	-	
	S	5.5	-	ND	ND	-	-	-	-	
	S	3.5/5.5	ND	-	-	ND	ND	ND	ND	
K-18	W	-	ND	0.47*	1.2 ^b	ND	ND	ND	ND	TD = 7.0'
	S	3.5/5.5	ND	5.8*	20	ND	ND	ND	ND	
FB	W	-	ND	ND	ND	ND	ND	ND	ND	
TB	W	-	ND	-	-	ND	ND	ND	ND	
LABORATORY REPORTING LIMITS (MIN.)	W	-	0.05	0.05	0.5	0.5	0.5	0.5	0.5	
	S	-	1.0	1.0	10	2.5	2.5	2.5	2.5	

NOTES:

- W Water Sample
- S Soil Sample
- TPHg Total Petroleum Hydrocarbons - gasoline
- TPHd Total Petroleum Hydrocarbons - diesel
- TPHmo Total Petroleum Hydrocarbons - motor oil
- B Benzene
- T Toluene
- X Total Xylenes
- E Ethylbenzene
- * Reported "diesel" actually identified by analyst as either heavier than diesel, or atypical of diesel standard
- ** Reported "gasoline" actually identified by analyst as heavier than gasoline
- FB Field Blank Sample
- TB Trip Blank Sample
- TD Total depth of hole
- a 2.0/6.0 Composite sample consisting of soils collected from 2.0 and 6.0 feet below ground surface.
- b 3.0/1.6 Total Petroleum Hydrocarbon concentration without/with silica gel pre-filtering. Samples subject to silica gel filtering exceeded standard holding times.

TABLE 2
 PHASE 2 SOIL SAMPLE RESULTS
 PRINCE MEMORIAL GREENWAY PROJECT
 41-3383-02/002
 ANALYTICAL RESULTS
 PETROLEUM HYDROCARBONS

BORING NO.	DEPTH (feet)	CONCENTRATION (PPM)			CONCENTRATION (PPB)				REMARKS
		TPHg	TPHd	TPHmo	B	T	X	E	
SB-1	2.0	ND	ND	540	ND	ND	ND	ND	
SB-2	2.0/4.5	ND	14 •	52	ND	ND	ND	ND	
SB-3	1.5	ND	13 •	54	ND	ND	ND	ND	
	3.5	ND	12 •	20	ND	ND	ND	ND	31 Bunker C
SB-4	1.5/3.5	ND	ND	120	ND	ND	ND	ND	
SB-5	1.0/3.0	ND	ND	78	ND	ND	ND	ND	
SB-6	2.0/4.5	ND	ND	550	ND	ND	ND	ND	
SB-7	2.0	ND	ND	40	ND	ND	ND	ND	
SB-8	2.0/4.0	ND	80 •	250	ND	ND	ND	ND	
SB-9	2.0	ND	ND	240	ND	ND	ND	ND	
SB-10	2.0/5.0	ND	ND	77	ND	ND	8.0	ND	
SB-11	2.0/4.5	ND	ND	20	ND	ND	ND	ND	
SB-12	2.0/4.5	ND	ND	110	ND	ND	ND	ND	
SB-13	2.5/6.0	ND	2.5 •	ND	ND	ND	ND	ND	
SB-14	-	NA	NA	NA	NA	NA	NA	NA	
SB-15	2.5	ND	ND	330	ND	ND	ND	ND	
SB-16	2.0	ND	4.2 •	11	ND	ND	ND	ND	
SB-17	1.5/4.0	ND	ND	42	ND	ND	ND	ND	
SB-18	2.0	ND	ND	220	ND	ND	ND	ND	
SB-19	-	NA	NA	NA	NA	NA	NA	NA	
SB-20	2.0	ND	ND	440	ND	ND	ND	ND	
SB-21	-	NA	NA	NA	NA	NA	NA	NA	
SB-22	1.5/3.5	ND	4.0 •	16	ND	ND	ND	ND	
SB-23	1.0/3.0	ND	2.2 •	ND	ND	ND	ND	ND	
SB-24	2.5	ND	5.3 •	21	ND	ND	ND	ND	
	5.0	ND	1.4 •	ND	ND	ND	ND	ND	
SB-25	2.0/4.0	ND	18 •	60	ND	ND	ND	ND	
SB-26	2.5	ND	ND	46	ND	ND	ND	ND	
SB-27	2.0	ND	ND	120	ND	ND	ND	ND	
SB-28	1.5	ND	ND	96	ND	ND	ND	ND	
SB-29	1.0/3.0	ND	ND	140	ND	ND	ND	ND	
SB-30	-	NA	NA	NA	NA	NA	NA	NA	
SB-31	2.0/4.0	ND	ND	150	ND	ND	ND	ND	
SB-32	2.0	ND	ND	61	ND	ND	ND	ND	

See next page for notes.



TABLE 2 (cont.)
 PHASE 2 SOIL SAMPLE RESULTS
 PRINCE MEMORIAL GREENWAY PROJECT
 41-3383-02/002

ANALYTICAL RESULTS
 PETROLEUM HYDROCARBONS

BORING NO	DEPTH (feet)	CONCENTRATION (PPM)			CONCENTRATION (PPB)				REMARKS
		TPHg	TPHd	TPHmo	B	T	X	E	
SB-33	2.0	ND	ND	63	ND	ND	ND	ND	
SB-34	1.5/3.0	ND	32 *	71	ND	ND	ND	ND	
SB-35	2.0	ND	100 *	160	ND	ND	ND	ND	
SB-36	2.0	ND	ND	110	ND	ND	ND	ND	
SB-37	2.0	ND	ND	ND	ND	ND	ND	ND	
SB-38	--	NA	NA	NA	NA	NA	NA	NA	
SB-39	2.0	ND	3.0 *	ND	ND	ND	ND	ND	
SB-40	2.0/4.5	ND	ND	25	ND	ND	ND	ND	
SB-41	2.5/5.0	ND	19 *	42	ND	ND	ND	ND	
SB-42	2.0/5.0	ND	21 *	47	ND	ND	ND	ND	
SB-42-GW	Grab Water	0.07	NA	NA	ND	ND	1.9	0.8	
FB	-	ND	ND	ND	ND	ND	ND	ND	
TB	-	ND	ND	ND	ND	ND	ND	ND	
LABORATORY REPORTING LIMITS (MIN.)	Soil	1.0	2	20	2.5	2.5	2.5	2.5	
	Water	0.05	--	--	0.5	0.5	0.5	0.5	

NOTES:

2.0/6.0 Composite sample consisting of soils collected from 2.0 and 6.0 feet below ground surface

TPHg Total Petroleum Hydrocarbons - gasoline

TPHd Total Petroleum Hydrocarbons - diesel

TPHmo Total Petroleum Hydrocarbons - motor oil

B Benzene

T Toluene

X Total Xylenes

E Ethylbenzene

* Reported "diesel" actually identified by analyst as either heavier than diesel, or atypical of diesel standard

FB Field Blank Sample

TB Trip Blank Sample

TABLE 3
 PHASE 1 SAMPLE RESULTS
 PRINCE MEMORIAL GREENWAY PROJECT
 41-3383-02/001
 ANALYTICAL RESULTS
 METALS

BORING NO.	SAMPLE TYPE	DEPTH (feet)	CONCENTRATION (PPM)										
			Cd	Cr	Cu	Ni	Zn	Pb	As	Hg	Se	Ba	Ag
K-2	S*	1.5	ND	ND	-	-	-	ND	ND	ND	ND	1.3	ND
K-3	W	-	ND	ND	ND	ND	ND	ND	-	-	-	-	-
	S*	1.5	ND	ND	-	-	-	ND	ND	ND	ND	1.5	ND
K-4	S*	1.5	ND	ND	-	-	-	ND	ND	ND	ND	0.94	ND
K-6	W	-	ND	ND	ND	ND	ND	ND	-	-	-	-	-
K-8	S	2.0/6.0	ND	ND	-	-	-	ND	ND	ND	ND	1	ND
K-15	S	3.5	ND	51	16	62	38	23	-	-	-	-	-
	S*	3.5	-	-	-	-	-	ND	-	-	-	-	-
	S	5.5	ND	23	10	26	16	15	-	-	-	-	-
	S*	5.5	-	-	-	-	-	ND	-	-	-	-	-
K-16	W	-	ND	ND	ND	ND	ND	ND	-	-	-	-	-
	S	3.5	ND	22	14	35	41	18	-	-	-	-	-
	S*	3.5	-	-	-	-	-	ND	-	-	-	-	-
	S	5.5	ND	41	14	49	25	23	-	-	-	-	-
	S*	5.5	-	-	-	-	-	ND	-	-	-	-	-
K-17	S	3.5	ND	80	40	81	160	180	-	-	-	-	-
	S*	3.5	-	-	-	-	-	ND	-	-	-	-	-
	S	5.5	ND	36	15	52	33	3.9	-	-	-	-	-
	S*	5.5	-	-	-	-	-	ND	-	-	-	-	-
K-18	W	-	ND	ND	ND	ND	ND	ND	-	-	-	-	-

