MITIGATED NEGATIVE DECLARATION

INITIAL STUDY

MURRAY STREET BRIDGE SEISMIC RETROFIT PROJECT

PREPARED FOR
TRC ENGINEERS
AND
CITY OF SANTA CRUZ PUBLIC WORKS DEPARTMENT

PREPARED BY
STRELOW CONSULTING

NOVEMBER 2007

MITIGATED NEGATIVE DECLARATION

The Administrator of Environmental Quality of the City of Santa Cruz has prepared this Negative Declaration for the following described project:

PROJECT: Murray Street Bride Seismic Retrofit Project

PROJECT LOCATION: Murray Street Bridge over Santa Cruz Harbor in the City of Santa Cruz

APPLICANT: City of Santa Cruz Public Works Department

PROJECT DESCRIPTION: The proposed project consists of a seismic retrofit of the existing Murray Street Bridge, which spans the Santa Cruz Small Craft Harbor and additional minor modifications to replace deficient bridge barriers (widening shoulders to standard widths and replacement and improvement of sidewalks and railings). The seismic retrofit project will provide the bridge with additional vertical support and resistance to lateral seismic forces by installing additional pilings and supplemental structural elements. In order to provide sufficient area for construction operations, some boats, Harbor facilities, and commercial businesses will require temporary relocation.

FINDINGS: The City of Santa Cruz Public works Department has reviewed the proposed project and has determined, based on the attached Initial Study, that the project will have a less-than-significant impact on the environment with implementation of mitigation measures. Consequently, adoption of a Mitigated Negative Declaration is appropriate. An Environmental Impact Report is not required pursuant to the *California Environmental Quality Act of 1970 (CEQA)*. This environmental review process was conducted and the attached Initial Study was prepared in accordance with the State *CEQA Guidelines* and the local City of Santa Cruz *CEQA Guidelines and Procedures*.

BASIS OF FINDINGS: The Initial Study finds that all potentially significant impacts that could be caused by the project can be reduced to less-than-significant levels with implementation of mitigation measures as described in the attached Initial Study, agreed to by the project applicant, and to be incorporated into the project plans and specifications. The following mitigation measures will be incorporated into the project design or as conditions of approval, to ensure that any potential environmental impacts will not be significant.

Impact	Mitigation
Biological Resources: Potential indirect impacts to steelhead that may be present during installation of piles and future reinstallation of docks and floats for boat berths.	**MITIGATION MEASURE 1:** Conduct pile driving activities in Harbor waters from July 1 to mid-November, unless otherwise permitted by the National Marine Fisheries Service (NFS).
Biological Resources: Potential disruption to roosting pallid bats, Townsends' big-eared bats, fringed myotis, and/or long-legged myotis if any of these species are using joint crevices of the Murray Street bridge for roosting or maternity roosting.	**MITIGATION MEASURE 2:** Conduct focused pre-construction surveys of the Murray Street bridge by a qualified biologist to determine if bats are roosting in the bridge's expansion joint crevices if bridge construction activities are scheduled during the breeding season of native bat species (April 1 through August 31). Bat roosting habitat in crevices will be sealed prior to the onset of bat reproductive season (April 1). If roosting habitat is not sealed prior to bat reproductive season, bat exclusion devices will be installed. If these actions do not result in exclusion, a qualified biologist in

Impact	Mitigation
	possession of an applicable Department of Fish and Game Memorandum of Understanding should remove and relocate the roosting bats to an appropriate alternate habitat (a roost with comparable spatial and thermal characteristics).
Biological Resources: Project construction could result in indirect harm or harassment to marine mammals that may be in the vicinity.	**MITIGATION MEASURE 3:** Remove known or potential marine mammal resting sites prior to construction based on the outcome of preconstruction survey to assess if and how marine mammals utilize the construction area of potential impact. This preconstruction monitoring will take place at least five days prior to the start of in-water construction. All potential resting sites that occur in the construction work area shall be removed beyond area of activity, either under the bridge or above. These sites could include floating docks (i.e. Dock FF) or boats, such as those used by UCSC. **MITIGATION MEASURE 4:** Require a qualified biological monitor be present during in water construction activities to search for target marine mammal species and halt project activities that could result in injury or mortality to these species. Prior to in-water construction, the approved monitor will conduct a workers training to instruct construction crews regarding actions to be taken to avoid or minimize impacts in the event of a target species entering the in-water work area. **MITIGATION MEASURE 5:** Prohibit pile driving activities within a 500-foot radius if marine mammals are present. This radius will be visibly flagged on the banks of the harbor during these activities. Each day prior to the commencement of pile-driving, the approved monitor will survey the buffer zone for marine mammals. If a marine mammal is detected, delay pile driving until the marine mammal(s) has moved beyond the buffer zone, verified by visual confirmation or lack of visual sighting within the next 15 minutes of the last sighting. If the animal should move back into the buffer zone after the commencement of pile-driving, no further work stoppage will be necessary. The buffer radius may be reduced based on a measurement of the distance the 160 db pressure travels in the underwater harbor waters. This would be determined using an approved acoustic monitoring device. The City of Santa Cruz would notify NMFS in writing of the proposed change in buffer zone area. No disturbance or noise will be used to encourage the movement of the target species from the work area. The City will contact the appropriate authorities to determine the best approach for exclusion of the target species from the in-water work area.
Biological Resources: Project construction could result in potential disturbance to nesting bird species either under the bridge or in nearby eucalyptus trees.	**MITIGATION MEASURE 6:** Require that a pre-construction survey for special-status nesting avian species (and other species protected under the Migratory Bird Act) be conducted at least 30 days prior to the beginning of construction activities that occur during the nesting/breeding season (typically February through July) to assure that this area is not actively being used. If active nesting is not occurring, project construction activities may begin. If a nesting special-status bird is found during the survey, construction within 100 feet of the nest site should be postponed until after the bird has fledged or consultation with the California Department of Fish and Game

Impact	Mitigation
	be conducted to determine alternative measures or appropriate buffers. **MITIGATION MEASURE 7:** If project activities are to be initiated outside of the breeding season, remove existing nests and/or install exclusion netting under the bridge to prevent nesting for the season. Swallow nests should be removed from the bridge structure before the breeding season including the courtship period, usually January through July. Exclusion netting should be subsequently installed to prevent reestablishment of nest structures on the bridge infrastructure during construction.
Hazardous Materials: Project construction could result in short-term, localized disturbance to or exposure to hazardous materials found in the soils.	**MITIGATION MEASURE 8:** In conformance with the recommendations of the Phase 1 Environmental Assessment, fill soils excavated from the west end of the bridge shall be tested for motor oil (with silica gel clean-up). Fill soils excavated from the east end of the bridge shall be tested for diesel, arsenic, motor oil (with silica gel clean-up), and lead (used in old paints). If motor oil is detected, soils shall be further tested for polychlorinated biphenyls (PCBs), due to the presence of a nearby transformer. Any contaminants found shall be treated and/or disposed of in conformance with all applicable regulations.
Hydrology – Water Quality: Construction activities within the Harbor waterway could result in inadvertent erosion or discharge of materials in harbor waters if construction activities and dock replacement are not property contained and managed, resulting in potential water quality impairment and potential indirect effects to aquatic species.	**MITIGATION MEASURE 9:** Incorporate BMPS into construction specifications, including, but not limited to: ▪ Require all excavated soils, fill and construction materials be stored and contained in a designated area away from Harbor waters, and cover stockpiled soils to prevent release of sediments. ▪ Prohibit fueling, cleaning, or maintenance of equipment except in designated areas located as far from Harbor waters as possible. As a precaution, require contractor to maintain adequate materials onsite for containment and clean-up of any spills. ▪ Install temporary erosion and sedimentation control devices. ▪ Locate equipment and spoils in designated staging areas. ▪ Control of dewatering process to limit turbidity. ▪ Prepare and implement a Stormwater Pollution Prevention Plan that further details measures for erosion, sediment and water quality control. ▪ All fill material would be clean material that would meet applicable water quality standards.
Noise: Pile installation and construction will result in temporary vibration to residences closest to the construction activities, but vibration levels will significantly decrease with increasing distance from the construction site.	**MITIGATION MEASURE 10:** Require that property owners and residents located within 150 feet of the pile installation locations be notified at least one week prior to construction.

PUBLIC REVIEW PERIOD: Public review of the Initial Study and Mitigated Negative Declaration is

from November 8, 2007 through December 7, 2007. Written comments should be submitted by December 7, 2007 to:

Josh Spangrud
City of Santa Cruz Public Works Department
809 Center Street, Room 201
Santa Cruz, CA 95060

By: Mark Dettle, Director

Date

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SECTION 1. BACKGROUND

BACKGROUND

1. **Project Title:** Murray Street Bridge Seismic Retrofit Project

2. **Lead Agency Name and Address:**
   City of Santa Cruz, Room 201
   809 Center Street
   Santa Cruz, CA 95060

3. **Contact Person and Phone Number:** Josh Spangrud, (831) 420-5178

4. **Project Location:** Murray Street Bridge in the City of Santa Cruz.

5. **General Plan Designation:** Coastal Dependent

6. **Zoning:** Coastal Dependent Related

7. **Other public agencies whose approval is required:**
   - California Coastal Commission: Coastal Development Permit
   - Caltrans: Construction Authorization
   - U.S. Army Corps of Engineers: Section 404 Permit and Section 10 Permit
   - Regional Water Quality Control Board: Section 401 Water Quality Certification
   - California Department of Fish and Game: Potential 1601 Streambed Alteration Permit
   - Public Utilities Commission: Potential approval for encroachment and/or work within or adjacent to the railroad right-of-way. (Approval from the Union Pacific Railroad will be required.)
   - Santa Cruz Port District: Approval of temporary dock removal and replacement and use of Harbor lands for construction staging areas
   - U.S. Coast Guard: Bridge Permit
   - County of Santa Cruz: Potential Encroachment Permit for work within County roadways

PROJECT OVERVIEW

The proposed project consists of a seismic retrofit of the existing Murray Street Bridge, which spans the Santa Cruz Small Craft Harbor and additional minor modifications to replace deficient bridge barriers (widening shoulders to standard widths and replacement and improvement of sidewalks and railings). The seismic retrofit project will provide the bridge with additional vertical support and resistance to lateral seismic forces by installing additional pilings and supplemental structural elements. In order to provide sufficient area for construction operations, some boats, Harbor facilities, and commercial businesses will require temporary relocation. Specific project components are described in Section II.

PURPOSE OF INITIAL STUDY

This Initial Study (IS) has been prepared pursuant to the California Environmental Quality Act (CEQA). The purpose of an IS is to:

1. Provide the Lead Agency with information to use as the basis for deciding whether to prepare an Environmental Impact Report (EIR) or a Negative Declaration (ND).

2. Enable a Lead Agency to modify a project, mitigating adverse impacts before an EIR is prepared, thereby enabling the project to qualify for a ND.

3. Assist in the preparation of an EIR, if one is required.

4. Facilitate environmental assessment early in the design of a project.

5. Provide documentation of the factual basis for the finding in a ND that a project will not have a significant effect on the environment.

6. Eliminate unnecessary EIRs.

7. Determine whether a previously prepared EIR could be used with the project. [Per CEQA Guidelines Section 15063(c)]:

According to CEQA Guidelines Section 15070, a public agency shall prepare a Negative Declaration (ND) or a Mitigated Negative Declaration (MND) when:

1. The IS shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or

2. The IS identifies potentially significant effects, but:

    a. Revisions in the project plans made before a proposed MND and IS are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and
    b. There is no substantial evidence, in light of the whole record before the agency, that the project as described may have a significant effect on the environment.

SECTION II. PROJECT DESCRIPTION

PROJECT LOCATION

The proposed project is located at the eastern edge of the City of Santa Cruz. The project area includes the Murray Street Bridge which spans the Santa Cruz Harbor, portions of lands within the Santa Cruz Port District harbor area, portions of the harbor waters, and the area along the Murray Street road right-of-way, west of Lake Avenue (see Figure 1).

ENVIRONMENTAL SETTING

The existing concrete Murray Street bridge structure, built in 1962, is approximately 544 feet long and 35 feet wide, with eight piers in the Santa Cruz Small Craft Harbor. The bridge structure carries two lanes of traffic, and has a sidewalk on the south side. The roadway is a portion of the Pacific Coast Bicycle Route, although there are only narrow bike lanes/shoulders on the bridge.

The bridge carries both a 12" water main and a 3" gas main, which are suspended underneath the structure. A sanitary sewer line conveying wastewater from the unincorporated area of the County to the City is located underneath the Harbor in the project vicinity. There are overhead power lines and street lighting facilities just north of the bridge, which will need to be relocated for the pile driving operation.

The Santa Cruz Harbor is located directly beneath the bridge. The Harbor accommodates 920 boat berths that support both commercial and recreational boating activities. In the immediate project vicinity, the Santa Cruz Rowing Club boat storage and UCSC rowing berth facility are located underneath the bridge and immediately south of bridge, respectively, on the west side of the Harbor. There are two waterway openings beneath the bridge through which all boats berthed in the northern portion of the harbor must pass. These two openings are required for efficient operations in the harbor.

A pedestrian path/sidewalk loops around the Harbor from Aldos Restaurant on the west side to the Crow's Nest Restaurant commercial area on the east side. A portion of this path is located within the construction area on both sides (see Figure 2). Bicyclists and other recreational users also occasionally use the path, although bicyclists mostly use the harbor service road and use the path/sidewalk where the service road does not exist. Residential uses generally surround the harbor area on all sides (see aerial photo on Figure2). The city-owned Arana Gulch greenbelt area is located to the north of the project area, outside of the proposed project construction zone.

PROJECT DESCRIPTION

Project Background

The bridge consists of nine spans. The Murray Street bridge has a precast concrete "I" girder superstructure set atop concrete columns, which in turn are supported by concrete piles with

concrete pile caps. The original structural support for the bridge was provided by driven, cast-in-place, 16-inch and 12-inch diameter concrete pilings; these pilings were supplemented with additional precast concrete pilings in later years. In 1989, following the Loma Prieta Earthquake, the existing structure was modified. These modifications included the widening of the columns at Bents 2, 3 and 4 along with foundation widening at Bent 6 (this included adding piles). All of the pilings are embedded to varying extents into underlying rock, lagoon deposits (sand, mud, silt, and erosion deposits), and artificial fill.

Project Purpose and Need

The existing Murray Street Bridge (Bridge # 36C-0108) crosses the Santa Cruz Small Craft Harbor in the city of Santa Cruz, California (see the Figure 1, Vicinity Map). Due to the structure's seismic vulnerability, the City in conjunction with Caltrans has embarked upon development of retrofit design plans. The City also received approval from Caltrans to rehabilitate the bridge, including replacement of the deficient bridge barriers under the HBRR (now HBP) program. In order to bring the bridge up to current standards, the narrow shoulders will be widened as part of the project.

Project Characteristics

Bridge Seismic Retrofit. The nine-span bridge is supported by two abutments (identified as Abutments 1 and 10, located at the western and eastern ends of the bridge, respectively) and 8 "bents" (identified as Bents 2 through 9, located at 60-foot intervals between the abutments) as shown on Figure 3. The seismic retrofit project consists of the following basic elements:

(1) Installation of concrete infill walls at Bents 2, 3, 4, and 9. These walls will span the voids between the existing concrete support columns and will be anchored to the columns with bonded dowels.

(2) Installation of shear keys and seat extenders at Abutment 1 and Bents 2 through 9.

(3) Retrofit of foundations with 16-inch diameter CISS (cast-in-steel-shell) piles at Bent 9 and Abutment 10. These piles will extend to depths of approximately –55 feet to –85 feet at Bent 9 and to depths of approximately –30 feet to –50 feet at Abutment 10.