NOTES:

- W Water sample for dissolved metals concentration
- S Soil sample for total metals concentration
- S* Soil sample for leachable metals concentration using TCLP analytical procedures
- 2.0/6.0 Composite soil sample consisting of soils collected 2.0 and 6.0 feet below ground surface
- ND Not detected above minimum laboratory reporting limits (see laboratory report for individual reporting limits)
- Cd Cadmium
- Cr Total Chromium
- Cu Copper
- Ni Nickel
- Zn Zinc
- Pb Lead
- As Arsenic
- Hg Mercury
- Se Selenium
- Ba Barium
- Ag Silver



TABLE 4
 PHASE 2 SOIL SAMPLE RESULTS
 PRINCE MEMORIAL GREENWAY PROJECT
 41-3383-02/002
 ANALYTICAL RESULTS
 METALS

(Soil sample for leachable metals concentration using TCLP analytical procedures)

BORING NO.	DEPTH (feet)	CONCENTRATION (PPM)						Remarks
		Cd	Cr	Cu	Ni	Zn	Pb	
SB-2	2.0/4.5	ND	ND	-	ND	0.41	0.005	
SB-3	1.5	ND	ND	-	ND	0.40	0.004	
	3.5	ND	ND	-	ND	0.24	ND	
SB-7	2.0	ND	ND	-	ND	0.68	0.10	
SB-12	2.0	ND	ND	-	ND	0.65	0.057	
SB-16	2.0	ND	ND	-	ND	0.27	0.020	
SB-17	1.5/4.0	ND	ND	-	0.18	0.37	0.11	
SB-22	1.5/3.5	ND	ND	-	ND	0.26	ND	
SB-23	1.0/3.0	ND	ND	-	ND	0.17	ND	
SB-24	2.5	ND	ND	-	ND	0.54	ND	
	5.0	ND	ND	-	ND	0.52	ND	
SB-27	2.0	ND	ND	-	ND	0.57	0.030	
SB-32	2.0	ND	ND	-	ND	3	0.12	
SB-35	2.0	ND	ND	-	ND	1.8	0.005	
SB-20	2.0	ND	ND	-	0.20	3.8	0.062	
SB-33	2.0	ND	ND	-	ND	0.13	ND	
SB-39	2.0	ND	ND	-	ND	0.31	ND	
SB-41	2.5/5.0	ND	ND	-	ND	0.35	0.009	

NOTES:

2.0/6.0 Composite soil sample consisting of soils collected 2.0 and 6.0 feet below ground surface.

ND Not detected above minimum laboratory reporting limits (see laboratory report for individual reporting limits)

Cd - Cadmium

Cr - Total Chromium

Cu - Copper

Ni - Nickel

Zn - Zinc

Pb - Lead

TABLE 5
 PHASE 1 SAMPLE RESULTS
 PRINCE MEMORIAL GREENWAY PROJECT
 41-3383-02/001

ANALYTICAL RESULTS
 VOLATILE ORGANIC COMPOUNDS
 (Only Detected Parameters Listed)

BORING NO.	SAMPLE TYPE	DEPTH (feet)	CONCENTRATION (PPB)				REMARKS
			cis-1,2-DCE	PCE	TCE	BUTANONE	
K-1 *	W	-	ND	ND	ND	10*	
K-2	S	1.5	ND	ND	ND	ND	
K-3	W	-	ND	ND	ND	ND	
K-4	S	1.5	ND	ND	ND	ND	
K-6	W	-	ND	ND	ND	ND	
K-8	S	2.0/6.0	ND	ND	ND	ND	
K-9 *	W	-	ND	ND	ND	ND	
K-10	W	-	1.4	3.0	0.5	ND	
K-15	W	3.5/5.5	ND	ND	ND	ND	
K-16	S	-	ND	ND	ND	ND	
K-17	W	-	ND	ND	ND	ND	
K-18	W	-	ND	ND	ND	ND	
FB	W	-	ND	ND	ND	ND	
LABORATORY REPORTING LIMITS (MIN.)	W	-	0.50	0.40	0.40	0.40	
	S	-	2.0	2.0	2.0	2.0	

NOTES:

W Water Sample

S Soil Sample

2.0/6.0 Composite sample consisting of soils collected from 2.0 and 6.0 feet below ground surface.

cis-1,2-DCE cis-1,2-dichloroethene

PCE Tetrachloroethene

TCE Trichloroethene

ND Not detected above minimum analytical reporting limits. Minimum analytical detection limits can vary in the case where sample contains other compounds creating matrix interference.

FB Field Blank Sample

* Samples exceeded standard holding times.

TABLE 7
 PHASE 2 SOIL SAMPLE RESULTS
 PRINCE MEMORIAL GREENWAY PROJECT
 41-3383-02/002
 ANALYTICAL RESULTS
 SEMI-VOLATILE ORGANIC COMPOUNDS
 (Only Detected Parameters Listed)

BORING NO	DEPTH (feet)	CONCENTRATION (PPM)														
		Acenaphthene	Acenaphthylene	Anthracene	Benzoanthracene	Benofluoranthene	Benopyrene	Benoperylene	Chrysene	Dibenzanthracene	Fluoranthene	Fluorene	Indenopyrene	Naphthalene	Pteridilene	Pyrene
SB-2	2.0/4.5	ND	ND	ND	0.15	0.43	0.33	0.30	0.21	ND	0.40	ND	0.22	ND	ND	0.53
SB-3	1.5	ND	ND	ND	ND	0.23	ND	0.19	ND	ND	ND	ND	ND	ND	ND	ND
SB-3	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.20	ND
SB-7	2.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SB-12	2.0/4.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SB-16	2.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SB-17	1.5/4.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SB-20	2.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SB-22	1.5/3.5	0.26	1.5	3.0	4.9	7.6	4.6	2.4	4.6	0.80	15.0	1.5	2.4	ND	13.0	10.0
SB-23	1.0/3.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SB-24	2.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SB-27	2.0	ND	ND	ND	ND	0.18	ND	ND	ND	ND	0.24	ND	ND	ND	ND	0.26
SB-32	2.0	ND	ND	ND	ND	0.23	ND	ND	ND	ND	0.31	ND	ND	ND	0.24	0.37
SB-33	2.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SB-35	2.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.19
SB-39	2.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SB-41	2.5/5.0	ND	0.39	ND	0.29	0.62	0.54	0.66	0.32	ND	1.4	ND	0.42	0.56	1.4	1.6

NOTES:

2.0/6.0 Composite sample consisting of soils collected from 2.0 and 6.0 feet below ground surface.

ND Not detected above minimum laboratory reporting limits.

* Bis-2 ethylhexylphalate and Di-n-butylphalate are commonly found due to plastics in laboratory apparatus. Their detection in listed samples is suspected, or was confirmed by, positive results in laboratory control blank samples.



A CULTURAL RESOURCES EVALUATION OF THE PRINCE MEMORIAL GREENWAY, SANTA ROSA CREEK, SANTA ROSA, CALIFORNIA

SUBMITTED BY

William Roop and Darren Milman, ARCHAEOLOGICAL RESOURCE SERVICE

SUBMITTED FOR

Nancy Dakin, Environmental Planner

June 4, 1997

A.R.S. Project 96-19

INTRODUCTION

As requested and authorized, Archaeological Resource Service has conducted an archaeological evaluation of the parcel described below. The evaluation consisted of these separate aspects:

1. A check of the information on file with our office and the Regional Office of the California Historical Resources Information System, to determine the presence or absence of previously recorded historic or prehistoric cultural resources;
2. A check of appropriate historic references to determine the potential for historic era archaeological deposits;
3. A surface reconnaissance of all accessible parts of the project area to locate any visible signs of potentially significant historic or prehistoric cultural deposits, and;
4. preparation of this report, and the summary report included in the body of the environmental document.

PROJECT DESCRIPTION

The proposed project would remove concrete and other pavements along a half mile section of Santa Rosa Creek, replacing the present channel with a more pedestrian friendly environment. Planned improvements include paths and walkways, greenswards, shaded pools of water, and other amenities. The magnitude of the final project is directly related to the availability of funding. The basic project is confined to the creek channel itself, while the greater project will include improvements in parks adjacent to the channel, and the addition of several creek-related improvements.

Specific improvements in the conceptual plan include an interactive sculptural fountain, decorative pavements, and landscaping on the east side of Santa Rosa Avenue; a statue of Luther Burbank in the intersection of Santa Rosa and Sonoma Avenues; an open air amphitheater between the creek and Sonoma Avenue on the west side of Santa Rosa Avenue; a creek walk along both sides of the channel; opening an access to the creek at the western end of Sonoma Avenue (adjacent to the freeway); Grassy banks at

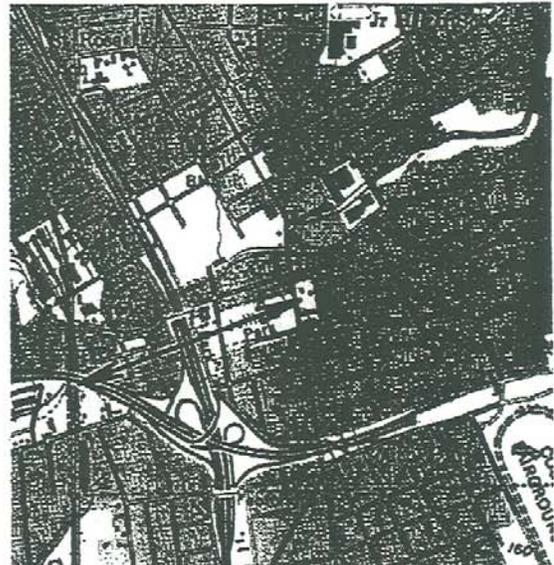


FIGURE 1 - PROJECT LOCATION ON THE USGS 7.5'
SANTA ROSA QUADRANGLE MAP

the Grace Brothers site; improvements to Olive Park; a pedestrian bridge at Orange Street; and a pedestrian connection to railroad Square along existing city streets.

PROJECT LOCATION

The project area is located in Santa Rosa Creek between Santa Rosa Avenue and Railroad Avenue. The parcel consists of acres of river bank and river bottom land bounded by Santa Rosa Avenue bridge on the east, Railroad Avenue on the west, commercial and redevelopment areas on the north, and residential and park areas on the south.

The project area lies in the Mexican era land grant of Cabeza de Santa Rosa within unsectioned land of Township 7 North, Range 8 West, Mt. Diablo Base and Meridian. The Universal Transverse Mercator Grid coordinates to the approximate center of the project area, as determined by measurement from the USGS 7.5' Santa Rosa Quadrangle Map (1954 photorevised 1980) are:

4254000 Meters North,
524780 Meters East, Zone 10

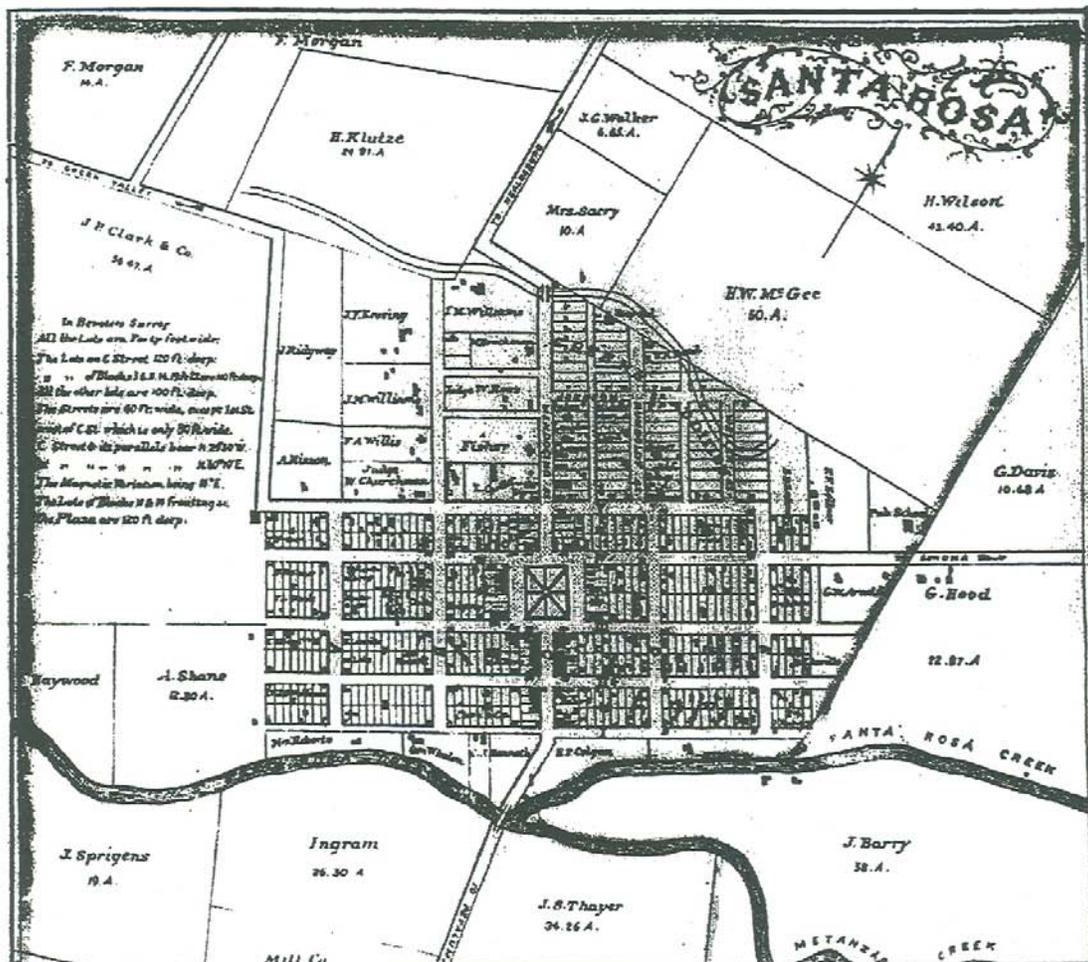


FIGURE 2 – SANTA ROSA IN 1867.

The project area lies between the Bridge at the confluence of Matanzas and Santa Rosa Creeks, and the western edge of the map.

RESULTS OF LITERATURE CHECK

Santa Rosa Creek has been a strong magnet for human settlement for thousands of years. The section of creek in this project area has undergone major changes since the first Europeans arrived in the 1820's. For several thousand years Native Californians settled along its banks. The major settlement for our purposes lay at the confluence of Santa Rosa and Matanzas Creeks, at the upstream end of our project area. This site, Son-11 originally, may be at least 6,000 years old. Additional settlements lay downstream. It is likely that the entire reach of Santa Rosa Creek we are examining was actively used by Native peoples. In the earliest part of the historic era the main settlement lay upstream, but this changed rapidly in the American era. Several prehistoric and historic resources are reported in the general vicinity of the project area.

CA-SON-11

This site is located at the confluence of Santa Rosa and Matanzas Creek. The city hall building rests directly on top of the original site. The site was originally recorded in 1908 by Jesse Peters. Later described in 1973 by R. Melander, CA-Son-11 was characterized by the presence of obsidian flakes and shell remains. A single obsidian tool was recovered from the site. Melander notes that at the time of inspection the area had been extensively modified by urban development. The site once extended for about two city blocks and may extend to the south into the property now occupied by Luther Burbank Gardens. The size and extent of the site indicates that CA-Son-11 was once a major village. Melander proposes that the site may have been Kabetciwua.



FIGURE 3 - DOWNTOWN SANTA ROSA IN 1900

The project area lies between the railroad tracks on the left and the bridge at the confluence of Matanzas and Santa Rosa Creeks. The geography of the town changed considerably after the earthquake of April 1906.

S. A. Barrett describes the village in his 1908 monograph as, "Kabeciwa, in the eastern edge of the town of Santa Rosa and at a point about a mile from the old village of Hukabetawi."