(4) Retrofit abutment with two 96-inch CIDH piles behind Abutment 10 to a depth of -50 feet.

(5) Retrofit of both outriggers and bents with 30-inch diameter CISS piles at Bents 6, 7, and 8 and 30-inch diameter CIDH (cast-in-drilled-hole) piles at Bent 5. These piles will extend to depths of approximately -55 feet to -80 feet at Bent 5 and at approximately –85 feet to –110 feet at Bents 6-8.

(6) Installation of fenders to protect new piles.

Figure 3 provides a cross section showing the abutment and bents and proposed improvements. The installation of new piles at Abutment 10 and Bents 5 through 9 will include two piles on each side for a total of 24 piles. Both the CISS piles and the CIDH piles will be installed at 1:12 angles.

Additional Bridge Improvements. The project also includes replacement of deficient bridge barriers. In order to bring the bridge up to current standards, the narrow shoulders will be widened

to provide standard 5-foot shoulders. The shoulder widening will consist of approximately an additional 2 feet on the north side of the bridge and 5-6 feet on the south side of the bridge. It is not anticipated that any work other than an overhang extension will be required on the north side widening. In addition, the construction of new bridge railings is required to conform to current codes. Roadway lane widths will remain the same as currently exists.

The proposed project will include the following improvements:

(1) Removal of existing curbs, sidewalks, and barrier railings on the bridge.

(2) Installation of new girders, road foundations, and road surfacing along the entire southern edge of the bridge, providing 5.5 feet of additional width. (The girders will be supported by the new 30-inch piles at Bents 5 through 8 and the 16-inch piles at Abutments 1 and 10 and at Bents 2, 3, 4, and 9.

(3) Installation of a new cantilevered extension along the entire northern edge of the bridge, providing approximately two feet of additional width. (This will not require additional foundation work.)

(4) Repaving of the bridge surface, and construction of a new 7-foot, 6-inch wide sidewalk on the south side of the bridge. Class 2 bike lanes will be provided in the roadway shoulders.

(5) Installation of new metal bridge railings on both the southern and northern sides of the bridge.

Description of Construction Activities

Construction Schedule and Phasing. The Murray Street Bridge Retrofit project is tentatively proposed for construction in five partially overlapping phases, from approximately May 2009 through December 2010. Generally, work will begin on the eastern side of the Harbor and progress to the western side. The timing of each phase and a brief description of work to be performed during each phase is provided in Table 1. Overall, the seismic retrofit work outlined above will be executed over a period of approximately 18 months within four construction phases as described in Table 1. The additional bridge improvements will be constructed over a period of approximately 6 months as part of Phase 5 of the construction.

Due to need for large construction equipment and harbor access, as described below, there will be traffic control on Murray Street to include various measures such as temporary lane closures, temporary one-way traffic movement, and detours. A detailed review of traffic impacts and options to manage traffic is presented further below in the "Transportation and Traffic" section of this Initial Study.

Construction Methods and Equipment. The proposed project includes the following construction activities and associated equipment.

- Demolition: The primary demolition activities include the removal of pilings at Bent 6, the temporary removal of the gangway under Bent 4, the removal of existing sidewalks and railings along the entire length of the bridge, the removal of pavement at both ends of the bridge, and the temporary removal of some docks.

Equipment: Demolition will require the use of equipment such as cranes, excavators, front-end loaders, dump trucks, concrete saws, and jackhammers.

- Work Platforms within the Waterway: Work within the waterway will require either the use of barges or construction of trestles to provide work platforms. If barges are utilized, prefabricated modular units may be brought to the site and locked together. This type of platform can be installed, reconfigured, and removed relatively quickly, but the system is not suitable for areas that are too narrow to accommodate the modules. For example, footings from the Union Pacific Railroad Bridge to the north and footings from the Murray Street Bridge appear too close together to allow use of a modular barge between footings. In these areas, a trestle likely will need to be constructed.

- Pile Installation within the Waterway: The CISS piles at Bents 5 through 8 will be installed within the waterway by driving 30-inch steel casings either to refusal at rock or into a shaft drilled within rock (depending on the location). The shaft and/or casing will be dewatered and concrete will be poured into the casings, which will be left in place. The 30-inch CIDH piles at Bent 5 will also be constructed by pouring concrete into permanent steel casings; dewatering is not expected to be achievable at this location, and a "wet" installation is planned. Overall the installation of piles is expected to take approximately 2 days for each pile.

  Equipment: The installation of these piles requires the use of a crane(s), a drilling rig, a pile driver, excavation and earthmoving equipment, concrete trucks and pumps, concrete vibrators, supply trucks, welding equipment, and other machinery. The piles will either be driven in with a pile driver or a vibrator.

- Pile and Anchor Installation outside the Waterway: The CISS piles at Bent 9 and Abutment 10 will be installed by driving 16-inch steel casing to depths of approximately –30 to –85 feet and filling them with concrete. These piles will be installed perpendicular to the ground surface. The 96-inch diameter anchor pile for Abutment 10 will require excavation and installation of a temporary steel casing, which will be filled with concrete. The anchor pile excavation will be dewatered by pumping, if necessary.

  Equipment: The installation of these piles will require the use of excavation equipment, soil tamper equipment, and the other construction equipment described above for installing piles within the waterway.

- Construction of Concrete Infill Walls, Shear Keys, Bent Caps, etc.: This part of the project will include the installation and construction of various project features below the bridge road surface and above the piles. Concrete forms will be constructed on the new footings.

  Equipment: Equipment required for this part of the project would include concrete trucks and pumps, supply trucks, welding equipment, and other machinery.

- Superstructure Construction: This part of the project will include the installation of new girders on the southern edge of the bridge, the installation of a cantilevered extension along the northern edge of the bridge, and the construction of barrier railings.

Equipment: Equipment required for this part of the project would include a crane, concrete trucks and pumps, paving equipment, trucks to haul supplies, welding equipment, and other machinery.

- Roadway Approach Construction: Excavation of existing road approaches will be performed. Gravel base and asphalt concrete will be placed to match the new widened bridge deck.

Equipment: Equipment used will be typical paving equipment including graders, loaders, bulldozers, sheep's-foot rollers, dump trucks, and a paving machine. The roadway approach work will be limited to less than 200 feet from each end of the bridge. Metal beam guard railings will be placed at each corner of the bridge.

Contractor Staging. Contractor staging activities for Phases 1 and 2 of the project will take place in an approximately 8,000 square-foot portion of an existing boat yard beneath the eastern edge of the bridge. The establishment of this staging area will require that 9 boats be temporarily relocated as further discussed below. Additionally, the pedestrian path beneath the bridge will be temporarily closed. At the end of Phase 2, the boat yard will be restored.

Contractor staging activities for Phases 3, 4, and 5 of the project will take place in the northern portion (approximately 11,000 square feet) of a parking lot situated at the western edge of the bridge. Adjacent existing offices, bathroom facilities, and storage areas will be relocated, as described below. The access ramp to Dock FF will be temporarily closed (replaced by a temporary ramp at the southern end of the dock). Additionally, the pedestrian path beneath the bridge and the concrete stairway beneath the western edge of the bridge will be temporarily closed. This staging area will be used through the end of Stage 5, when original facilities will be restored.

Temporary Harbor Facility Relocation. The temporary use of portions of the eastern harbor boat yard and the western parking lot for contractor staging as described above, in combination with provision of construction access to the bridge from the waterway, will result in temporary disruptions of harbor activities including boat berths, boat storage, buildings, and businesses. Facilities to be temporarily removed and relocated are described below, summarized on Table 2, and illustrated on Figure 4.

During Phases 1 and 2 of the project, two berths will be removed from dock T at the east end of the bridge, and the two boats located there will be temporarily stored for up to four months. (These berths will be restored at the end of Phase 2.) During Phase 4, which includes work within the waterway, a portion of Dock FF will be removed and temporarily relocated: two boats will be relocated to dock AA and 8 boats to new docks that will be installed at the ends of docks N, O, P. A temporary dock FF--with fewer berths—will be constructed at the southern end of the dock, which will accommodate 6 boats. (Affected portions of Dock FF will be restored at the end of Phase 4.) Additionally, the berth for the commercial “Chardonnay” boat will be temporarily unavailable for a period of approximately two weeks during Phase 4 construction. Figure 4 shows the location of the berths to be temporarily removed, the temporary docks, and the new docks.

The contractor staging area on the east side of the Harbor will require that nine boats in the boat yard be temporarily relocated to boat storage for approximately four months. On the west side, 60 rowing boats stored under the existing Murray Street bridge will be temporarily relocated to a recently constructed onland dry boat storage facility near docks A and B. An additional 200± square

feet of storage area would be constructed to accommodate the temporary row boat storage. Row boats stored under Span 2 and UCSC Rowing Facility boats under Span 1 will be temporarily relocated to the US Coast Guard parking lot and fenced.

Existing offices, bathroom facilities, and storage areas located north of the western staging area (and within the City's right-of-way) will be displaced during Phases 3, 4, and 5 of the project. These facilities include: the UCSC storage building, the Lighthall Yacht Charters office, rowing equipment storage, the Santa Cruz Rowing Club Oar House, the Chardonnay Sailing Charters office, the Pacific Yachting Sailing School Charters office, and men's and women's restrooms. The buildings will be protected during construction, and a temporary 600 square foot facility (modular) will be installed on the US Coast Guard parking area for a period of approximately six months, which will temporarily house these businesses. An existing memorial bench and plaque will be removed, properly stored, and reinstalled in the West Harbor upon completion of construction.

In addition, as indicated above, traffic on Murray/Eaton will be subject to temporary controls as further discussed in this Initial Study. A portion of Lake Avenue may be also be subject to temporary traffic controls during setup of the construction staging area on the east side of the Harbor. The existing pedestrian path on both sides of the Harbor, the western concrete stairway, and the access ramp to Dock FF also will be closed during certain phases of construction. Approximately 30-50 Harbor parking spaces (for permit users) on the west side of the Harbor will be temporarily unavailable when the construction staging area is setup in that location.

Reinstallation of Boat Berths After Project Construction. Upon completion of the project construction, two boat slips at the end of dock T will be reinstalled. Additionally, the temporary boat berths at dock FF will be removed, and the dock FF will be reconstructed to its current form. The eight new boat berths at the ends of docks N, O and P will remain permanently.

Although design plans have not yet been completed for the reinstalled berths, it is expected that the docks would be plastic, wood or concrete over polyethylene floats and would be anchored with pilings. Piles would be drilled into the harbor floor by mechanical hammer. There would be no dredging or placement of fill in Harbor waters with reinstallation of docks and both berths.

Railroad Right-of-Way Encroachment. The Union Pacific Railroad (UPRR) maintains a bridge and track located approximately 20 to 30 feet north of the Murray Street Bridge (as measured from edge of deck to edge of deck, with the distance increasing west to east). Construction on the northern side of the bridge will require railroad flaggers for the protection of workmen and railroad traffic. In addition, a portion of the existing bridge is located within the UPRR right-of-way, and the project will encroach further.

TABLE 1. Murray Street Bridge Retrofit Project: Construction Phasing & Approximate Schedule

Work Tasks	Effects on Harbor and Road Operations
Phase 1: Construction in East Zone	
2 months (5/09-7/09) [1]	
* Temporarily relocate overhead utilities north of bridge * Prepare construction staging area (8,000 sq.ft.) at harbor boat yard * Retrofit Bent 9 & Abutment 10; install anchor piles * Erect Girder Span 9 * Remove existing south rail	* Install traffic control system with alternating 1-way traffic * Close Murray for 7 days for driving anchor piles * Temporary relocation (dry storage) of 9 dry-docked boats from boat yard * Traffic controls along Lake Avenue during construction staging area setup * Close east walkway under bridge * Close bridge sidewalk
Phase 2: Construction in Eastern Waterway	
5 months (7/09-12/09)	
* Construct new berths (8) at ends of docks N, O, P * Construct work platform(s) (trestle or barge) for Stage 2 work [2] * Retrofit Bents 7 & 8 (includes installing anchor piles at Bents 7 & 8) * Erect Girder Spans 7 & 8 and construct Deck Spans 7, 8, & 9 * Construct north and south rails (optional) [3] * Restore boat yard; reopen pedestrian path * Remove east work platform	* Temporary relocation of 2 boats from Dock T to AA or new dock N-Q * Temporary closure of East Drive & part of harbor boat yard * Availability of only one boat channel under the bridge for 6 non-consecutive half-days
Phase 3: Construction in West Zone	
6 months (12/09-5/10)	
* Install row boat storage at docks A/B & USCG area * Install temporary building at USCG area * Temporarily relocate existing offices and row boats to above [2] * Close portion of western parking lot [2] * Construct temporary access ramp to Dock FF * Retrofit Abutment 1 and Bents 2, 3, & 4 * Erect Girder Spans 1, 2, & 3 [and construct Deck Spans 1, 2, & 3]	* Closure of West Path, western concrete stairway and access ramp to Dock FF * Temporary relocation of affected facilities (offices, storage, restrooms, etc.)
Phase 4: Construction in Western Waterway	
5 months (5/10-10/10)	
* Construct modifications to Dock FF; move 7 boats to new Dock FF * Construct work platform(s) (trestle or barge) for Stage 4 work * Retrofit Bents 5 & 6 (including installation of anchor piles) * Erect Girder Spans 4, 5, & 6 [and construct Deck Spans 4, 5, & 6] * Construct north and south rails [3] * Remove work platform(s)	* Closure of West Path, western concrete stairway and access ramp to Dock FF * Temporary relocation of affected facilities (offices, storage, restrooms, etc.) * Temporary relocation of 8 boats from Dock FF * Availability of only one boat channel under the bridge for 6 non-consecutive half-days
Phase 5: Construction of Superstructure and Barrier Rails	
[no timing provided]	
* Remove sidewalks & temporary barrier rails * Construct new barrier rails * Restore Dock FF, parking lot, existing offices and related facilities * Restore all remaining facilities to original condition * Repair deck	

Footnotes:

[1] Note that construction phases overlap; the sum of the construction periods specified is therefore greater than the total period indicated by start and finish dates.

[2] These tasks could be initiated and/or completed during the prior stage.

[3] [These tasks could be completed either in Phase 2 or 4.