The stratigraphic integrity of CA-Son-11 has been largely destroyed by the extensive development in the area. Due to extent of the site, it is likely that artifacts and other cultural evidences are present, and possible that areas with undisturbed features remain. In contrast to the site's considerable size and significance, very little archaeological work has been done.

CA-Son-11 is large prehistoric village site. The site probably occurs throughout the easternmost extent of the project area. The site has already been severely damaged by construction of the City Hall and federal buildings, as well as other work in the area. If intact features of this site remain, they are at great risk from any excavation activities.

ATTEMPTED FRANCISCAN MISSION SITE

Robert A. Thompson states in his publication of 1884, *Central Sonoma*, "The principal rancharia was on the Smith farm, just below the bridge, at the crossing of Santa Rosa creek, on the road leading to Sebastopol. Upon this site a Mission was commenced, probably by Father Amoroso. The Indians rose up and destroyed the incipient Mission buildings about the same time that the Mission of Sonoma was devastated." The bridge location referred to, is probably the bridge at the confluence of Santa Rosa Creek and Matanzas Creek.

The location of the Franciscan Mission, initiated along Santa Rosa Creek in the early 19th century, has not been accurately located. It is likely that the location is near the crossing of Santa Rosa Creek by Santa Rosa Avenue, at the eastern end of the project area. If the location is confirmed as being within the project area, any evidences associated with the Mission would be of great historical and archaeological value. Considering its brief tenure of only a few days, it is unlikely that any remnant of this short lived site exists.

CA-SON-860/H

Both prehistoric and historic components comprise CA-Son-860/H. Originally recorded in 1973 by Melander, Owen and King, this site has subsequently been documented by Fredrickson in 1976 and Mikkelsen in 1984. The site abuts the steep north bank of the Santa Rosa Creek channel, just to east of A Street.

The prehistoric component of the site is described as a seasonal settlement, characterized by the presence of shell, bone, and obsidian. The site has been found to be quite extensive and has yielded large quantities of artifacts and several features.

The site contains a substantial historical component. Dona Maria Ignacia Lopez Carrillo moved to the Santa Rosa area in 1837, the first historic occupation of Santa Rosa. The following year she applied for a land grant of approximately 8800 acres. The land grant known as Rancho Cabeza de Santa Rosa was approved in 1841. Upon the death of Dona Carrillo, her son Julio Carrillo received all of the ranch north of Santa Rosa Creek. Julio created a partnership and began planning for the new town of Santa Rosa. That same year, 1853, Julio built himself a frame house on the corner of Second and B Streets. That house was located in the present lot bounded by First and Second Streets to the south and north, and by B Street to the west. The property that originally pertained to Julio Carrillo's house included the entire southeast corner of the original Santa Rosa lots. The present day boundaries are Freeway 101 to the west, B Street to the east, Third Street to the north, and First Street along Santa Rosa Creek to the south.

The oldest wooden residence in Santa Rosa located on A Street is another historic component of CA-Son-860/H. The house was constructed between 1854 and 1857, probably by John Ingram. A trash dump from under the house was excavated in 1984 by Adrian Praetzelis.

GRACE BROTHERS BREWERY (CA-SON-1276H)

Located on the north bank of Santa Rosa Creek, to the southeast of the intersection of Wilson and Second Streets, is the former location of the Grace Brothers Brewery. This historic brewery was founded in 1872 as the Santa Rosa Brewery and continued operations into the mid-20th century. Pottery, glass, horse

shoes and other artifacts were noted in addition to vast quantities of glass and ceramic beer bottles in a survey of the site by Nelson B. Thompson in 1980.

CA-SON-1805H

Mid-19th century remains and features comprise CA-Son-1805H, located beneath the parking lot of the Days Inn, southwest of the corner of Railroad and Second Streets. The site is described as a probable drainage ditch and associated sump. These features have been directly associated with the historic Redmonds Clean House in an extensive report by Mary and Adrian Praetzellis in 1989.

HUKABETAWI (ETHNOGRAPHIC VILLAGE SITE)

S. A. Barrett describes the village in his 1908 monograph as, "Hukabetawi, on the south bank of the Santa Rosa creek at a point a short distance from the depot of the California Northwestern railway in Santa Rosa." In David Fredrickson's report of 1976, he locates the village on the south bank of the Santa Rosa Creek to the west of the railroad tracks. The railroad depot quoted by Barrett was located between Third and Fourth Street adjacent to the tracks.

ARCHITECTURAL RESOURCES

CA-SON-HR-25

The Westside District, roughly comprising 15 city blocks to the west of the railroad tracks and north of Santa Rosa Creek in central Santa Rosa, has been designated a historic resource. The neighborhood contains 19th and 20th century structures and contains the "Italian Town", Santa Rosa's only historic ethnic neighborhood.

CA-SON-HR-26

Just to the east of the railroad tracks and to the north of Santa Rosa Creek, is the North Railroad District. This area is the only surviving historic commercial district in Santa Rosa outside of Railroad Square. Historically, the area contained many Italian businesses serving the Italian community to the west.

CA-SON-HR-27

Just to the south of Santa Rosa Creek and bounded by Dutton Avenue and West Third Street is the West Third Street District. This residential neighborhood contains small houses from early in the 20th century. Still unincorporated, this neighborhood was created by the growing need for residential property. The residents were largely Italians, interacting with "Italian Town" just to the north across the creek.

CA-SON-HR-28

The Olive Park Neighborhood is isolated from adjacent neighborhoods by Santa Rosa Creek to the north, railroad tracks to the west, the 101 Freeway to the east, and the 12 Freeway to south. Olive Park is focal point of the neighborhood and serves as a buffer to commercial and industrial district immediately across the creek. Except for lots along the creek, most of the parcels are intact from their original 50 by 134 foot survey lots. Most of the original turn of the century houses remain in good preservation.

RESULTS OF SURFACE EXAMINATION

The surface inspection for archaeological sites and features was remarkably fruitless. The vast majority of the examined area is covered by pavement, landscaping or buildings. Despite the magnitude of resources known to be in or adjacent to the project area, field conditions are not conducive to surface inspection. No features or artifacts with archaeological potential were observed in the initial reconnaissance.

Architectural resources are recognized on adjacent properties, but not within the planned project area. One recognized historic district borders the project area. Fragments of old glass and metal were observed at many locations in the project area. These were liberally mixed with more recent trash in some areas.

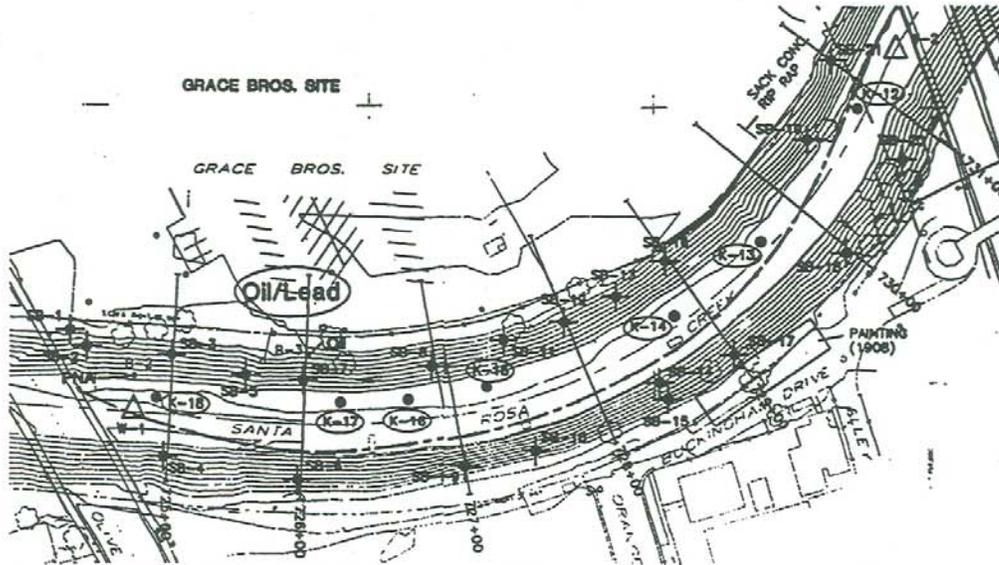


FIGURE 4 – SOIL TEST BORES WEST OF HIGHWAY 101

Bores executed higher on the slope tend to have a higher concentration of historic site indicators.

Examination of soil samples recovered by Kleinfelder indicated the presence of historic materials, primarily glass, bits of metal, charcoal, brick and ceramic fragments in many of the specimens. Some of these items are indicative of the archaeological features deposited as part of Santa Rosa's earliest development. Additional constituents include concrete, asphalt, construction sand, indicative of the recent disturbance of

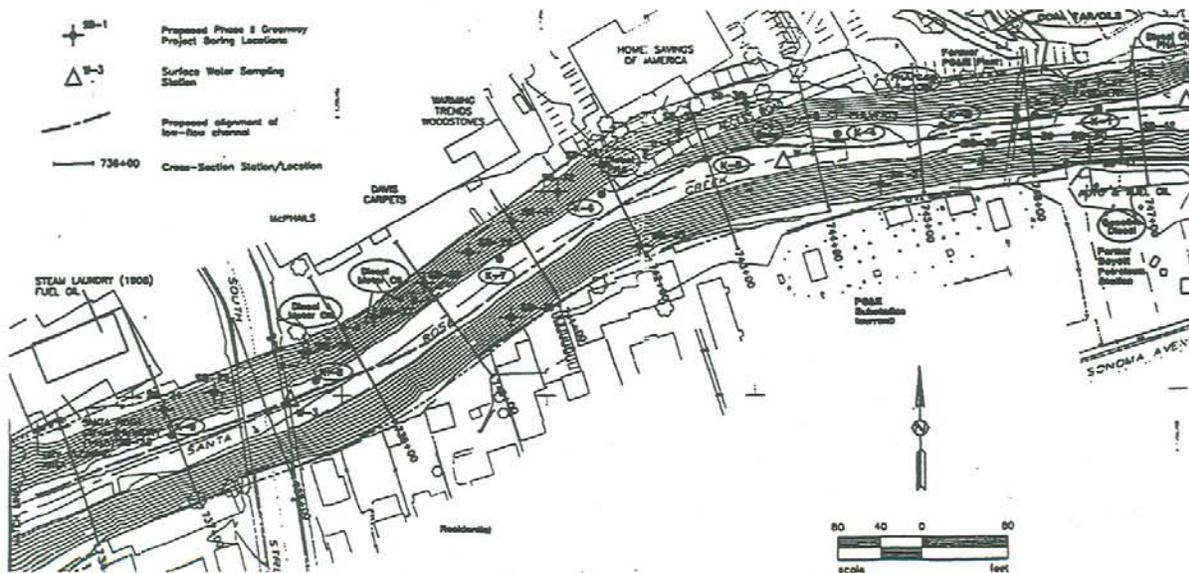
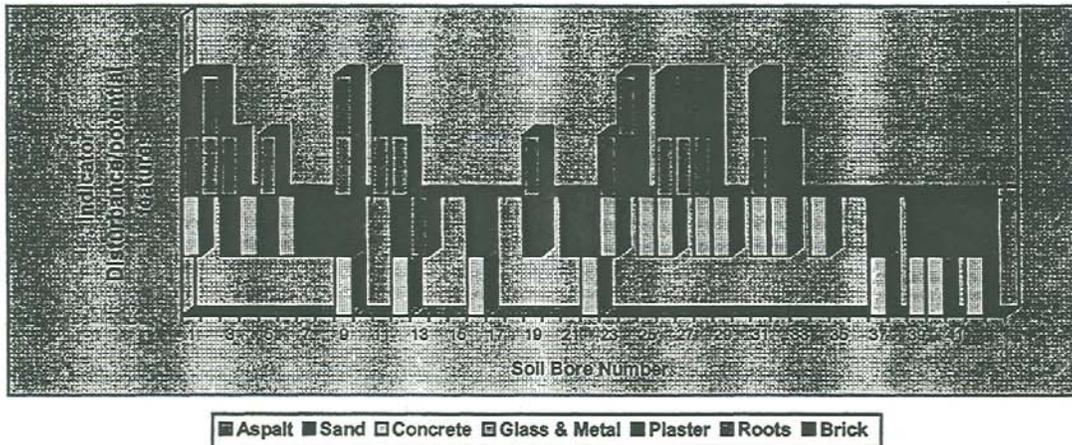


FIGURE 5 – SOIL TEST BORES EAST OF HIGHWAY 101

Soil bore 22 is not shown. It lies about 50 feet east of the highway, about 2/3 of the way down the slope of the creek bank

some areas. Some of the deposits are undoubtedly badly disturbed or destroyed, leaving a general scatter of broken artifacts and debris through the soil. Some level of soil contamination by these glass and metal bits in particular, was observed in 15 of the soil samples. These materials are presumably from fairly close to the surface. A total of 42 bores were made at various points along the channel between Railroad and Santa Rosa Avenues. The numbered bores start at Railroad Avenue, occurring on both sides of the creek, and terminate at the Santa Rosa Avenue bridge. The following table summarizes the constituents potentially indicative of a historic era component or of recent disturbance. Disturbance factors such as concrete, asphalt and construction sand are listed as negative values, historic glass and ceramics, old metal fragments, bricks, and tree roots are indicators of the potential presence of important deposits and are shown as positive values.

Selected Constituents Of Soil Test Bores



The distribution of the soil test bores is a factor in the observation of historic constituents. Boring locations are shown in the figures below. Soil constituents vary significantly with the location of borings on the slope of the creek bank. Only one bore executed below about half way down the slope of the creek bank, Number 19, contained any archaeological site indicators. The remaining positive indicators were more than halfway up slope from the creek. This indicates that, generally, the lower work occurs on the slope, the less sensitive it will be to the presence of cultural resources.

POTENTIAL IMPACTS TO CULTURAL RESOURCES

CA-SON-11

Excavation and removal of previously built features is likely to disturb the soils of Son-11. If these soils have been previously disturbed, impact will be minor. If undisturbed soil deposits are encountered, major impacts may occur to highly significant prehistoric features. A possibility exists that human remains will be found in this part of the project area.

SPANISH MISSION SITE

This ephemeral site may no longer exist in a physical form. If no evidence has survived, no impacts can occur from this project. There is a very slim potential for intact features to be discovered that associate with this brief attempt to extend Spanish influence into Santa Rosa. Any intact features that are discovered are likely to be severely damaged or destroyed by the planned project.

CA-SON-860/H

The creek bank throughout this recognized archaeological site has a high potential to contain intact features from the earliest part of Santa Rosa's history. Disruption of these features will result in the loss of part of the physical record of Santa Rosa as a 19th century town.

CA-SON-1276/H

The Grace Brothers Brewery site has been demonstrated to contain large numbers of historic era deposits. Excavation into the creek bank will reveal deposits associated with the brewery site. These are mostly small to large trash deposits from the active life of the brewery. Not all features associated with this parcel will be considered significant, although a large number are likely to be so classified on discovery.

CA-SON-1805H

As with other sites along the river, impacts to historic deposits associated with the former Redmond House may be found as part of this project. The creek bank throughout this recognized archaeological site has a high potential to contain intact features from the earliest part of Santa Rosa's history. Disruption of these features will result in the loss of part of the physical record of Santa Rosa as a 19th century town.

ETHNOGRAPHIC VILLAGE OF HUKABETAWI

Excavation in the westerly end of the project area may reveal deposits from this site. If no physical evidence of the settlement is found, no impacts will occur. Intact deposits from this Pomo settlement are considered highly significant and should be either recovered archaeologically, or preserved in place. There is a small possibility that human remains will be found in association with this deposit, if intact areas are found.

SON-HR-25

The Westside Historic District lies north of Santa Rosa Creek and west of the railroad tracks. This is outside of the project area. No impacts to this district are foreseen as a result of the planned project.

SON-HR-26

The North Railroad District lies north of the Railroad Square National Register district, between Donahue and Davis Streets and north of Fifth Street. This is outside of the impact area of the proposed project.

SON-HR-27

The West Third Street Historic District lies south of Santa Rosa Creek, North of Highway 12, and west of Pearson Street. This is west of the project area.

SON-HR-28

The Olive Park District lies adjacent to Santa Rosa Creek, on the south side of the creek, between Chestnut Street and Highway 101. Historic structures in this district are south of Buckingham Drive, outside of the impact area of this project. Historic archaeological deposits associated with existing and former structures in the district are likely to be located in the creek banks and along the upper edge of the existing channel. These areas are under concrete and cannot be inspected.