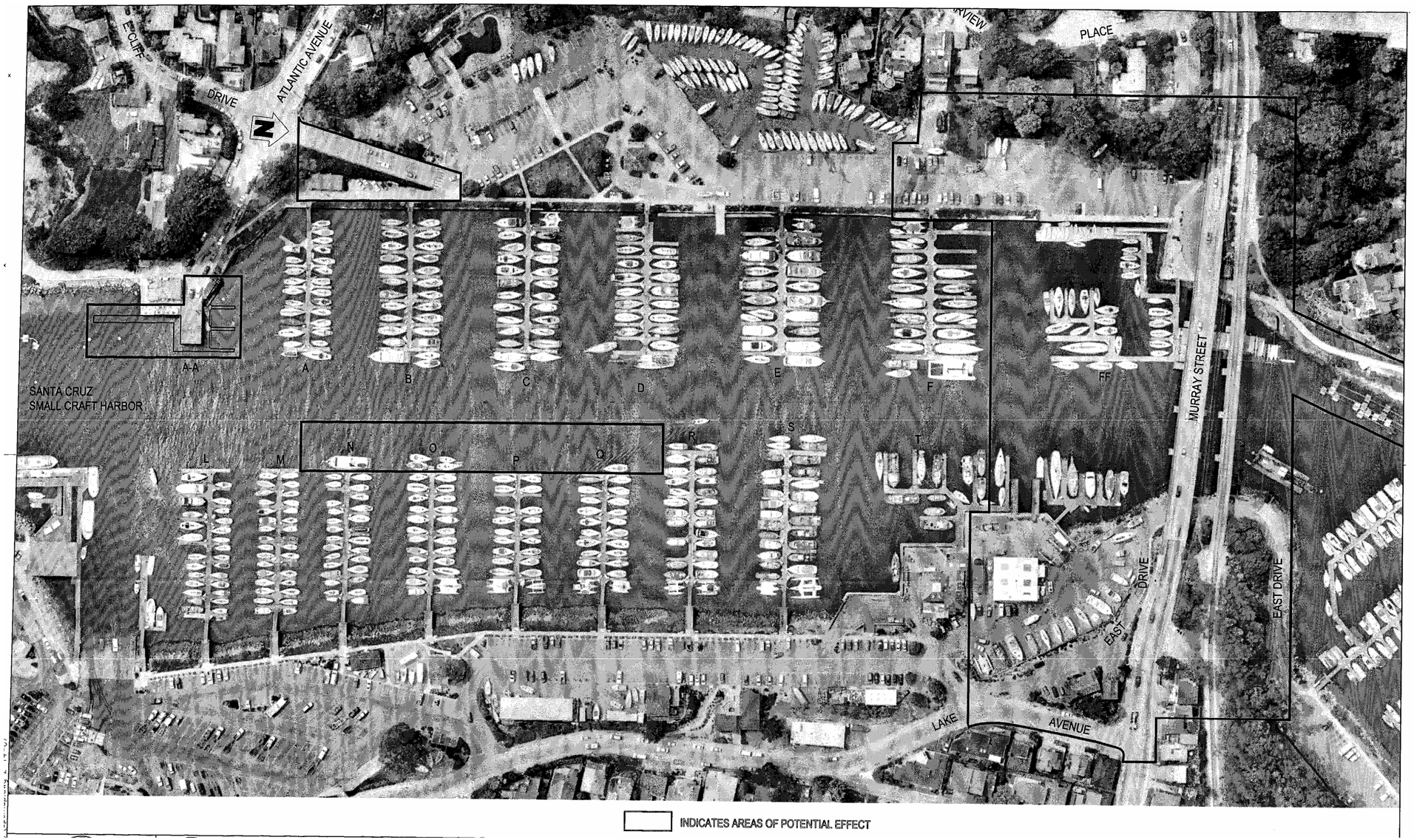
[4] Temporary closure of Murray Street bridge roadway to all traffic is possible during any phase for a short duration. The alternating one-way traffic with sign control will occur during the consturction, but not during the full duration of construction activities.

TABLE 2: Summary of Temporary Harbor Facilities' Removal and Relocation
(SEE FIGURE 4 FOR LOCATIONS)

Facility	Location	Action
Pedestrian Bridge	#1 - Beneath Span 4	Remove or salvage.
Rowing Center	#2 - Row boat storage under bridge	▪ Relocate 60 boats to new facility near A/B Dock. ▪ Construct addition to new storage rack at A/B Dock.
Chardonnay	#5 – Beneath Span 3 (City right-of-way)	Install temporary, 600sf building at USCG concrete pad. Protect existing building in place, if possible, or remove and replace.
Rowing Club Equipment Storage	#6 – Beneath Span 2 (City right-of-way)	Relocate units to temporary fenced storage area at USCG.
UCSC Storage Space	#7 – Beneath Span 1 (City right-of-way)	Remove from site or temporarily store at fenced USCG site. Restore upon completion of construction.
Aquarius Boatworks	#11 – East Harbor	Temporary use of site (~8,000 sf); relocate 9 drydock boats to storage; remove 2 boat slips; reconstruct dock and yard upon completion of construction.
Pacific Yachting & Sailing	#17 – Building on upper west Harbor	Relocate to temporary building for #5. Protect existing building in place, if possible, or remove and replace.
Santa Cruz Rowing Club Oar House	#25 – Under bridge on upper west Harbor	Two week relocation to USCG site.
Concrete Stairway	#26 – Upper west Harbor	Remove and replace.
Timber Retaining Wall	#27 – Upper east Harbor	Remove and replace.
Restrooms	#28 - Under bridge on upper west Harbor	Install temporary restrooms at USCG.
Dock AA	Dock AA	Utilize southern portion for temporary boat relocation
Docks FF, N, O, P, Q, AA	Docks FF, N, O, P, Q, AA	▪ Remove portion of Dock F-F. ▪ Relocate 10 boats: 2 to Dock AA; 8 to new Docks N, O, P. ▪ Construct temporary Dock FF and relocate 6 boats to Dock FF. ▪ Reconstruct Dock FF and relocate 10 boats back to dock upon completion of construction. ▪ Construction extensions of Docks N-P.

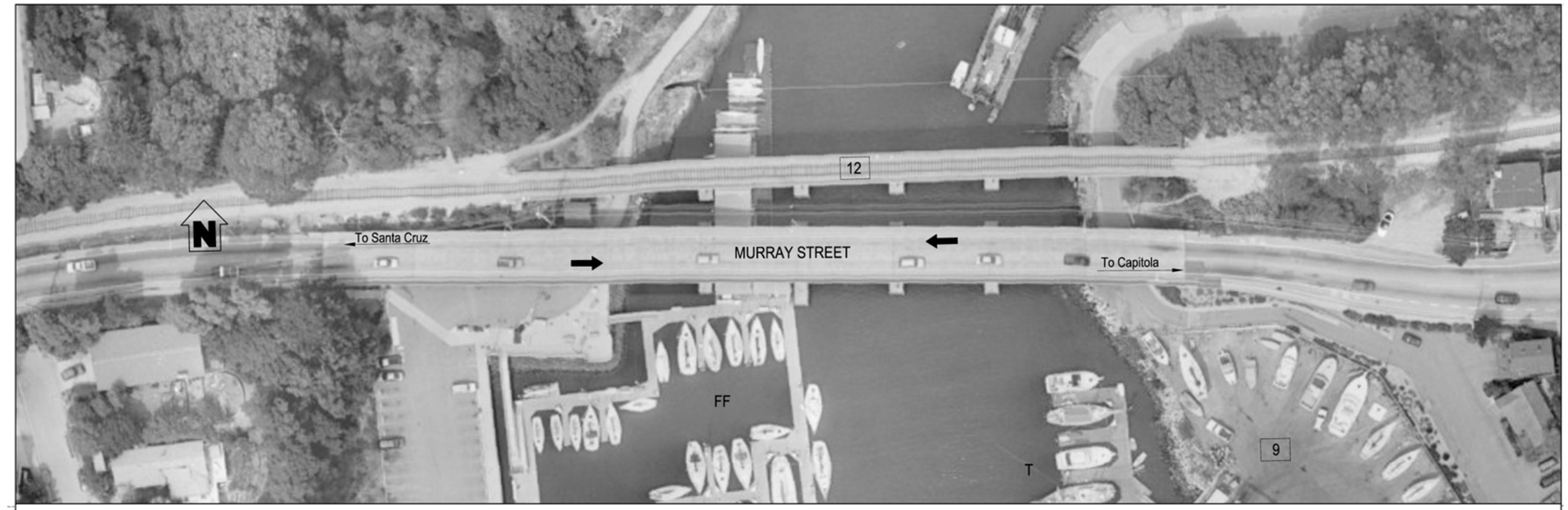
FIGURE 1: VICINITY LOCATION

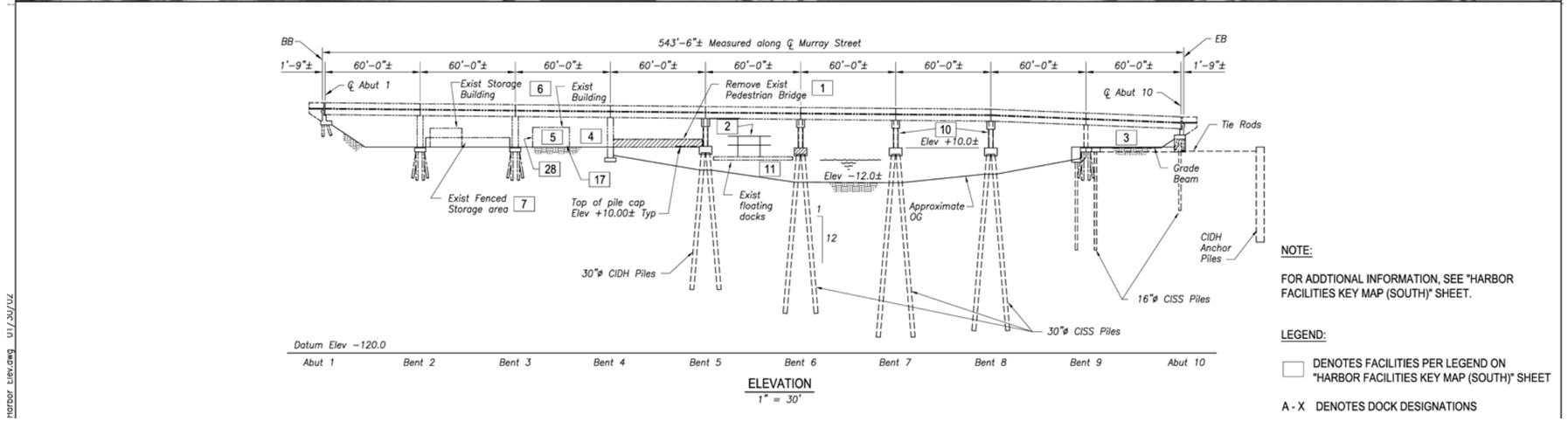
FIGURE 2: AERIAL PHOTO OF SURROUNDING AREA & AREAS OF POTENTIAL EFFECT



SOURCE: TRC Engineers

FIGURE 3: BRIDGE CROSS SECTION





SOURCE: TRC Engineers

FIGURE 4: RELOCATED HARBOR FACILITIES

LEGEND:

A - X,AA,FF DOCK DESIGNATIONS
1 PEDESTRIAN BRIDGE
2 JOE WEISS - LEE FARAOLA, SR. ROWING CENTER
3 EAST DRIVE
4 WEST DRIVE
5 CHARDONNAY
6 ROWING EQUIPMENT STORAGE
7 UCSC STORAGE SPACE
8 PORT DISTRICT OFFICE
9 AQUARIUS BOATWORKS
10 NAVIGATION LIGHTS
11 POTENTIAL THIRD WATERWAY
12 UPRR BRIDGE
13 ALDO'S HARBOR RESTAURANT
14 SANTA CRUZ YACHT CLUB DRY STORAGE
15 KAYAK CONNECTION
16 TEAM O'NEILL
17 PACIFIC YACHTING & SAILING
18 WIZARD YACHTS
19 JOHNNY'S RESTAURANT
20 499 LAKE AVENUE
21 FAR WEST MARINE
22 HARBOR PUBLIC MEETING ROOM
23 CALIF. COMMERCIAL DIVERS
24 WIZARD YACHTS
25 SANTA CRUZ ROWING CLUB OAR HOUSE
26 CONCRETE STAIRWAY
27 TIMBER WALL
28 MENS & WOMENS RESTROOMS
29 497 LAKE AVENUE
30 SMALL BOAT LAUNCH RAMP
31 UCSC STORAGE BUILDINGS
32 LANDING AREA APPURTENANCES

SOURCE: TRC Engineers

SECTION III. ENVIRONMENTAL CHECKLIST

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.

X	Aesthetics		Agricultural Resources	X	Air Quality
X	Biological Resources		Cultural Resources	X	Geology / Soils
X	Hazards & Hazardous Materials	X	Hydrology / Water Quality		Land Use / Planning
	Mineral Resources	X	Noise		Population / Housing
	Public Services		Recreation	X	Transportation / Traffic
X	Utilities / Service Systems	X	Mandatory Findings of Significance		

ENVIRONMENTAL CHECKLIST

1. A brief explanation is required (see Section 4--“Environmental Evaluation”) for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question (see references listed in Section VII). A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. “Potentially Significant Impact” is appropriate if there is substantial evidence that any effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4. “Negative Declaration: Less Than Significant With Mitigation Incorporated: applies where incorporation of mitigation measures has reduced an effect from “Potentially Significant Impact” to a “Less Than Significant Impact.” The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level.

5. 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). In this case a discussion should identify the following on attached sheets:

    a) *Earlier analysis used.* Identify earlier analyses and state where they are available for review.

    b) *Impacts adequately addressed.* Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

    c) *Mitigation measures.* For effects that are "Less than Significant with Mitigation Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

ENVIRONMENTAL IMPACTS (Explanation of answers are found in Section V - Environmental Evaluation)	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1. AESTHETICS. Would the project:				
a) Have a substantial adverse effect on a scenic vista? (Source VII.1 - Map CD-3)				X
b) Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			X	
d) Create new source of substantial light or glare which would adversely affect day or nighttime views in the area				X
2. AGRICULTURE RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? (Source VII.1 - Map EQ-5)				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?				X
3. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?				X
b) Violate any air quality standard or contribute to an existing or projected air quality violation?				X
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			X	

ENVIRONMENTAL IMPACTS (Explanation of answers are found in Section V - Environmental Evaluation)	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Expose sensitive receptors to substantial pollutant concentrations?				X
e) Create objectionable odors affecting a substantial number of people?				X
4. BIOLOGICAL RESOURCES. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?			X	
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?			X	
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?		X		
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X
5. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in section15064.5? (Source VII.1 - Map CD-5)				X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to section 15064.5? (Source VII.1 - Map CR-2, VII.4)				X

ENVIRONMENTAL IMPACTS (Explanation of answers are found in Section V - Environmental Evaluation)	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? (Source VII.1 - Map CR-2)				X
d) Disturb any human remains, including those interred outside of formal cemeteries?				X
6. GEOLOGY AND SOILS. Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
a) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. (Source VII.11)				X
b) Strong seismic ground shaking?			X	
c) Seismic-related ground failure, including liquefaction?			X	
d) Landslides?				X
e) Would the project result in substantial soil erosion or the loss of topsoil?			X	
f) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?				X
g) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X
h) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of wastewater?				X
7. HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				X
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		X		
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 3 mile of an existing or proposed school?				X

ENVIRONMENTAL IMPACTS (Explanation of answers are found in Section V - Environmental Evaluation)	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? (Source VI.I-Map S-11)				X
8. HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements?				X
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local ground water table level (for example, the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				X
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.				X
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.				X
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?				X

ENVIRONMENTAL IMPACTS (Explanation of answers are found in Section V - Environmental Evaluation)		Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
f)	Otherwise substantially degrade water quality?		X		
g)	Place housing within a 100-year flood-hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? (Source V!I.1-Map S-7)				X
h)	Place within a 100-year flood-hazard area structures which would impede or redirect flood flows?			X	
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
j)	Inundation by seiche, tsunami, or mudflow? (Source V!I.1-Map S-8)			X	
9.	**LAND USE AND PLANNING. Would the project:**				
a)	Physically divide an established community?				X
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X
c)	Conflict with any applicable Habitat Conservation Plan or Natural Community Conservation Plan?				X
10.	**MINERAL RESOURCES. Would the project**				
a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? (Source VII.10 & 11)				X
b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?				X
11.	**NOISE. Would the project result in:**				
a)	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies?				X
b)	Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?			X	

ENVIRONMENTAL IMPACTS (Explanation of answers are found in Section V - Environmental Evaluation)	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X
12. POPULATION AND HOUSING. Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X
13. PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or need for new or physical altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
a) Fire protection?				X
b) Police protection?				X
c) Schools?				X
d) Parks?				X
e) Other public facilities?				X

ENVIRONMENTAL IMPACTS (Explanation of answers are found in Section V - Environmental Evaluation)	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
14. RECREATION. Would the project				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X
15. TRANSPORTATION/TRAFFIC. Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (for example, result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?			X	
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?				X
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location, that results in substantial safety risks?				X
d) Substantially increase hazards due to a design feature (for example, sharp curves or dangerous intersections) or incompatible uses (for example, farm equipment)?				X
e) Result in inadequate emergency access?				X
f) Result in inadequate parking capacity?				X
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (for example, bus turnouts, bicycle racks.				X
16. UTILITIES AND SERVICE SYSTEMS. Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				X
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction or which could cause significant environmental effects?				X

ENVIRONMENTAL IMPACTS (Explanation of answers are found in Section V - Environmental Evaluation)	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?			X	
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				X
g) Comply with federal, state, and local statutes and regulations related to solid waste?				X
17. MANDATORY FINDINGS OF SIGNIFICANCE. Does the project:				
a) 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?			X	
b) 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 the past projects, the effects of other current projects, and the effects of probable future projects.)				X
c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				X

DISCUSSION OF ENVIRONMENTAL EVALUATION

See Section **V--ENVIRONMENTAL EVALUATION** for discussion.

SECTION IV. ENVIRONMENTAL DETERMINATION

DETERMINATION

On the basis of this initial evaluation:

I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	
I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.	X
I find that the proposed project MAY have a significant effect on the environment and an ENVIRONMENTAL IMPACT REPORT is required.	
I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.	
I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.	

_____ _____

Mark Dettle, Public Works Director Date

SECTION V. ENVIRONMENTAL EVALUATION

1. AESTHETICS

(a-b) Effects on Vistas, Scenic Resources. According to the City's General Plan (Map CD-3), the project site is not part of a mapped scenic view. The proposed bridge improvements would not affect or remove a designated scenic vista or scenic resource.

(c-d) Degradation of Surrounding Visual Character & Light and Glare. The proposed project would replace the existing barrier railing with a new metal bridge railing. The overall bridge design would remain unchanged except that the existing concrete railing would be replaced with a more open design utilizing metal, which would be considered a visual improvement. The replacement railing would not create a significant visual disruption or degradation to the visual character of the surrounding area.

New bridge lighting will be installed to replace the four existing streetlights. The design has not been completed, but would be an improvement over the existing outdated design that is located on the northern side of the bridge and not along the existing sidewalk. Street lighting would not create a new source of substantial light and glare as lighting along the bridge currently exists. Although mitigation measures are not warranted, the following project Condition of approval is recommended.

> **RECOMMENDED CONDITION OF APPROVAL:** Require all bridge lighting to be hooded and directed downward.

2. AGRICULTURAL RESOURCES

The project site is not located on or immediately adjacent to agricultural lands or lands that are designated for agricultural use. The project area is a developed urban neighborhood, consisting of residential and commercial uses. The project would have no effect upon agricultural resources.

3. AIR QUALITY

(a) Conflicts with Applicable Air Quality Plan. The project consists of improvements to an existing bridge structure and would not result in new population or growth or inconsistencies with the existing air quality management plan for the region.

(b-d) Air Emissions. The North Central Coast Air Basin (NCCAB), in which the project site is located, is under the jurisdiction of the Monterey Bay Unified Air Pollution Control District (MBUAPCD) and includes Santa Cruz, Monterey and San Benito Counties. In March 1997 the air basin was redesignated from a "moderate non-attainment" area for the federal ozone standards to a "maintenance/attainment" area. Under the Federal Clean Air Act, as of March 2006 the NCCAB is designated an attainment area for the federal 8-hour ozone standard.

(The federal 1-hour ozone standard was revoked in the basin on June 15, 2005.) The basin is designated unclassified/attainment for all other Federal standards, including those for carbon monoxide, nitrogen dioxide, inhalable particulates (PM 10), and fine particulates (PM 2.5).

Under the California Clean Air Act, the NCCAB is classified as nonattainment-transitional for the State 1-hour ozone standard. The air basin is also a nonattainment area for the State inhalable particulate (PM10) standard. The basin is an attainment area or is unclassified for all other State standards, including those for carbon monoxide, nitrogen dioxide, sulfur dioxide, and fine particulates (PM2.5).

The project consists of a seismic retrofit to the existing Murray Street Bridge, but would not increase the motor vehicle capacity of the bridge. The project would therefore not cause or indirectly support increases in vehicle traffic that could increase mobile-source air emissions. Nor does the project involve any long-term operations that would result in stationary sources of pollutants. The project would therefore have no long-term emissions or impacts on air quality.

Construction projects generally have the potential to cause short-term increases in exhaust emissions from construction equipment and to generate fugitive dust. The MBUAPCD does not generally require projects to quantify VOC and NOx emissions from typical construction equipment, because these temporary emissions have been accommodated in State and federally required air plans.

Impact Analysis: Project construction could result in short-term, localized increases in exhaust emissions due to construction activities, but would not exceed construction thresholds or result in permanent mobile or stationary emissions upon completion of the bridge retrofit construction activities. This is considered a *less-than-significant impact*,

Upon completion of the proposed bridge improvements, the project will not result in an increase in population or result in a new source of stationary or ongoing permanent mobile emissions. This project would include the operation of construction equipment that would cause short-term, localized increases in exhaust emissions. Construction would take place over an approximate 18-month period and would include demolition activities (removal of some pilings, pavement, and docks), pile installation (drilling and driving of piles both within the waterway and on adjacent land), construction of superstructure improvements on the bridge surface, and construction of new roadway approaches to the bridge. Equipment used would include cranes, excavators, loaders, a drilling rig, pile drivers, trucks, pumps, and other typical construction equipment.

Project construction activities generally will not include excavation/soils work that could result in a short-term, localized increase in equipment and truck exhaust emissions. The two staging areas for the project are paved and are situated immediately adjacent to the project site. The entire area subject to disturbance during construction is approximately 2.86 acres, including the bridge itself, the bridge approaches, the waterway, and areas occupied by docks that would be temporarily removed. Because most construction will take place within the waterway or on the surface of the bridge, only limited portions of the construction site would be potential sources of fugitive dust. The construction of new road approaches and the installation of an anchor pile for Abutment 10 would require some minimal grading and

excavation, but these operations will occur on only a fraction of the site.

Information from the Monterey Bay Unified Air Pollution Control District and its CEQA Air Quality Guidelines indicate that 8.1 acres may be graded per day with minimal earthmoving or 2.2 acres per day with grading and excavation without exceeding the PM_{10} threshold of 82 lbs/day, which could result in a significant effect. The portions of the site subject to grading are well below these thresholds, so no significant effects would occur. Moreover, implementation of standard construction Best Management Practices (BMPs) would further minimize generation of dust and have been incorporated into construction specifications.

> **RECOMMENDED CONSTRUCTION SPECIFICATION:** Require that all stockpiles of debris, soil and other materials which can become windblown be covered.

Grading and construction for this project would involve very limited, if any, use of diesel trucks and equipment that will emit diesel exhaust, including diesel particulate matter. Following the identification of diesel particulate matter as a toxic air contaminant (TAC) in 1998, the California Air Resources Board (ARB) developed a comprehensive strategy to control diesel PM emissions. The "Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles," a document approved by ARB in September 2000, sets goals to reduce diesel particulate emissions in California by 75% by 2010 and 85% by 2020. This objective would be achieved by a combination of approaches (including emission regulations for new diesel engines and low sulfur fuel program). Important parts of the Diesel Risk Reduction Plan are measures for various categories of in-use and on- and off-road diesel engines, which are generally based on the following types of controls:

1. Retrofitting engines with emission control systems, such as diesel particulate filters or oxidation catalysts,
2. Replacement of existing engines with new technology diesel engines or natural gas engines, and
3. Restrictions placed on the operation of existing equipment.

Once the Diesel Risk Reduction Plan was adopted, the ARB started developing PM emission regulations for a number of categories of in-use diesel vehicles and equipment. In July 2007, the ARB adopted regulations for in-use, off-road diesel vehicles that will significantly reduce particulate matter emissions by requiring fleet owners to accelerate turnover to cleaner engines and install exhaust retrofits.

Project construction could involve the use of diesel trucks and equipment that will emit diesel exhaust, including diesel particulate matter, primarily during the pipeline trench excavation phase. No significant impacts are expected to occur due to the transient and short-term nature of the construction period, limited extent of disturbance, limited equipment use, and distance to residential receptors.

Given the short duration and the nature of construction activities, the project will not significantly contribute to existing or projected air quality violations, and thus, will not result in a cumulatively considerable net increase for ozone or PM_{10}, or expose sensitive receptors to substantial pollutant concentrations.

(e) Odors. The proposed project would include construction activities that are not generally associated with the creation of objectionable odors. Upon completion of construction, there would be no long-term operations would result in generation of odors.

4. BIOLOGICAL RESOURCES

This biological resources section was prepared in consultation with EcoSystems West Consulting and Jeffery Hagar, fishery biologist.

Existing Plants and Habitat. The land portion of the project area is mostly developed or heavily disturbed. Most of the area is occupied by parking lots, buildings, existing roads, a boat yard, landscaped areas, and small patches of heavily disturbed ground. Where these developed areas are vegetated, the vegetation consists mostly of planted landscaping species or weedy non-native species. The native herb miner's-lettuce (*Claytonia perfoliata*) is locally abundant in highly disturbed areas, especially in the vicinity of the eastern ends of the existing bridges (SOURCE VII.4).

The area east of the existing bridges and south of Murray Street is essentially entirely developed. East of the existing bridges and north of Murray Street there is a small area of remnant forest on and at the top of the steep slope between the railroad and East Drive. At its western end, this patch of forest is dominated by the native tree species coast live oak (*Quercus agrifolia*). To the east, the non-native tree species blue gum eucalyptus (*Eucalyptus globulus*) dominates the canopy, with subcanopy-sized coast live oaks underneath. The understory is disturbed and variable in species composition to include native and non-native vines and herbaceous species (SOURCE VII.4). One small individual of the native riparian tree species box elder (*Acer negundo* var. *californicum*) occurs at the edge of the eucalyptus stand. Coast live oak and eucalyptus also grow in the narrow area between Murray Street and the railroad track.

West of the existing bridges and north of Murray Street and the railroad track, there is a stand of coast live oak at the top of a steep bank. The understory is disturbed and is vegetated with a relatively sparse cover consisting mostly of non-native species. Several small coast live oaks occur in the area between Murray Street and the railroad track. Several individuals of Monterey pine (*Pinus radiata*) a species that is native in northwestern Santa Cruz County but not native in the vicinity of Santa Cruz, occur close to Murray Street.

Much of the area west of the existing bridges and south of Murray Street is occupied by a parking lot. A patch of remnant forest borders the parking lot on the west. To the south, the canopy of this patch of forest is dominated by blue gum eucalyptus. The understory of this patch of forest is partly landscaped; where not landscaped, the understory is vegetated mostly by weedy non-native species, with Bermuda-buttercup being especially abundant.

Existing Wildlife Use. In general, the developed and disturbed areas of the project site provide low quality habitat for wildlife species. Buildings provide temporary perching places for some avian species such as gulls and doves. The Murray Street Bridge structure provides

habitat for both avian and bat species. The docks in the study area are haul-out sites for harbor seals and roosts for gulls, cormorants and herons. The open water of the study area provides habitat for the southern sea otter, the harbor seal, and the occasional California sea lion.

The eucalyptus trees in the project vicinity, although non-native, provide potential habitat for a variety of wildlife species. Monarch butterflies utilize eucalyptus trees as a nectar source, for temporary roosts, and for winter roosts. Eucalyptus also provides nesting and roosting opportunities for various avian species such as double-crested cormorant, great blue heron (*Ardea herodias*), great egret (*Ardea alba*), as well as other birds and raptors. The oak stands and trees in the project vicinity provide potential food source and habitat for many bird and mammal species. Bat species, including the big brown bat, many *Myotis* species, western red bat, and hoary bat may roost in these stands of oaks as winter migrants, in maternity colonies, or as year-round residents.

Birds observed during field surveys include: belted kingfisher, great blue heron, black-crowned night heron at bridge support bent 8, double crested cormorant, rock dove, black phoebe, western grebe, and a few gull species. Several cliff swallow mud nest remains were observed underneath the Murray Street Bridge. The mud nests were located at bridge support bents 6, 7, 8, and 9.

Mammals observed during field surveys include: one unidentified bat in a tunnel on the northwest side of the Murray Street Bridge, three harbor seals observed at a haul-out site on dock FF at night, an otter swimming north of the bridge, and a California sea lion swimming under the western section of the bridge; the last two observations were made during an evening site visit.

The aquatic portion of the project area is located within the Santa Cruz Harbor which primarily includes boat docks in the project vicinity. Historically, steelhead trout (*Oncorhynchus mykiss*) and tidewater gobies (*Eucyclogobius newberryi*) occurred in Woods Lagoon. Steelhead trout are federally and State listed as threatened. Tidewater gobies are federally listed as endangered and state listed as a species of special concern.

(a) Special Status Species. No special status plant species were observed in the project area. Although the survey was conducted in January, before some special status species would have been identifiable, it was concluded that no native special status plant species occurs in the project area due to the highly disturbed nature of the entire area and the lack of suitable habitat. (SOURCE VII.4). Monterey pine is a special-status species in the areas of California where it is native (generally northern Santa Cruz County near Ano Nuevo, the Monterey Peninsula and the vicinity of Cambria in San Luis Obispo County), but is naturalized and not native in the vicinity of the city of Santa Cruz (SOURCE VII.4).

A search of the California Natural Diversity Database was required to determine the presence of special status species and their habitat within the project vicinity. Special status wildlife species known to occur or potentially occur within the project area include: steelhead, monarch butterfly, and some marine mammals that have been observed swimming in harbor

waters. Habitat for the tidewater goby is not present in the Harbor. These species are further discussed below.

Steelhead. Steelhead trout (*Oncorhynchus mykiss*) is federally and State listed as a threatened species. The proposed project site is also located within the designated critical habitat for Central California Coast ESU steelhead trout.

O. mykiss have been found within Harbor waters and the upstream Arana Gulch that discharges into the Upper Harbor has supported steelhead passage in the past. Surveys conducted by D.W. Alley (2000) recorded an extremely small steelhead population in the lowest reach of Arana Gulch Creek and attributed these low densities to extremely poor spawning habitat conditions and limited rearing habitat (cover and food) (Skewes-Cox, 2006 & Alley, 2000). The lower reach of Arana Gulch is characterized as a tidal channel that extends approximately 1,500 feet upstream to the four 72-inch culverts connected to the Upper Harbor. Tidal effects result in a static backwater environment that causes settling of fine sediment onto the streambed that covers potential spawning gravels and aquatic insects (Skewes-Cox). The upper reaches of Arana Gulch are also characterized by areas of erosion and steelhead migrational barriers (Alley, 2000). The Arana Gulch Watershed Alliance (AGWA) is actively seeking to restore the gulch for steelhead habitat.

Upstream migration season for steelhead is generally between December and April, and the downstream migration season generally peaks from March through May. Previous reviews conducted for the Santa Cruz Port District with regards to dredging operations indicated that there would be negligible effects on steelhead population in Arana Gulch if these activities were conducted outside of smolt out-migration and adult migration periods (SOURCE VII.6).

Impact Analysis. The proposed Murray Bridge Seismic Retrofit project could result in potential indirect impacts to steelhead that may be present during installation of piles and future reinstallation of docks and floats for boat berths. The project will not result in alteration of Harbor water habitat, but could result in temporary disturbances. Specifically, installation of piles could result in localized increased turbidity if not properly managed. Additionally, vibration from pile driving may disrupt steelhead migration through the Harbor. Pile driving can result in production of sound waves sufficient to rupture fish internal organs. Steelhead migrating through the harbor may therefore be harmed by pile driving activities. Except for possible avoidance of sound waves generated by pile driving, physical passage through the harbor, under the existing bridge and into the upper harbor will not be precluded by construction activities. Thus, fish movement and passage within and through the harbor would be possible if not disrupted by pile driving. Due to the species' listed status, this is considered a *potentially significant* impact.