CONCLUSIONS

The section of Santa Rosa Creek in our project area lies adjacent to the oldest part of Santa Rosa. Although the area is currently covered in large part by concrete, buildings, and vegetation, the potential for subsurface deposits is very high. Discovered archaeological deposits may include the earliest record of American period Santa Rosa. Depending on location, discovered deposits may lend themselves to preservation in place as interpretive exhibits. This is particularly true in the Grace Brothers area and the proposed open air amphitheater.

As has been demonstrated by previous work in the area, intact archaeological features are undoubtedly also present. These features are an important record of local history. This is a rare opportunity to

enhance the proposed project and increase the cohesion of the community by inclusion of historic features as part of the recreational experience.

RECOMMENDATIONS

CA-SON-11

Evidences of this site will likely be visible after concrete removal is accomplished. Where it is possible to do so, archaeological testing could reveal the presence or absence of intact features within this site. Testing should consist of auger boring at regular intervals at set distances from the creek, or systematic trenching with a small backhoe or similar device. If intact prehistoric deposits are encountered, a program of recovery or avoidance can be developed. If no intact features are found, earth moving activities can proceed with an archaeological monitor present, once size and extent of the remaining site is determined. This village was of considerable size and was most likely the largest village in the area. Because it has only been documented minimally, any features with stratigraphic integrity should be considered significant. These features should be excavated appropriately or preserved in place. If human remains are encountered, the county coroner should be notified, and all appropriate procedures followed.

SPANISH MISSION SITE

If any remnant of this briefly established location can be identified, preservation in place, with appropriate markers, or recovery to an appropriate facility, such as the Sonoma County Museum, are the only appropriate choices.

CA-SON-860/H

The precise locations of significant features cannot be predicted at this time. Two avenues are open. Mechanized testing with a backhoe or similar excavator can be used to determine the soil conditions and recover encountered features. This method may succeed in eliminating areas requiring further work. Secondly, archaeological monitoring and recovery of discovered features may offer the most efficient method of approaching this area. There is a potential for highly interesting features to be encountered in this area. If the opportunity presents itself, consideration should be given to preserving at least one feature in place and making a permanent exhibit space of it.

CA-SON-1276/H

Monitoring of excavation accompanied by removal of discovered features may be the most efficient method of approaching this site. The precise locations of significant features cannot be predicted at this time. Two avenues are open. Mechanized testing with a backhoe or similar excavator can be used to determine the soil conditions and recover encountered features. This method may succeed in eliminating areas requiring further work. Secondly, archaeological monitoring and recovery of discovered features may offer the most efficient method of approaching this area. There is a potential for highly interesting features to be encountered in this area. If the opportunity presents itself, consideration should be given to preserving at least one feature in place and making a permanent exhibit space of it.

CA-SON-1805H

The precise locations of significant features cannot be predicted at this time. Two avenues are open. Mechanized testing with a backhoe or similar excavator can be used to determine the soil conditions and recover encountered features. This method may succeed in eliminating areas requiring further work. Secondly, archaeological monitoring and recovery of discovered features may offer the most efficient method of approaching this area. There is a potential for highly interesting features to be encountered in this area. If the opportunity presents itself, consideration should be given to preserving at least one feature in place and making a permanent exhibit space of it.

ETHNOGRAPHIC VILLAGE OF HUKABETAWI

Evidences of this site will possibly be visible after concrete removal is accomplished. Where it is possible to do so, archaeological testing could reveal the presence or absence of intact features within this site. Testing should consist of auger boring at regular intervals at set distances from the creek, or systematic trenching with a small backhoe or similar device. If intact prehistoric deposits are encountered, a program

of recovery or avoidance can be developed. If no intact features are found, earth moving activities can proceed with an archaeological monitor present, once size and extent of the remaining site is determined. This village was of considerable size and was most likely the largest village in the area. Because it has only been documented minimally, any features with stratigraphic integrity should be considered significant. These features should be excavated appropriately or preserved in place. If human remains are encountered, the county coroner should be notified, and all appropriate procedures followed.

SON-HR-25 THROUGH HR-27

No impacts to any of these historic districts are foreseen as a result of this project, and no mitigation measures are recommended.

SON-HR-28

Archaeological monitoring is recommended for all earth disturbing operations in or adjacent to the historic district. If any potentially significant deposits or features are discovered all work in the immediate vicinity of the discovery should be halted and the discovery evaluated by the monitoring archaeologist. Significant deposits should be removed using archaeological methods, or avoided and left in place.

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Appendix C. Hydraulic Analysis Related to
Flood Control Capacity
by Philip Williams Associates

Hydraulic Analysis of Potential Project Conditions

Figure 2 shows a comparison of the proposed project's design water surface elevation at a particular channel "n" or roughness value of 0.035 as compared to the original design water surface elevation. In addition, the required freeboard elevation for the proposed condition (calculated as 20 percent of the specific energy) is shown in comparison to the tops of the banks and the original required freeboard condition. (The top of bank elevations were either taken from cross-sectional data or estimated from the plan view, and may not reflect the top of the existing grouted rock.)

This graph shows that even though a slight increase in the design water surface elevation is expected in some locations, especially in the lower reach, sufficient freeboard is still provided to meet the original freeboard criteria of the project in most or all of the reach. This means that the channel will continue to be capable of conveying the design discharge with adequate freeboard under proposed project conditions. Only modest top of bank changes, if any, may be required in the vicinity of cross section 73350 (near Highway 101). If a design "n" value greater than 0.035 is used for the channel below the terraces, it may be necessary to construct a low floodwall (1 - 2 feet) or provide backfill for short reaches in parts of this section, mostly on the south bank, to provide the required freeboard. Therefore the proposed project design satisfying a value of $n=0.035$ in the central channel (and potentially up to 0.04 in some portions of the reach) will meet the design discharge with adequate freeboard as established by the Natural Resource Conservation Service (formerly the Soil Conservation Service, or SCS), and the Sonoma County Water Agency.

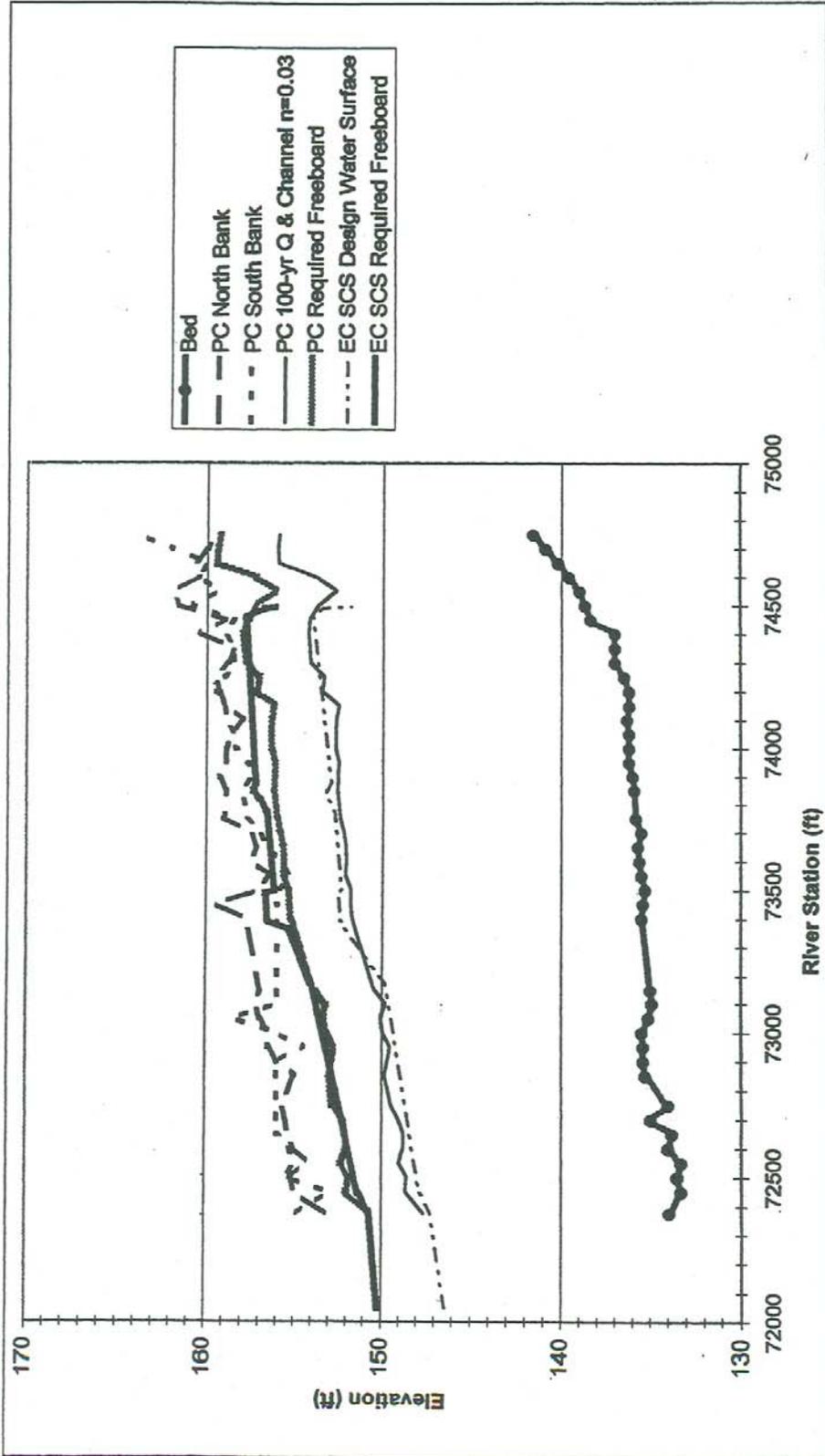


Figure 1

**Santa Rosa Creek Proposed 100-yr Flood Conditions
(Channel $n=0.03$) with SCS Freeboard Requirements and
Existing Channel Design Parameters**

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PWA#: 1137

Philip Williams & Associates, Ltd.

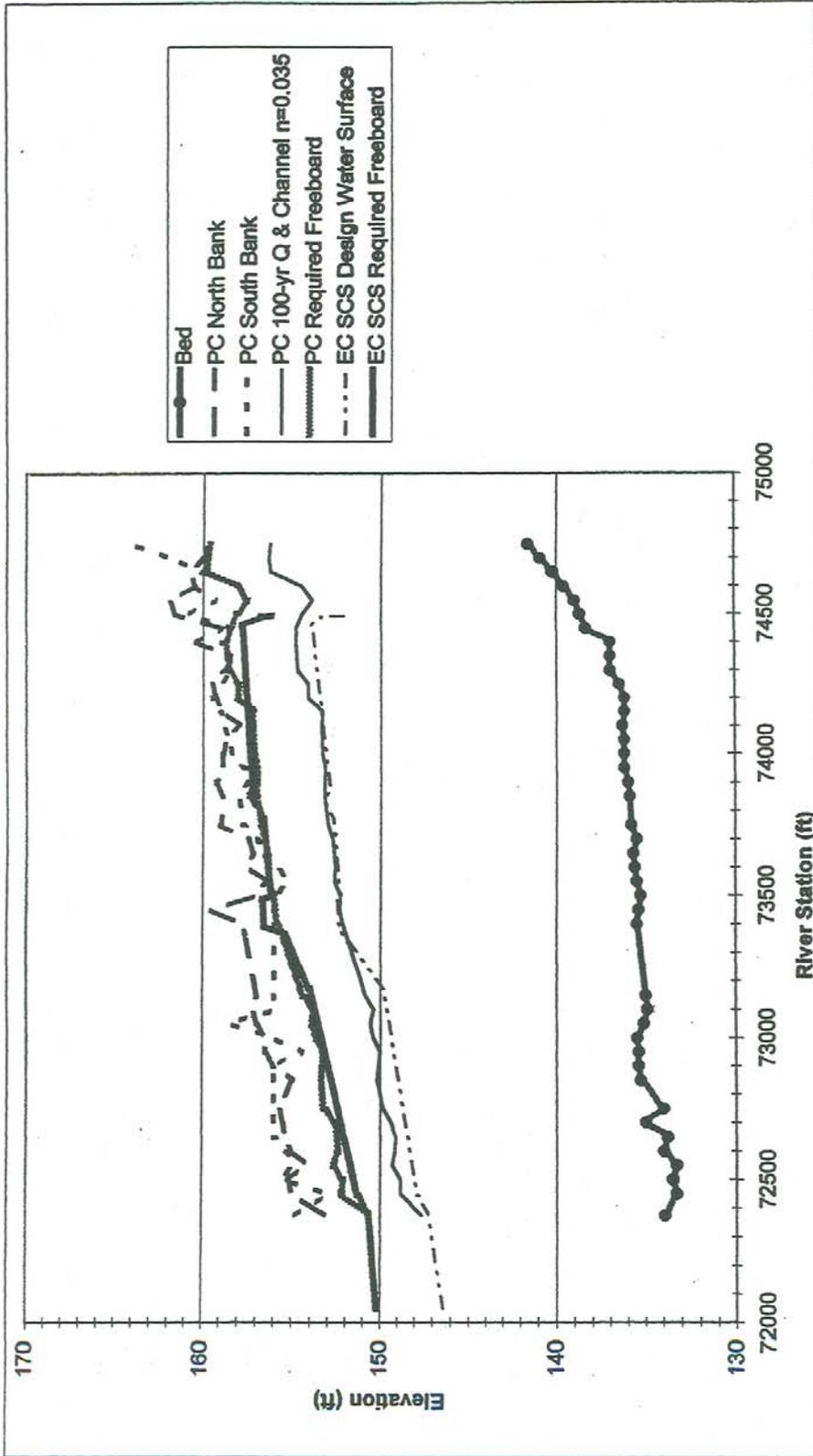


figure 2

**Santa Rosa Creek Proposed 100-yr Flood Conditions
(Channel $n=0.035$) with SCS Freeboard Requirements and
Existing Channel Design Parameters**

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PWAM: 1137

Philip Williams & Associates, Ltd.