The piles will be installed over a period of approximately two days for each of the 24 planned piles. Pile installation that would occur with the Harbor channel would be undertaken in Phases 2 and 4. Although the construction schedule has not been finalized, as currently proposed pile installation could occur during periods of steelhead migration. Based on reviews of pile driving and effects on fish in other areas, there is evidence that pile driving produces an underwater energy wave powerful enough to rupture a fish's internal organs, but use of devices to produce air bubbles in the vicinity of the piles significantly reduce underwater noise by 25 to 30 dB (SOURCE VII.10). This study was done for a larger project

in the Carquinez Straits involving significant new bridge construction, and may be an extreme example due to the size of the piles, depth of installation, and other project features that are not similar to the scale of the proposed Murray Street Bridge pile driving. Another study (Popper, et. al., 2006) found that sound waves kept below about 200 db would not be a problem (SOURCE VII.18).

Other potential indirect effects relates to disturbance of sediments when the pile casing is installed. Generally, this would be very localized, and would not result in a level of increased turbidity that would be detrimental to fish. The best way to avoid impacts to steelhead would be to schedule pile driving outside of the steelhead migration period. Implementation of this mitigation would reduce potential indirect impacts to steelhead during construction to a less-than-significant level.

> **MITIGATION MEASURE 1:** Conduct pile driving activities in Harbor waters from July 1 to mid-November, unless otherwise permitted by the National Marine Fisheries Service (NFS).

Tidewater Goby. Tidewater gobies (*Eucyclogobius newberryi*) are federally listed as endangered and state listed as a species of special concern. A letter from the California Department of Fish and Game (CDFG) to the Santa Cruz Port District dated March 1993, indicates that as of that time, the tidewater goby had not been collected or observed in the Santa Cruz Harbor. Additionally, the Department indicated that potential habitat for the goby may occur in the brackish water/freshwater zone at the mouth of Arana Creek, which is located north of and drains into the Upper Harbor (Letter to Port District from California Department of Fish and Game in March 1993).

Tidewater gobies were known to occur within Arana Gulch in 1984 (CNDDB), however there have been no recent sightings. According to a review of site conditions by fishery biologist, Donald Alley, past sampling and existing conditions in Arana Gulch indicate that the tidewater goby no longer inhabits Arana Gulch and that habitat for the species is lacking (SOURCE VII.7). Additionally, the predominantly saltwater, developed portions of the Harbor were not identified by the CDFG as potential goby habitat. This species requires relatively closed habitat where daily tidal fluctuations are reduced or absent. The majority of the Harbor experiences tidal influences, especially in the Lower Harbor. The U.S. Fish and Wildlife Service recently reviewed surveys and data regarding presence of tidewater gobies in Harbor waters, and concurred that tidewater gobies do not inhabit Harbor waters (SOURCE VII.8).

A recent survey of Arana Gulch Creek and information from the recent federal draft recovery plan for the tidewater goby concluded that the goby does not occur in Arana Gulch. While the creek does provide potential habitat for tidewater gobies that may become displaced from populations in the San Lorenzo River to the north during strong storm events, recolonization of an established population in Arana Gulch Creek is unlikely under the current altered habitat conditions from the past dredging of the harbor mouth. Constant tidal contact between the harbor mouth and Arana Gulch Creek prohibits development of a closed lagoon, which is essential for tidewater goby breeding and long-term colonization success (SOURCE VII.5).

Special Status Bat Species. Day and nighttime bat surveys were conducted to determine if special status bats were utilizing the Murray Street bridge and surrounding areas. Pallid and Townsend's big-eared bats are California Species of Special Concern. Neither of these bats were observed or acoustically detected at the project site. The nearest occurrence record for the pallid bat is located near Summit Road in the headwaters of Soquel Creek, and the nearest occurrence of the Townsend's big-eared bat is from the Pogonip Clubhouse (SOURCE VII.4).

One unidentified bat was observed in a tunnel on the northwest side of the Murray Street Bridge. Roosting habitat for the pallid bat **(***Antrozous pallidus*), Townsend's big-eared bat **(***Corynorhinus townsendii*), fringed myotis (*Myotis thysanodes*), and long-legged myotis (*Myotis volans*) exists in the expansion joint crevices of Murray Street bridge, and in the weep holes of the Union Pacific Rail Road Bridge. The fringed myotis may also roost in the marginal habitat provided by the coast live oak trees in the study area. Low quality roosting habitat exists for the foliage roosting western red bat (*Lasiurus blossevillii*) in the isolated stands of trees in the study area. The western red bat is known to occur in Arana Gulch (SOURCE VII.4).

Impact Analysis. Project construction could result in disruption to roosting pallid bats, Townsends' big-eared bats, fringed myotis, and/or long-legged myotis if any of these species are using joint crevices of the Murray Street bridge for roosting or maternity roosting. This is considered a *potentially significant* impact.

While the study area does not offer high quality habitat for bat species and neither pallid or Townsends' big-eared bats were observed during surveys, the bridge does provide suitable roosting habitat for special-status bats. One unidentified bat was observed in a tunnel on the northwest side of Murray Street Bridge. While a bat survey revealed no bats or evidence of bats occupation to date, there is still some potential that bats could roost under the bridge.

> **MITIGATION MEASURE 2:** Conduct focused pre-construction surveys of the Murray Street bridge by a qualified biologist to determine if bats are roosting in the bridge's expansion joint crevices if bridge construction activities are scheduled during the breeding season of native bat species (April 1 through August 31). Bat roosting habitat in crevices will be sealed prior to the onset of bat reproductive season (April 1). If roosting habitat is not sealed prior to bat reproductive season, bat exclusion devices will be installed. If these actions do not result in exclusion, a qualified biologist in possession of an applicable Department of Fish and Game Memorandum of Understanding should remove and relocate the roosting bats to an appropriate alternate habitat (a roost with comparable spatial and thermal characteristics).

Monarch Butterflies. The overwintering monarch butterfly (*Danaus plexippus*) is protected under CEQA due to its restricted range, CNDDB ranking (rare), and locally identified as a sensitive habitat in the City of Santa Cruz General Plan. The project vicinity is not within a monarch butterfly habitat area as mapped in the City's General Plan (Map EQ-9). However, monarch butterflies are present in the study area and suitable roosting habitat occurs in the eucalyptus grove northwest of the Murray Street Bridge. Two monarch butterflies were observed during the site visit near the gate at W Dock and landed on an eucalyptus tree

northeast of Murray Street Bridge. Ten individual monarchs were observed previously in the eucalyptus grove on the northwest side of the bridge in October 2006 (SOURCE VII.4).

The eucalyptus grove located northwest of Murray Street bridge, located on private property, is not a known overwintering habitat area for the butterflies. Winter roosting by the species could not be confirmed nor have previous studies been conducted to determine the extent of occupation of this monarch habitat.

Monarch populations may fluctuate widely from year to year, depending upon a number of factors, including the timing of winter rains, winter temperatures, and adequate food supply for larvae. Overall, populations appear to be declining due to general trends of climate change, urban development, and farming practices such as herbicide use, which have reduced milkweed populations (Source VII.4).

Both fluctuations in population and changes in location characteristics affect the selection of wintering roost sites from year to year. A site may serve as an autumnal roost site in low population years and as an overwintering site in years with greater numbers of butterflies. Changes in the canopy density of a tree stand may cause a shift in a site from an overwintering site to autumnal roost. In general, there is great variability from year to year, in terms of which sites will be occupied. In other words, survey results from one year would not be predictive of monarch overwintering occupation in subsequent years. Therefore, it is unknown whether the monarch habitat in the vicinity of the project will be occupied during proposed project timelines.

Impact Analysis. No impacts to monarch butterflies are anticipated as a result of the construction of the proposed project. Project construction would not result in removal of trees. The eucalyptus grove located northwest of Murray Street bridge is not a known overwintering habitat area for the butterflies. The heavy construction zones (i.e., areas of pile driving located within the Harbor channel) are located over 100 feet from this grove, and would not result in indirect impacts to butterflies that may be using the area as roosting habitat. Only a few types of butterflies are known to be sensitive to ultrasonic frequencies and these do not include monarchs. At present, there is no evidence that adult monarchs detect sound, although monarch larvae do respond to sound. The eucalyptus grove in the vicinity of the project site does not provide breeding habitat for the monarch so larvae will not be impacted by project activities (SOURCE VII.4).

Special Status Marine Mammal Species. The southern sea otter (*Enhydra lutris nereis*) is federally listed as threatened, and State-listed as "California Fully Protected." The species is also protected under the Marine Mammal Protection Act (MMPA). One individual sea otter was observed swimming in the open water of the main Harbor channel, north of the Murray Street bridge (SOURCE VII.4).

Seals and sea lions are also protected by the MMPA, but do not retain any other federal or state threatened or endangered status. One individual California sea lion (*Zalophus californianus californianus*) was observed swimming under the western section of the Murray Street Bridge, and six Pacific harbor seals (*Phoca vitulina richardsi*) were observed resting on dock FF at night (SOURCE VII.4).

The waters under Murray Street bridge do not provide rookery habitat or mating grounds for sea otters, California sea lion or Pacific harbor seal. Dock FF does not provide rookery habitat, mating grounds, or habitat of a similar ecological significance for harbor seals.

Impact Analysis. Project construction could result in indirect harm or harassment to marine mammals that may be in the vicinity. The Harbor does not provide rookery habitat or mating grounds for species observed in the Harbor. However, if the Harbor area is utilized as a regular foraging site for the observed otters, sea lions and harbor seals, temporary impacts to these species may result from construction activities, including noise disturbance from pile drivers. Harm or harassment of the these species that may be present in the vicinity of the Murray Street Bridge that is the result of construction activities would constitute a *significant impact.*

Work within the waterway will consist of installing temporary barges to provide work platforms for pile installation. If barges are utilized, prefabricated modular units may be brought to the site and locked together. This type of platform can be installed, reconfigured, and removed relatively quickly, but the system is not suitable for areas that are too narrow to accommodate the modules. For example, footings from the Union Pacific Railroad Bridge to the north and footings from the Murray Street Bridge appear too close together to allow use of a modular barge between footings. In these areas, a trestle likely will need to be constructed.

A total of 24 piles will be installed. The CISS piles at Bents 5 through 8 will be installed within the waterway by driving 30-inch steel casings either to refusal at rock or into a shaft drilled within rock (depending on the location). The shaft and/or casing will be dewatered and concrete will be poured into the casings, which will be left in place. The 30-inch CIDH piles at Bent 5 will also be constructed by pouring concrete into permanent steel casings; dewatering is not expected to be achievable at this location, and a “wet” installation is planned. Overall the installation of piles is expected to take approximately 2 days for each pile. The piles will either be driven in with a pile driver or a vibrator. Loud underwater sounds, such as in-water pile driving, could result in detrimental effects to marine mammals including the increased stress, behavioral changes, decreased communication, and a loss of predator/prey detection (SOURCE VII.20). Considered most significant is potential for temporary or permanent loss of hearing. The National Marine Fisheries Service (NMFS) has preliminarily determined that underwater impulse sound levels of 160 dB of pressure results in observable behavioral changes. Based on NMFS directives on other bridge construction sites where marine mammals are present, a minimum 500-foot radius must be observed when in-water construction will produce loud underwater sounds, particularly; pile driving activities (SOURCE VII.20).

> **MITIGATION MEASURE 3:** Remove known or potential marine mammal resting sites prior to construction based on the outcome of preconstruction survey to assess if and how marine mammals utilize the construction area of potential impact. This preconstruction monitoring will take place at least five days prior to the start of in-water construction. All potential resting sites that occur in the construction work area shall be removed beyond area of activity, either under the bridge or

above. These sites could include floating docks (i.e. Dock FF) or boats, such as those used by UCSC.

MITIGATION MEASURE 4: Require a qualified biological monitor be present during in water construction activities to search for target marine mammal species and halt project activities that could result in injury or mortality to these species. Prior to in-water construction, the approved monitor will conduct a workers training to instruct construction crews regarding actions to be taken to avoid or minimize impacts in the event of a target species entering the in-water work area.

MITIGATION MEASURE 5: Prohibit pile driving activities within a 500-foot radius if marine mammals are present. This radius will be visibly flagged on the banks of the harbor during these activities. Each day prior to the commencement of pile-driving, the approved monitor will survey the buffer zone for marine mammals. If a marine mammal is detected, delay pile driving until the marine mammal(s) has moved beyond the buffer zone, verified by visual confirmation or lack of visual sighting within the next 15 minutes of the last sighting. If the animal should move back into the buffer zone after the commencement of pile-driving, no further work stoppage will be necessary. The buffer radius may be reduced based on a measurement of the distance the 160 db pressure travels in the underwater harbor waters. This would be determined using an approved acoustic monitoring device. The City of Santa Cruz would notify NMFS in writing of the proposed change in buffer zone area.

No disturbance or noise will be used to encourage the movement of the target species from the work area. The City will contact the appropriate authorities to determine the best approach for exclusion of the target species from the in-water work area.

(b-c) Wetland and Riparian Habitat. The proposed project will not result in fill of wetlands as none were identified in the project area. However, the project will include temporary work within the waterway, which is considered a "waters of the U.S." The work in the waterway consists of pile driving which would be accomplished either from a barge or from trestle, and which will result in minor fill (approximately 430 square feet of surface area with a volume of approximately 360 cubic yards) to install the 24 new piles and minor pile cap extension. See section 8-Hydrology and Water Quality regarding water quality impacts.

(d) Wildlife Movement/Breeding. Although surveys were conducted outside of the breeding season, several swallow mud nest remains were observed underneath the Murray Street Bridge. The mud nests were located at bridge support bents 6, 7, 8, and 9. It is unknown if the remains are of cliff swallow (*Petrochelidon pyrrhonota*) and/or barn swallow (*Hirundo rustica*) nests. Cliff swallows have been observed nesting on Murray Street bridge in previous years but it is possible that both species occupy the bridge (SOURCE VII.4).

A great blue heron (*Ardea herodias*) rookery exists in the eucalyptus grove on the northwest side of Murray Street Bridge, which is also used for night roosting. Seven nest platforms were

observed in the eucalyptus grove during the site visit and great blue heron individuals were seen in the study area. A roosting heron was observed at dusk in a eucalyptus tree in the U. S. Coast Guard yard on the west side of the bridge. A potential nest was located in the tree in which the great blue heron was observed roosting. Great blue herons are known to return to this rookery and occupy nests year after year (SOURCE VII.4). It is likely that great blue herons will continue to breed in the rookery.

Great egrets (*Ardea albus*) are also known to nest in this eucalyptus grove. A pair of great egrets was successfully nesting in this rookery in 2005. No great egrets were observed during the site visit; however the visit did not coincide with the breeding season. Great egrets are known to return to this rookery and occupy nests year after year and thus, it is likely that great egrets will continue to breed in the rookery (SOURCE VII.4).

Western gulls (*Larus occidentalis*) were also observed in the study area. Although surveys were conducted outside of the breeding season for this species, gulls have been observed nesting in the footings of the Murray Street Bridge during previous years (SOURCE VII.4). It is likely that gulls will return and attempt to nest at this bridge site. Double-crested cormorants (*Phalacrocorax auritus*) were observed in the water on the north side of the bridge, but the site does not provide nesting habitat (SOURCE VII.4). Some of the tree groves adjacent to the project vicinity are known to support nesting raptors.

Impact Analysis: Project construction could result in potential disturbance to nesting bird species either under the bridge or in nearby eucalyptus trees. This is considered a potentially *significant impact*, as nests were observed in nearby trees, as well as under the bridge itself.

No direct impacts will occur to potential nesting areas as no trees will be removed in the adjacent areas. During project construction, noise disruption of nesting birds (herons, egrets, gulls and swallows) could occur if such nesting occurs within 100 feet of the construction zone. All migratory birds and their nests are federally protected under the Migratory Bird Treaty Act of 1918 (MBTA) (Title 16 United States Code, Section 703-712 as amended; 50 Code of Federal Regulations Section 21 and 50 Code of Federal Regulations Section 13) and by CDFG codes that support the act. The MBTA makes it unlawful to “take” (e.g., pursue, kill, harm, harass) any migratory bird or raptor listed in the 50 Code of Federal Regulations Section 10, including nests, eggs, or products.

The rookeries of the great blue heron and the great egret are protected under the Migratory Bird Treaty Act. While populations of these species are stable, colonies are vulnerable to disturbance. When disrupted, especially early in the breeding season, the birds may abandon rookeries or experience diminished reproductive success (SOURCE VII.4).

Noise from project construction activities may disrupt or diminish reproduction in the great blue heron and great blue heron rookeries, and birds may abandon these rookeries. Some project construction activities would be within 100 feet of known rookeries. As discussed below in section 11, typical construction equipment generate noise levels of about 70 to 85 decibels at a distance of 100 feet, while vibratory pile driving could reach 80 to 95 decibels at 100 feet during pile driving. Due to the period of time during which pile driving can occur within the water (July-November), it is expected that pile driving would occur outside of the breeding season. Long-term impacts to the rookery may result from construction activities if

herons and/or egrets leave the rookery and do not return after completion of the Murray Street Bridge retrofit.

A small nesting population of swallows occupies the Murray Street Bridge. It is assumed that swallows will return and attempt to nest at this bridge location. As the bridge retrofit will coincide with the nesting season, impacts to swallows may also occur.

> **MITIGATION MEASURE 6:** Require that a pre-construction survey for special-status nesting avian species (and other species protected under the Migratory Bird Act) be conducted at least 30 days prior to the beginning of construction activities that occur during the nesting/breeding season (typically February through July) to assure that this area is not actively being used. If active nesting is not occurring, project construction activities may begin. If a nesting special-status bird is found during the survey, construction within 100 feet of the nest site should be postponed until after the bird has fledged or consultation with the California Department of Fish and Game be conducted to determine alternative measures or appropriate buffers.
>
> **MITIGATION MEASURE 7:** If project activities are to be initiated outside of the breeding season, remove existing nests and/or install exclusion netting under the bridge to prevent nesting for the season. Swallow nests should be removed from the bridge structure before the breeding season including the courtship period, usually January through July. Exclusion netting should be subsequently installed to prevent reestablishment of nest structures on the bridge infrastructure during construction.

(e) Conflicts with Local Policies/Ordinances. Project construction would result in removal of two ornamental trees on the east side of the Harbor adjacent to the existing trail. Chapter 9.56 of the City Municipal Code defines heritage trees, establishes permit requirements for the removal of a heritage tree, and sets forth mitigation requirements as adopted by resolution by the City Council. Resolution NS-21, 433, adopted by the City Council in January 1994, establishes the criteria for permitting removal of a heritage tree, and indicates that one or more of the following findings must be made by the Director of Parks and Recreation:

> (1) The heritage tree or heritage shrub has, or is likely to have, an adverse effect on the structural integrity of a building, utility, or public or private right-of-way;
>
> (2) The physical condition or health of the tree or shrub, such as disease or infestation, warrants alteration or removal; or
>
> (3) A construction project design cannot be altered to accommodate existing heritage trees or heritage shrubs.

Resolution NS-21, 436, sets forth the tree replacement/mitigation requirements for approved removal of a heritage tree to include replanting three 15-gallon or one 24-inch size specimen or the current retail value which must be determined by the Director of Parks and Recreation. Tree removal that is consistent with the criteria set forth in City regulations is not considered a significant impact.

Impact Analysis: As indicated above, the project will not result in removal of heritage trees. On the west side of the Harbor, there are existing pine and oak trees adjacent to a stairway that leads from Murray Street to the Harbor. This stairway will be replaced as part of the project, but the trees appear to be outside of any construction zone that would result in damage. To prevent inadvertent damage to existing oak trees on the edge of the west harbor, protective fencing should be installed during construction. Grading and soil compaction and inadvertent damage due to construction equipment could damage the root zones unless the trees and root zones are adequately protected during construction. This is considered a l*ess-than-significant impact*.

RECOMMENDED CONDITION OF APPROVAL: Implement measures to protect existing retained heritage trees in order to minimize damage to protected trees and their root zones during construction, including, but not limited to the following:

- Install construction fencing around the heritage trees to be retained to establish a zone sufficient for protection during construction to prevent inadvertent grading or disturbance/compaction by construction equipment; and
- Prohibit storage of materials, dumping of debris or construction equipment within tree protection zones.

(f) Conflicts with Habitat Conservation Plans. There are no Habitat Conservation or Natural Community Conservation Plans for the project area.

5. CULTURAL RESOURCES

(a-d) Historical and Cultural Resources. According to the City's General Plan, the project site is located adjacent to a mapped "sensitive archaeological area" (Map CR-2) that is situated to the west of the Lower Harbor area and south of Murray Street. The Harbor is also identified as a "landmark" in the City's General Plan (Map CD-5). A majority of the project area consists of Harbor waters that were previously disturbed with the dredging to create the Harbor and ongoing maintenance dredging.

The results of an archaeological investigation conducted for the project indicate that there are two archaeological sites within one kilometer of the project site; no archaeological sites are recorded on the project site itself (SOURCE VII.11). The archaeological investigation also reports that six previous archaeological surveys were conducted on or immediately adjacent to the project site between 1980 and 2002, all with negative results. A field reconnaissance conducted for the archaeological investigation concluded that none of the materials which are typically associated with prehistoric cultural resources in this area (such as dark midden soil, broken or fire-altered rocks, mixed marine shell fragments, bones or bone fragments, flaked or ground stone, etc.) were noted during the survey (Ibid.). The investigation concluded that there is no evidence of potentially significant historic archaeological resources on the project site, and significant impacts to cultural resources are not expected.

However, because of the possibility of unidentified (e.g., buried) cultural resources being found during construction, the following condition of approval is recommended.

> **RECOMMENDED CONDITION OF APPROVAL:** If archaeological resources or human remains are discovered during construction, the City of Santa Planning and Community Development Department and Caltrans District 5 Environmental Planning Branch shall immediately be notified, work shall be halted within 50 meters (150 feet) of the find, and a qualified archaeologist shall assess its significance. If the find is determined to be significant, appropriate mitigation measures shall be formulated and implemented.

6. GEOLOGY AND SOILS

(a-c,f) Seismic Hazards. The project site is located in a seismically active region of California, and the region is considered to be subject to very intense shaking during a seismic event. The city of Santa Cruz is situated between two major active faults: the San Andreas, approximately 11.5 miles to the northeast and the San Gregorio, approximately 9 miles to the southwest. There are no faults zones or risk of fault rupture within the city according to the City's General Plan/Local Coastal Plan (Map S-1).

According to maps in the City General Plan, the Harbor area and Murray Street Bridge are located within an area subject to very intense seismic shaking during an earthquake (Map S-5), and there is a high potential for liquefaction (Map S-6). Additional information on site conditions is provided in a foundation investigation prepared for the project (SOURCE VII.12). This investigation included test borings, field and laboratory testing of recovered soils, an evaluation of previous borings and bridge plans, and an evaluation of proposed project plans.

Three generalized units of earth materials were identified in the test borings: underlying rock, lagoon deposits, and fill. The rock material is considered stable, at least moderately erosion resistant, and capable of supporting heavy, concentrated foundation loads without distress. The lagoon deposits are very weak, highly compressible, and capable of only limited contributions to foundation support. The fill materials are loose to slightly compacted clayey and silty sand and sandy silt, capable of providing some passive soil resistance, but supporting only light loading. The foundation investigation also confirmed the presence of soils subject to liquefaction and slope instability, particularly in the east bank area (SOURCE VII.12).

The design recommendations set forth in the foundation investigation and included in the project take all identified site conditions into account and ensure that the project would not expose persons or structures to seismic or geological hazards. These recommendations include specified pile diameters, installation depths, driving resistance parameters, and installation angles for all new piles. Furthermore, the proposed project is a seismic retrofit of an existing bridge, which will result in substantially improved safety and reduced seismic and geologic hazards risk.

(d,e,g) Soils and Erosion. The proposed project does not include significant subsurface excavation, but construction activities and staging areas will occur within and adjacent to harbor waters. Some minor excavation will be required to widen the east abutment . Thus, the project would not result in significant soil erosion impacts, but could result in advertent water quality impacts if construction activities and materials are not properly managed and contained. This is addressed further below under section 8-Hydrology and Water Quality.

7. HAZARDS AND HAZARDOUS MATERIALS

(a-d) Hazardous Materials/Wastes. The proposed project consists of construction activities to retrofit an existing bridge structure for seismic safety. The project does not involve the

transport, use, or disposal of hazardous materials or wastes and would not result in creation of a public health hazard.

A Phase I Environmental Assessment prepared for the project identified 3 properties with leaking underground storage facilities historically located within one half mile of the site (SOURCE VII.13). Two of these appear to have been closed by the Santa Cruz County Environmental Health Department (SCCEHD) after investigation and monitoring. The third is located so far to the east of the project site that it should have no impact on the site (Ibid.). The assessment also identified one facility within the project's area of potential effect that is a generator of hazardous waste: Aquarius Boatworks (formerly known as Harbor Marine) at 495 Lake Avenue, adjacent to the eastern end of the bridge.

Two incident reports have been filed with SCCEHD for the former Harbor Marine business. The first involved the storage of a boat fuel tank adjacent to the bridge on the southeast side. The tank was removed and its contents (diesel fuel) were disposed of in 1991. The second incident involved paint that had been sanded from the bottom of a boat; paint residue was washed into the waters of the Harbor in 1992. In addition, the assessment notes the presence of a transformer between the Murray Street Bridge and the railroad bridge and the presence of drums for the storage of hazardous materials, solvent fumes, and sanded paint on the asphalt surface at Aquarius Boatworks. The assessment also notes that fill soils used to construct the harbor and bridge could contain incidental motor oil.

Impact Analysis: Project construction could result in short-term, localized disturbance to or exposure to hazardous materials found in the soils. Although the project does not involve extensive grading or excavation, there will be some excavation at the boat yard to create level grades to accommodate construction equipment. In this area, there may be some motor oil, paint or PCBs in the soil on the east side due to historical and existing uses (boat yard and transformer). These conditions are the only ones considered by the Phase 1 Assessment to potentially affect the Murray Street Bridge project. Based on these findings, additional soils testing is recommended, and if contaminants are found they shall be disposed of in conformance with all applicable regulations.

> **MITIGATION MEASURE 8:** In conformance with the recommendations of the Phase 1 Environmental Assessment, fill soils excavated from the west end of the bridge shall be tested for motor oil (with silica gel clean-up). Fill soils excavated from the east end of the bridge shall be tested for diesel, arsenic, motor oil (with silica gel clean-up), and lead (used in old paints). If motor oil is detected, soils shall be further tested for polychlorinated biphenyls (PCBs), due to the presence of a nearby transformer. Any contaminants found shall be treated and/or disposed of in conformance with all applicable regulations.

(e-f) Airport Safety. The project site is not located near a public airport or private airstrip.

(g) Emergency Response Plans. The project is located within a developed urban area. The temporary construction activities would result in intermittent and temporary traffic impacts including closure of one lane of traffic and limited periods when the bridge may be closed to traffic. Murray Street and the Murray Street Bridge are identified as part of an emergency

route in the City's General Plan (Map S-13). The City has adopted an Emergency Management plan describing the role and operation of City departments and personnel during major emergencies resulting from floods, storms, earthquakes, tsunamis, hazardous materials incidents and other disaster (SOURCE VII.1).

As discussed in section 15 (Transportation/Traffic) below, project construction will result in intermittent periods of lane and/or road closure on the bridge, but road closure would not occur for more than two weeks at any one given time. Additionally, emergency vehicle access would be maintained at all times. Thus, the project would have no effect on or interfere with adopted emergency response or evacuation plans for the area. but emergency providers should be given notice of the construction schedule and potential traffic disruptions and lane/road closures on Murray Street.

(h) Wildland Fire Hazards. The project area is not located within a designated fire hazard area according to the City's General Plan.

8. HYDROLOGY AND WATER QUALITY

(a,f) Water Quality. Implementation of the proposed project will not result in discharge of materials or wastes that are regulated and would not violate water quality standards. The proposed project consists of a seismic retrofit of an existing bridge that would slightly increase the surface area of the bridge with widening of shoulders to meet current road standards.

Impact Analysis: Construction activities within the Harbor waterway could result in inadvertent erosion or discharge of materials in harbor waters if construction activities and dock replacement are not property contained and managed, resulting in potential water quality impairment and potential indirect effects to aquatic species. This is considered a *potentially significant impact* due to presence of special status species within the Harbor.

Work in the waterway will require either the use of barges or construction of trestles to provide work platforms. The majority of the piles will be installed by driving 30-inch casings that will be dewatered, and into which concrete will be poured. Additionally, some berth docks will be removed in order allow for adequate area for construction, but will be replaced upon project completion, requiring re-installation of pilings.

During installation of the pilings, benthic sediments would be temporarily disturbed in the area of construction. This may result in temporary discharge of sediments into surface waters, which could cause a very minor increase in the water's turbidity in the immediate vicinity on a temporary basis. This localized change (occurring over a period of 2-3 days) would not result in a significant impact on water quality due to the temporary and localized nature of the effect. Additionally, "Best Management Practices" (BMPs) that require protection of surface waters during construction activities can be incorporated into construction specifications. Implementation of BMPs during construction, as set forth in the project construction specifications, would prevent any temporary, localized erosion or water quality effects.

MITIGATION MEASURE 9 Incorporate BMPS into construction specifications, including, but not limited to:

- Require all excavated soils, fill and construction materials be stored and contained in a designated area away from Harbor waters, and cover stockpiled soils to prevent release of sediments.
- Prohibit fueling, cleaning, or maintenance of equipment except in designated areas located as far from Harbor waters as possible. As a precaution, require contractor to maintain adequate materials onsite for containment and clean-up of any spills.
- Install temporary erosion and sedimentation control devices.
- Locate equipment and spoils in designated staging areas.
- Control of dewatering process to limit turbidity.
- Prepare and implement a Stormwater Pollution Prevention Plan that further details measures for erosion, sediment and water quality control.
- All fill material would be clean material that would meet applicable water quality standards.

(c-e) Drainage Patterns. The project will not result in development. The surface area of the bridge would slightly increase with widening of shoulders to meet current bike lane and sidewalk standards, but would not result in significant increases in impervious surfacing or runoff relative to the surrounding area. Thus, the project would not result in significant impacts related to runoff and drainage.

The proposed berthing improvements will not alter water courses within the Harbor. The course of flow of flood waters would not be modified by the improved berths. The amount of surface water in the Harbor would be slightly reduced due to placement of new piles, but would not be considered significant in relation to remaining Harbor and Bay waters.

(g-j) Flood Hazards. The proposed seismic retrofit of an existing bridge and would not expose people to flood hazards or result in obstruction of flows.

j) Tsunami Inundation. According to the City of Santa Cruz General Plan maps (Map S-8), the Harbor and project site are located within a tsunami area, as is most of the downtown and beach areas of Santa Cruz. The proposed project would not lessen or worsen the potential for tsunami damage. The National Oceanic and Atmospheric Administration operates a tsunami warning system giving several hours notice to allow evacuation of threatened areas to prevent injuries and loss of life.

9. LAND USE AND PLANNING

The entire harbor area, including the project site, is designated CD--Coastal Dependent in the City's General Plan and is zoned "Small Craft Harbor" District with a coastal zone overlay. The site is also within the *Harbor Development Plan* (HDP) area which contains specific policies and development standards for Port District lands. The HDP is the certified Local Coastal Program for the harbor area and is included as an area plan in the City's General

Plan and certified Local Coastal Program (LCP). The project does not conflict with existing City General Plan or Local Coastal Plan policies.