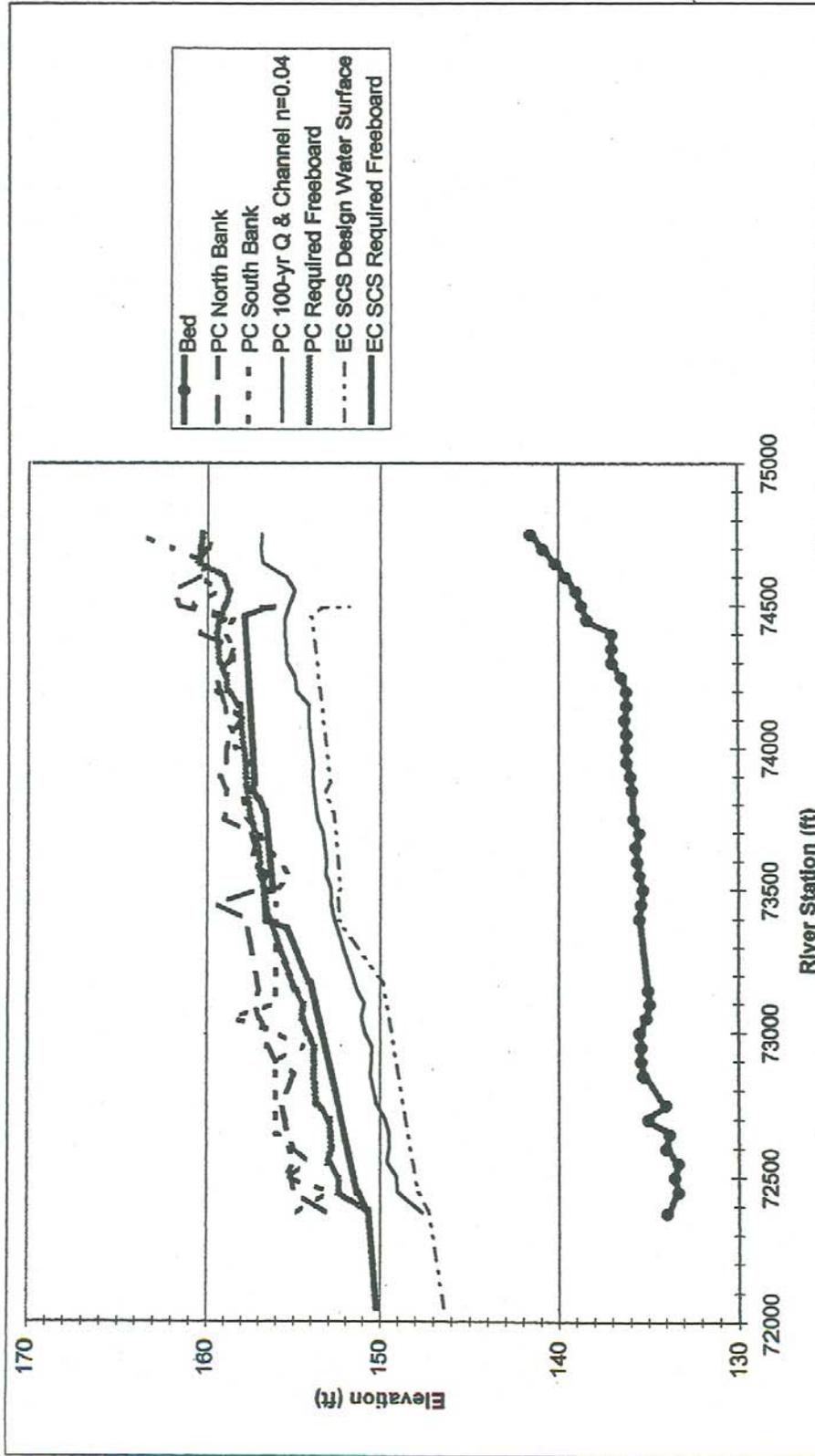


figure 3

**Santa Rosa Creek Proposed 100-yr Flood Conditions
(Channel n=0.04) with SCS Freeboard Requirements and
Existing Channel Design Parameters**

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PWA#: 1137

Philip Williams & Associates, Ltd.

Appendix D. Agency Correspondence



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Habitat Conservation Division
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

May 30, 1997 F/SWO:RW

Ms. Nancy Dakin
Environmental Planner
2435 Professional Drive
Santa Rosa, CA 95403

Dear Nancy:

Thank you for the opportunity to review the preliminary plans for Santa Rosa's Prince Memorial Greenway Project. In general, the National Marine Fisheries supports the stated goals and preliminary design concepts of the project. I would like to offer the following comments with regard to the documents and drawings accompanying your letter of May 16, 1997.

1. All in-stream structure modifications should be analyzed from a fish passage standpoint. That is, structures should not create adverse hydraulic patterns, velocity barriers, dams, or other passage impediments that would prohibit reasonable passage conditions over the full range of hydrologic flows when anadromous species are known to migrate.
2. Cool water is an important aspect of natural salmonid habitats. Since riparian shading is currently insufficient, enhancement of shaded areas might be considered by designing some architectural features for the existing bridges. This might take the form of aesthetically pleasing "cantilevered wings," protruding from the sides of the bridges, which cast their shadow to the water below.
3. Actual in-stream construction should be limited to periods when anadromous fish are not passing upstream. A construction window between mid-April and mid-October will avoid upstream passage problems. Also, precautions should be taken to minimize construction impacts to any resident species or rearing juvenile salmonids.
4. Proper erosion control measures should be utilized to maintain acceptable water quality during construction and especially during the post-construction period.
5. Bridge Crossings: all bridges should ideally span the entire width of the creek, such that unsuitable hydraulic conditions for fish passage are not created. Where bridges do not span the creek, additional hydraulic analysis from our engineering staff is necessary to ascertain fisheries impacts.
6. Boulders and Rock Facing: what is the function of the "new rock-faced surface" which is to replace the existing grouted rock. What is the nature of the soils in the reach of the stream (clay, sand, etc.)? What about soil permeability issues, and will a significant amount of in-stream flow be lost to percolation into the ground water during the summer season?
7. Low flow channel: should the excavated low flow channel surface be left naturally permeable, or artificially impermeable by design? What will be the actual depth of the low flow channel? Perhaps this channel should be deepened and made relatively impermeable,



with the adjacent stream bed naturalized. The water temperature of the low flow channel will be a function of depth, among other factors, so the deepest feasible configuration should be considered. Ideally, water temperatures in the range of 55-60 F are considered acceptable for salmonid rearing habitat.

8. Rock weirs: the configuration and size of the rock weirs must be more clearly specified. The concern is that rock weirs must not create adverse hydraulic conditions, or in-stream passage barriers during fish migration periods.

9. Pools and Riffles: in general, pool and riffle features are considered beneficial to salmonid habitat. The depth of the pools could be more clearly specified with respect to anticipated water temperatures.

10. Eddy Dissipator: please provide further clarification of this feature if it is incorporated in the project.

11. Tree Plantings: what size trees will be planted within the channel? At certain locations, are larger caliper trees desirable to provide a mature stand more quickly, thus accelerating the time frame in which the creek will realize shaded riparian cover? I have heard conflicting advice from different tree experts about the benefits of using smaller or larger trees, with regard to establishment and growth rates. I believe that if proper care is taken to establish larger trees, they will result in a mature shaded riparian stand more quickly than smaller trees. However, the keys to establishment of any tree, regardless of size, are: 1) suitable species for the location, considering both the macro- and micro-environment, 2) proper soil conditions, 3) healthy nursery stock, 4) sufficient irrigation, 5) proper planting techniques, 4) fertilization, 5) protection from adverse conditions, (e.g.- natural stress, or damage by insects, microorganisms, or animal activities).

12. Fish Ladder: if modifications are proposed to the fish ladder, please contact our hydraulic engineering staff (Rick Wantuck: 575-6063) to discuss the nature of the modifications.

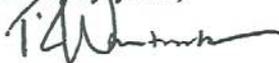
13. Hazardous Materials Mitigation: the existence of hazardous materials at the project site causes water quality and fish habitat concerns. Please provide a more complete briefing on this subject as the project develops.

14. Endangered Species Act Permits: the project team should consult with our Protected Species Division (Patrick Rutten: 575-6059) to determine whether a Section 7 permit is required regarding potential impacts to steelhead trout. The nature of the consultation (formal or informal) will be determined by the ESA listing status of steelhead when the project is to be constructed.

15. Other work: if significant additional work is incorporated into this project, please advise our office of such at the earliest opportunity (e.g.- future widening of highway 101, culvert modifications, fish passage projects, etc.).

16. A separate attachment is included which lists some general recommendations for salmonid habitat restoration.

Sincerely yours,



Richard L. Wantuck
Fisheries Engineer



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Habitat Conservation Division
777 Sonoma Avenue, Room 325
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May 30, 1997 F/SWO:RW

Salmonid Habitat Guidelines for Fisheries Restoration Projects

The National Marine Fisheries Service would like to offer some generic recommendations to assist environmental planners and landscape designers in accommodating fisheries concerns for salmonid restoration projects. Since the stabilization and/or recovery of salmonid populations is dependent on suitable and sustainable habitat conditions, the following list of general habitat values should be considered during the development of project design. This list is not exhaustive; however, it does represent some of the key factors characterizing a healthy salmonid habitat. We recognize that most restoration projects, by themselves, cannot bring about all of the following conditions in any given riverine or estuarine system, yet we offer them as guidelines for enhancement of the existing salmon and steelhead habitat.

- Sufficient in-stream flows
- Cool water temperatures
- Abundant shaded riparian cover
- Abundant and diverse nutrients in the form of plants, animals, insects, etc.
- No in-stream structures which prevent/inhibit migration of juvenile and adult fish
- No artificial structures which have the potential of creating ideal predator habitat and unsuitable juvenile refuge
- No artificial structures which could injure or endanger fish
- No adverse hydraulic conditions, created by artificial structures, which could injure or endanger fish
- Biologically acceptable fish passage and rearing conditions during the widest possible range of hydrological events
- Adequate erosion control and preventive measures
- Prevention or minimization of in-water activities which could adversely affect fish and/or its habitat.
- Necessary construction and maintenance activities scheduled outside of the seasonal windows of migration.
- Creation and maintenance of an appropriate mix of natural, in-stream pools and riffles
- Pools of sufficient depth to provide cover and cooler water temperatures near the bottom, or beneath natural shading structures.
- All unnecessary water diversions from the creek should be minimized to the extent practicable.
- Where significant water diversions must exist, adequate entrainment prevention measures must be incorporated as mitigation. (e.g.- fish screens).
- Where artificial structures that significantly inhibit upstream fish passage must exist, adequate hydraulic modifications must be incorporated to ensure viable upstream passageways are maintained (e.g.- fish ladders)