10. MINERAL RESOURCES

The proposed project is located in a developed area. The site is not designated for mineral extraction in the County's General Plan and is not located within, adjacent to or near existing mining operations or known mineral resources.

11. NOISE

(a, d) Exposure to Temporary Construction Noise. The proposed project would be constructed in areas within and immediately adjacent to the Santa Cruz Harbor. Land uses within the harbor area include a mix of visitor-serving and commercial boat uses. Residential uses generally surround the Harbor, except for some commercial businesses along Seventh Avenue, and a PG&E facility off of Seventh.

Nearby residential uses are considered sensitive receptors, but there are no schools, convalescent homes or other uses in the vicinity that would be considered noise sensitive. The nearest residences to the project construction area are several houses along Murray Street (Eaton) about 200 feet from the east end of the bridge, homes at the intersection of Fairview Place and Marine Parade Street, about 100 feet from the west end of the bridge, and several new multifamily structures at the end of Owen Street, about 150 feet north of the west end of the bridge. These three residential areas are the key sensitive receptors of concern at the edge of the construction zone.

The existing noise environment in the project area is dominated by motor vehicle movement on Murray Street/Eaton, Lake Avenue, Seventh Avenue and other nearby arterial streets. Trains utilizing the tracks adjacent to the site, the operation of commercial and private boats in the harbor, and operation of boat yards engaged in repair activities also contribute sporadic noise incidents.

Ambient noise levels in the residential areas adjacent to the project site are in the 55 - 60 (dBA) Ldn/CNEL range, depending on distance and the volume of nearby traffic, based on monitoring and information contained in the City's General Plan / Local Coastal Plan (Map EQ-13). The City of Santa Cruz considers ambient noise levels between 40 and 75 dBA to be acceptable for the range of land uses in the city. For residential areas, exterior ambient noise levels between 50 and 60 dB are normally considered to be acceptable.

Ambient noise levels were monitored during the mid-morning period of March 19, 2007 at the Lake Avenue entrance to the harbor --- across from the residences on Lake. Noise levels were measured and are reported using percentile noise descriptors: L_{90} (the background noise level exceeded 90 % of the time), L_{50} (the median noise level exceeded 50% of the time), L_1 (the peak level exceeded 1% of the time), and L_{eq} (the average energy-equivalent noise level). Monitored noise levels are shown in the following table:

TABLE 3: Existing Noise Levels – Murray Bridge area (dBA)

Location	L_{90}	L_{50}	L_{eq}	L_1
Harbor entrance – 20 feet from Lake Avenue	51	60	62	69

Project construction would occur on weekdays during normal working hours, typically 7 AM to 6 PM. In accordance with City regulations, a public works project can commence before 8AM if it would minimize potential traffic disruption. Goal 6 of the Environmental Quality Element of the Santa Cruz General Plan requires the City to: "Maintain an environment that is not degraded by excessive urban noise by … mitigating the impacts of road projects." Policy 6.1.2 of the Environmental Quality Element requires the City to: "Ensure that construction activities are managed to minimize overall noise impacts."

Impact Analysis. Pile installation and construction will result in temporary increases in ambient noise levels over an approximate 18 month period. Because higher noise levels associated with the project will vary throughout the construction period, and noise levels associated with use of heavy equipment would be intermittent throughout a given day and entire construction phasing, this is considered a *less-than-significant* impact.

Construction-related noise levels would vary throughout the day, depending on the type of equipment in use at any one time and the distance to the receptors. Anticipated equipment includes, but is not limited to equipment that would be used for excavation, installation of bridge piles, and surface improvements, such as cranes, excavators, concrete saws and jackhammers, pile driver or vibrator, and concrete trucks and pumps. Table 4 shows typical noise levels associated with different types of construction equipment.

Conventional construction activities (such as demolition, construction of bridge superstructure elements, and construction of new road approaches to the bridge) are expected to generate noise levels in the range of 66 to 84 dBA at a distance of 100 feet, the approximate distance to the nearest residences on Fairview Place and Owen Street at the west end, while the nearest residences on Murray Street to the east are about 200 feet from the closest construction areas, so noise levels would be 4 to 8 dB lower. Noise generated periodically during vibratory pile driving activities could be greater than other equipment, reaching 80 to 95 dBA at 100 feet during pile driving operations.

Noise and vibration, particularly during pile driving activities, could sporadically disturb nearby residences and businesses. Because impacts would occur only during daylight hours, because impacts are temporary, and because impacts would not violate City Municipal Codes or City General Plan policies pertaining to noise, impacts are considered less-than-significant. Nevertheless, BMPs are recommended to be included in the project construction specifications.

TABLE 4:
Noise Levels and Abatement Potential of Construction Equipment Noise (in dBA)

	Noise Level at 50 Feet		Noise Level at 100 Feet	
Equipment	**Without Controls**	**With Controls**[1]	**Without Controls**	**With Controls**[1]
Earthmoving				
Front Loaders	79	75	73	69
Backhoes	85	75	79	69
Dozers	80	75	74	69
Tractors	80	75	74	69
Graders	85	75	79	69
Pavers	89	80	83	74
Trucks	82	75	76	69
Materials Handling				
Concrete Mixer	85	75	79	69
Concrete Pump	82	75	76	69
Crane	83	75	77	69
Concrete Crusher	85	75	79	69
Stationary				
Pumps	76	75	70	69
Generator	78	75	72	69
Compressors	81	75	75	69
Impact				
Jack Hammers	88	75	82	69
Pneumatic Tools	86	80	80	74
Other				
Saws	78	75	72	69
Vibrators	76	75	70	69

1 Noise levels that can be achieved with implementation of feasible noise controls. Feasible noise controls include selecting quieter procedures or machines and implementing noise-control features requiring no major redesign or extreme cost (e.g., improved mufflers, equipment redesign, use of silencers, shields, shrouds, ducts, and engine enclosures).

Source: U.S. Environmental Protection Agency, "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances," NTID 300-1, 1971.

RECOMMENDED CONDITIONS OF APPROVAL:

- Require all stockpiling and vehicle staging areas and stationary noise-generating construction equipment to be located as far as possible from nearby residential areas as practicable.
- As part of construction specifications, require all equipment to be kept in good repair and fitted with superior quality mufflers. All equipment shall be properly maintained to assure that no additional noise, due to worn or improperly maintained parts, would be generated.
- Require the contractor to assure that mobile noise-generating equipment and machinery are shut off when not in use.

(b) Exposure to Vibration. Nearby businesses and residences, as well as boat users in the Harbor, will be subject to intermittent levels of vibration as a result of installation of 24 new piles to reinforce the bridge structure. Typically, the operation would take 2 days for each pile, with the first day spent driving steel casings into the ground using either a pile driver or a vibrator. Pile driving activity is the only one in which significant vibration levels would occur. Other normal construction equipment activities, such as pouring concrete into the casing, would have negligible vibration transmission. Pile installation would occur in Phases 1, 2, 3 and 4 at sporadic intervals over an approximate 16 month period.

Worst-case vibration levels from the two primary types of pile driving operations are estimated to be as follows, at a distance of 100 feet (from NY-NJ Region Build Alternative Core DEIS, 2005):

Impact pile driving 0.1 to 0.2 inches/sec

Vibratory pile driving 0.02 to 0.15 inches/sec

Potential impacts from pile driving range from minimal noticeability to human disturbance and, for high vibration levels, even architectural damage. The following table describes the range of potential impacts associated with various levels of vibration (from Caltrans Technical Advisory bulletin on vibration TAV-02-01-R9601 (February 2002) and U.S. Dept of Transportation Construction guidelines).

Potential Impacts	Vibration Level (inches/sec)
Barely noticeable	0.01 - 0.015
Some annoyance in buildings	0.02 – 0.05
Significant annoyance, possible plaster damage	0.1 – 0.5
Unpleasant, possible minor building damage	1.0 – 2.0
Potential structural damage	2.5 +

The table shows that the threshold of perception from groundborne vibration is approximately 0.01 to 0.015 in/sec. A continuous vibration level of 0.02 – 0.05 in/sec begins to annoy people, but there is virtually no risk of architectural damage to normal buildings. The threshold at which there is a risk of significant annoyance and damage to plaster walls and ceilings is 0.10 to 0.5 in/sec. Vibration is considered unpleasant by people exposed to continuous vibrations of 1.0 to 2.0 in/sec and minor architectural damage is possible. Vibration levels greater than 2.5 in/sec may result in structural damage and is considered the high end of safety. The above damage criteria are based on ground motion at the building foundations. No allowance is included for the amplifying effects of structural components.

Impact Analysis. Pile installation and construction will result in temporary vibration to residences closest to the construction activities, but vibration levels will significantly decrease with increasing distance from the construction site. This is considered a *potentially significant* impact for a few houses within 150 feet of pile driving operations.

The estimated maximum project vibration levels would be experienced by a few residences that are within 100 to 150 feet of the pile driving operations, and there could be some instances of annoyance and plaster loosening from the pile driving periods for these residences. The vibration levels drop off rapidly with increasing distance (doubling the distance reduces vibration amplitude over 65%), so residences further away than 150 feet would have much less vibration impact and for these areas, worst-case vibration exposures would be in the minor annoyance category.

MITIGATION MEASURE 10: Require that property owners and residents located within 150 feet of the pile installation locations be notified at least one week prior to construction.

(c) Permanent Increase in Ambient Noise. The project would not provide additional traffic lanes or make any other modifications which would cause permanent increases in ambient noise. The project would not make any other modifications which would cause permanent increases in noise or vibration in the area.

(e-f) Airport Noise. See subsection 7 e-f above.

12. POPULATION AND HOUSING

The project consists of improvements to an existing bridge structure. It would not result in new habitable development or population growth.

13. PUBLIC SERVICES

The project consists of improvements to an existing bridge structure. It would not result in new habitable development, population growth, or an increased demand for public services.

14. RECREATION

The project consists of improvements to an existing bridge structure and would not result in new development, population growth, or demand for recreational services. An existing pedestrian path adjacent to the project site on both the east and west sides of the harbor would be temporarily blocked during some periods of construction. However, it is the intent to keep trails open during non-construction periods, i.e. evenings and weekends when possible. However, there will be periods when construction staging on either side of the harbor will require temporary path closure. During these periods, detour signs will direct path users to the other side of the path and harbor. During these closures, the path around the harbor would be temporarily disrupted, but access to the harbor would continue at other locations.

15. TRANSPORTATION/TRAFFIC

(a-b) Traffic. The proposed project consists of construction activities to retrofit an existing bridge structure to improve seismic safety. Long-term traffic impacts (i.e., increase in traffic or congestion) would not occur, as the proposed project would not result in new trip-generating development or permanently alter any public roads other than to improve bike lanes and sidewalks. This section evaluates potential traffic impacts during construction when segments of the Murray Street Bridge will be closed to traffic. A traffic analysis by Higgins Associates was prepared to evaluate the impacts during construction and to evaluate and recommend alternative traffic management plans to be implemented during construction. The results are summarized in this section.

Existing Roads and Traffic Conditions

Murray Street is designated an arterial street in the City of Santa Cruz General Plan / Local Coastal Plan (GP/LCP). Murray Street is part of one of the east-west networks that links Santa Cruz County and downtown Santa Cruz. Murray Street generally extends between Seventh Avenue on the east and East Cliff Drive on the west. Murray Street is renamed Eaton Street just east of the Harbor in the unincorporated portion of the county. At the west end, Murray turns into East Cliff Drive, which is renamed San Lorenzo Boulevard near Ocean Street, and terminates at Broadway.

In addition to Murray, streets that may be affected by diverted and/or experience traffic delays include other east-west corridors: Soquel Avenue, Broadway Street, and East Cliff Drive; and north-south corridors: Seabright Avenue, Frederick Street, and Seventh Avenue. Due to potential diversion of traffic on other streets during construction, 11 key intersections were evaluated. Existing traffic counts were either provided by the City of Santa Cruz and Santa Cruz County, or collected in the field for weekday AM, and PM peak periods. Data collection included vehicles, pedestrians, and bicycle counts. Signal timing plans were provided by the City of Santa Cruz and Santa Cruz County for the intersections along the East Cliff Drive, Murray Street / Eaton Street, Seabright Avenue, and 7th Avenue. All of the intersections along 7th Avenue are located in Santa Cruz County. The remainder of the intersections in the study network along the other three corridors located in City of Santa Cruz. The recently completed bike lane along Soquel Avenue and updated signal timing plans were incorporated into the analysis.

Some traffic may also be diverted to Highway 1, which is currently under construction. The improvements that are being installed are designed to improve merging by adding additional merge lanes from Highway 1 (near Morrissey) to Highway 17 may be completed by the time the Murray Street Bridge construction period is started.

Levels of Service (LOS) analyses were performed for the study intersections and study segments based on *2000 Highway Capacity Manual* methodologies. Traffic volumes at the study intersections are shown in Appendix A. Level of Service measures traffic conditions based on the grading scale of LOS A thru LOS F with LOS A representing free flowing conditions and LOS F representing force flow conditions. The City of Santa Cruz has established LOS D as the minimum Level of Service for overall intersection operations as a

result of development projects that result in a permanent increase in traffic. The City does not have a standard for temporary construction traffic impacts. For signalized intersections, average control delay per vehicle is utilized to define intersection levels of service. Delay is dependent on a number of factors, including the signal cycling, the roadway capacity provided on each intersection approach and the traffic demand.

Table 5 summarizes existing LOS conditions based on traffic counts conducted during 2006. As can be seen, all intersections currently operate at acceptable (D or better) Levels of Service, except at the Seabright/Murray intersection, which operates at LOS E during the PM peak hour.

Westbound traffic on Soquel Avenue flows onto Water Street west of Morrissey at Poplar Avenue, and makes a left turn and then right turn movement onto westbound Soquel. The street layout, at this location as depicted in the SimTraffic modeling showed heavy delays, resulting in backups on westbound Soquel Avenue east of Morrissey Boulevard. The heavy delay was related to assumptions in the traffic model which were not observed during field visits. Therefore, this movement was removed from the SimTraffic model due to the severe congestion and ultimately gridlock on westbound Soquel Avenue east of Morrissey,.

TABLE5: Existing Intersection Levels of Service

E-W Street	N-S Street	AM Peak Hour		PM Peak Hour	
		LOS	Delay	LOS	Delay
Soquel Avenue	Seabright Avenue	D	54	D	49.7
Soquel Avenue	Morrissey Boulevard	C	29.6	D	41.3
Soquel Avenue	Frederick Street	B	16	C	33.6
Soquel Avenue	Capitola Road	C	23.6	C	28.3
Broadway	Frederick Street	A	8.8	B	11.3
Broadway	Seabright Avenue	B	47.2	C	131.6
Murray Street	Seabright Avenue	C	35	**E**	56.5
E. Cliff Drive	Ocean Street	C	25.6	D	41.7
Seventh Avenue	Capitola Road	C	26.8	C	29.7
Seventh Avenue	Brommer Street	B	11.8	B	14.9
Seventh Avenue	Eaton Street	C	28.7	D	40.8
SOURCE: Higgins Associates, 2007					

Impact Analysis. Project construction will result in temporary increase of approximately 5 peak hour trips distributed throughout the road system and will result in temporary closure of one or both lanes of Murray Street Bridge for intermittent periods over the 18-month construction period. Because the temporary increase in construction-related traffic is minor, lane closures will vary throughout the construction period, and road closure would not occur for more than two weeks at any one given time, this is considered a *less-than-significant* impact.

Project construction would result in a short-term temporary increase in traffic in the project area related to construction equipment and workers over an approximate 18-month period. Traffic increases would be generated by construction workers arriving and leaving each day and truck / equipment access to and from the construction site. At the worst case it is assumed that the project may generate up to 50 daily trips with 5 trips in the peak hours (assuming approximately 10 onsite workers, hauling, and transport of equipment). This is not considered significant due to the low peak hour trip volume generated by the project in relation to the existing roadway traffic. Project-generated traffic would be dispersed throughout the construction work hours, thus minimizing the effect on traffic flow on project area roadways. Given the low number of estimated construction workers and estimated daily truck trips, temporary construction traffic would not cause a substantial increase in traffic relative to existing conditions or contribute substantial volumes of traffic during peak hours.

Construction of the proposed project would affect access to adjacent land uses and streets for both general and emergency traffic, and result in temporary traffic disruption and short-term traffic delays. Access to driveways at the northeast side of the project site is not expected to be disrupted. However, provisions will be made to allow access to private property at all times. Vehicle access to driveways would be restored at the end of each work day through the use of steel trench plates over trenched segments. Emergency vehicle access would be maintained at all times throughout project construction.

During times of temporary lane closures, traffic control measures will be implemented in accordance with City and County of Santa Cruz requirements. The traffic study evaluated four alternatives which are discussed below. Complete road closures will occur during periods of construction for a short-term duration at a given time.

- Alternative I: Full Closure
- Alternative II: A-One Lane with Signal Control; B-One Lane with Flagger Control
- Alternative III: Continuous Eastbound (EB) Closure
- Alternative IV: Continuous Westbound (WB) Closure

The traffic analysis found that except for Alternatives IIA and IIB, intersections that provide inlet/outlets to the traffic along major corridors, such as Soquel Avenue, 7th Avenue, and Seabright Avenue were heavily impacted as a result of these diverted trips in the other three alternatives. Furthermore, due to the amount of trips diverted all the alternatives studied experienced delays and/or congestions. The analysis identified signal phasing recommendations under each alternative that could provide some traffic relief along the congested corridors/intersections. Table 5 summarizes intersections operating at unacceptable levels of service and Table 6 outlines recommended improvements for each alternative.

The traffic analysis found that Alternative IIA operates more efficiently than the other alternatives with respect to overall traffic operations, and is the alternative recommended in the traffic analysis. Temporary traffic signals would be placed at the eastern and western end of the Murray Street Bridge, and would be controlled by a single controller, responsible for alternating eastbound or westbound traffic demand along the single operable lane on the

Bridge. The traffic signal would be coordinated with the adjacent intersections, if possible, and would help satisfy the traffic demand based on the directional flows in the peak periods and off peak periods.

Traffic impacts caused by the closure of one lane would occur at the adjacent intersections located on either side of the Bridge; Seabright Avenue at Murray Street and 7th Avenue at Eaton Street. However, side street volumes are low and it is recommended that preference be given to thru traffic on the main corridor at the expense of the side streets volumes. Alternative IIA was preferred over Alternative IIB, as a traffic signal would be more efficient and provide better safety than the flagger option. Alternative IIA will not cause any confusion among the traffic patterns as the traffic patterns will remain the same as the existing traffic patterns. Detour signs would need to be installed during periods when the entire road is temporarily closed.

TABLE 6: Summary of Traffic Conditions and Recommendations For Traffic Management Alternatives

Alternative	Impacted Intersections AM PEAK HOUR	Impacted Intersections PM PEAK HOUR	Recommended Improvements
I – Full Bridge / Street Closure	▪ Soquel / Seabright (**F**) ▪ Soquel/Capitola Rd (**E**) ▪	▪ Soquel / Seabright (**F**) ▪ Soquel/Frederick (**F**) ▪ Soquel/Capitola Rd (**F**) ▪ Broadway/Frederick (**E**) ▪ 7th/Capitola Rd (**E**) ▪ 7th/Brommer (**F**) ▪ 7th/Eaton (**E**)	▪ Optimize Existing Signal Timing at Murray/Seabright, Soquel/Seabright & Capitola/7th intersections ▪
IIA – One Lane Closure with Signal			▪ Install temporary traffic signal on Murray Street ▪ Optimize Existing Signal Timing at 9 intersections
III – Continuous Eastbound Closure	▪) ▪ Murray/Seabright (**E**)	▪ Soquel / Seabright (**F**) ▪ Soquel/Morrissey (**F**) ▪ Soquel/Frederick (**F**) ▪ Murray/Seabright (**E**) ▪ 7th/Brommer (**F**)	▪ Change signal phasing/timing at: Murray/Seabright, Soquel/Seabright, & Capitola/7th intersections
IV -- Continuous Westbound Closure	▪ Soquel / Seabright (**F**) ▪ 7th/Capitola Rd (**E**) ▪ 7th/Brommer (**E-F**)	▪ Soquel / Seabright (**F**) ▪ Soquel/Morrissey (**F**) 7th/Brommer (**F**)	▪ Change signal phasing/timing at: Soquel/Seabright, & Capitola/7th intersections

SOURCE: Higgins Associates, October 2007

Based on the analysis and cost associated with the proposed recommendations, Alternative III and Alternative IV (EB and WB Closure alternatives) could also be feasible options. However, these alternatives will increase the travel time and vehicle delay. The diverted trips will be spread around the different corridors in the study network to reach their destinations resulting in traffic impacts at individual intersections to increase minimally along the study network. However, the traffic will impact intersections that provide inlet / outlets to major corridors such as Soquel Avenue, 7th Avenue, and Seabright Avenue.

RECOMMENDED CONSTRUCTION SPECIFICATION: Prepare and implement a traffic control

plan that includes: installation of signals on each side of the Murray Street bridge to allow controlled access for each direction; changing existing signal phasing as recommended in the traffic analysis; and implementation detours and advance warning signs to address delays.

RECOMMENDED CONSTRUCTION SPECIFICATION: To the extent possible, restrict any temporary lane closures on Murray Street to times outside peak traffic periods, which are generally 7-9 AM and 4-6 PM, and require implementation of traffic controls during times of lane closures consistent with provisions of a traffic control plan that includes a signal to control eastbound and westbound traffic during times of lane closures.

RECOMMENDED CONSTRUCTION SPECIFICATION: Provide advance notice to emergency providers of the construction schedule, lane/road closures on Murray Street, and potential traffic disruption.

Boat Traffic. Project construction activities will take place within the harbor channel beneath the bridge during the retrofitting of Bents 5 through 8. The channel area directly affected will be approximately 180 feet wide by 150 feet long, or 0.62 acres.

The Santa Cruz Port District generally requires two usable waterway openings, each with 30 feet of horizontal clearance, to provide two-way access from the lower harbor to the upper harbor north of the bridge. A single opening is permissible only for very brief periods. During project construction it is expected that two openings will generally be maintained. However, during the driving of piles for Bent 7, it is expected that only one opening will be available for intermittent, non-consecutive half days. The channel width would allow only one-way traffic, necessitating the need for water traffic control. The project will require approval of a Bridge Permit from the U.S. Coast Guard (USCG).

RECOMMENDED CONDITION OF APPROVAL: Require water traffic controls, i.e. patrol/flagger, during periods when the boat channel must be reduced to one-way traffic, consistent with USCG bridge permit requirements.

(c) Air Traffic. The proposed project will have no effect on air traffic patterns (see subsection 7 e-f).

(d-e) Access. The proposed project will not result in new development that would require emergency access.

(f-g) Parking and Alternative Transportation Systems. Parking for construction workers vehicles would occur within the designated Harbor parking areas and would not affect nearby public parking or onstreet parking. The project would not result in permanent parking demand increases.

16. UTILITIES AND SERVICE SYSTEMS

The project consists of improvements to an existing bridge structure. It would not result in new habitable development, population growth, or an increased demand for public services.

17. MANDATORY FINDINGS OF SIGNIFICANCE

(a) Environmental Degradation and Biological and Cultural Resource Impacts. The project will not result in significant biological impacts with implementation of mitigation measures outlined in this Initial Study, and will not result in significant impacts to cultural resources

(b) Cumulative Impacts. The project consists of a seismic retrofit to an existing bridge. The project will result in short-term, temporary impacts related to construction, but will not result in permanent impacts. The proposed project would not contribute to any known cumulative impacts.

(c) Adverse Environmental Effects. As evaluated in this Initial Study, the proposed project would no permanent effect on human beings, either directly or indirectly. Short-term construction-related noise and vibration impacts will be minimized or avoided with implementation of proposed project construction specifications and mitigation measures outlined in this Initial Study.

SECTION VI. MITIGATION MONITORING

MONITORING PROGRAM

1. **Pre-Construction Surveys.** The following actions are required for mitigation measures # 2 and 7 as outlined below. It is the responsibility of the City to hire a qualified biologist and complete work in accordance with the specifications contained in the measures.

    - **Specific Actions Needed for Implementation:** Actions are specified in the measure.
    - **Staff or Agency Responsible for Implementation:** The City of Santa Cruz Public Works Department is responsible for hiring a qualified biologist to conduct pre-construction surveys in accordance with provisions outlined in the measure.
    - **Timing of Implementation:** To be completed prior to construction or during construction as outlined in the measure.
    - **Timing of Monitoring or Reporting:** Report upon completion of surveys and prior to construction.

    MITIGATION MEASURE 2: *Conduct focused pre-construction surveys of the Murray Street bridge by a qualified biologist to determine if bats are roosting in the bridge's expansion joint crevices if bridge construction activities are scheduled during the breeding season of native bat species (April 1 through August 31). Bat roosting habitat in crevices will be sealed prior to the onset of bat reproductive season (April 1). If roosting habitat is not sealed prior to bat reproductive season, bat exclusion devices will be installed. If these actions do not result in exclusion, a qualified biologist in possession of an applicable Department of Fish and Game Memorandum of Understanding should remove and relocate the roosting bats to an appropriate alternate habitat (a roost with comparable spatial and thermal characteristics).*

    MITIGATION MEASURE 6: *Require that a pre-construction survey for special-status nesting avian species (and other species protected under the Migratory Bird Act) be conducted at least 30 days prior to the beginning of construction activities that occur during the nesting/breeding season (typically February through July) to assure that this area is not actively being used. If active nesting is not occurring, project construction activities may begin. If a nesting special-status bird is found during the survey, construction within 100 feet of the nest site should be postponed until after the bird has fledged or consultation with the California Department of Fish and Game is conducted to determine alternative measures or appropriate buffers.*

2. **Construction Specifications.** The following actions are required for mitigation measure #1, 3-6, 8-11 as outlined below., which can be incorporated into the Construction Specifications on the project plans. The consulting project engineer shall review plans and construction specifications to insure that these measures have been incorporated into the construction specifications.

    - **Specific Actions Needed for Implementation:** Actions are specified in the measure.
    - **Staff or Agency Responsible for Implementation:** The City of Santa Cruz Public Works Department or designated engineer is responsible for including measure on project plans and/or in construction specifications.

- **Timing of Implementation:** Measure to be included in project plans and construction specifications with monitoring during construction as outlined in measures 5 and 6.

MITIGATION MEASURE 1: *Conduct pile driving activities in Harbor waters from July 1 to mid-November, unless otherwise permitted by the National Marine Fisheries (NFS).*

MITIGATION MEASURE 3: *Remove known or potential marine mammal resting sites prior to construction based on the outcome of preconstruction survey to assess if and how marine mammals utilize the construction area of potential impact. This preconstruction monitoring will take place at least five days prior to the start of in-water construction. All potential resting sites that occur in the construction work area shall be removed beyond area of activity, either under the bridge or above. These sites could include floating docks (i.e. Dock FF) or boats, such as those used by UCSC.*

MITIGATION MEASURE 4: *Require a qualified biological monitor be present during in water construction activities to search for target marine mammal species and halt project activities that could result in injury or mortality to these species. Prior to in-water construction, the approved monitor will conduct a workers training to instruct construction crews regarding actions to be taken to avoid or minimize impacts in the event of a target species entering the in-water work area.*

MITIGATION MEASURE 5: *Prohibit pile driving activities within a 500-foot radius if marine mammals are present. This radius will be visibly flagged on the banks of the harbor during these activities. Each day prior to the commencement of pile-driving, the approved monitor will survey the buffer zone for marine mammals. If a marine mammal is detected, delay pile driving until the marine mammal(s) has moved beyond the buffer zone, verified by visual confirmation or lack of visual sighting within the next 15 minutes of the last sighting. If the animal should move back into the buffer zone after the commencement of pile-driving, no further work stoppage will be necessary. The buffer radius may be reduced based on a measurement of the distance the 160 db pressure travels in the underwater harbor waters. This would be determined using an approved acoustic monitoring device. The City of Santa Cruz would notify NMFS in writing of the proposed change in buffer zone area. No disturbance or noise will be used to encourage the movement of the target species from the work area. The City will contact the appropriate authorities to determine the best approach for exclusion of the target species from the in-water work area.*

MITIGATION MEASURE 7: *If project activities are to be initiated outside of the breeding season, remove existing nests and/or install exclusion netting under the bridge to prevent nesting for the season. Swallow nests should be removed from the bridge structure before the breeding season including the courtship period, usually January through July. Exclusion netting should be subsequently installed to prevent reestablishment of nest structures on the bridge infrastructure during construction. 7*

MITIGATION MEASURE 8: *In conformance with the recommendations of the Phase 1 Environmental Assessment, fill soils excavated from the west end of the bridge shall be tested for motor oil (with silica gel clean-up). Fill soils excavated from the east end of the bridge shall be tested for diesel, arsenic, motor oil (with silica gel clean-up), and lead (used in old paints). If motor oil is detected, soils shall be further tested for polychlorinated biphenyls (PCBs), due to the presence of a nearby transformer. Any contaminants found shall be treated and/or disposed of in conformance with all applicable regulations.*

MITIGATION MEASURE 9: *Incorporate BMPS into construction specifications, including, but not limited to:*

- *Require all excavated soils, fill and construction materials be stored and contained in a designated area away from Harbor waters, and cover stockpiled soils to prevent release of sediments.*
- *Prohibit fueling, cleaning, or maintenance of equipment except in designated areas located as far from Harbor waters as possible. As a precaution, require contractor to maintain adequate materials onsite for containment and clean-up of any spills.*
- *Install temporary erosion and sedimentation control devices.*
- *Locate equipment and spoils in designated staging areas.*
- *Control of dewatering process to limit turbidity.*
- *Prepare and implement a Stormwater Pollution Prevention Plan that further details measures for erosion, sediment and water quality control.*
- *All fill material would be clean material that would meet applicable water quality standards.*

MITIGATION MEASURE 10: *Require that property owners and residents located within 150 feet of the pile installation locations be notified at least one week prior to construction.*

3. The following recommendations are included in the Initial Study and should also be incorporated into the Construction Specifications on the project plans.

   - ***RECOMMENDED CONDITION OF APPROVAL:*** *Require all bridge lighting to be hooded and directed downward.*

   - ***RECOMMENDED CONSTRUCTION SPECIFICATION:*** *Require that all stockpiles of debris, soil and other materials which can become windblown be covered.*

   - ***RECOMMENDED CONDITION OF APPROVAL:*** *Implement measures to protect existing retained heritage trees in order to minimize damage to protected trees and their root zones during construction, including, but not limited to the following:*

     - *Install construction fencing around the heritage trees to be retained to establish a zone sufficient for protection during construction to prevent inadvertent grading or disturbance/compaction by construction equipment; and*

     - *Prohibit storage of materials, dumping of debris or construction equipment within tree protection zones.*

   - ***RECOMMENDED CONDITION OF APPROVAL:*** *If archaeological resources or human remains are discovered during construction, the City of Santa Planning and Community Development Department and Caltrans District 5 Environmental Planning Branch shall immediately be notified, work shall be halted within 50 meters (150 feet) of the find, and a qualified archaeologist shall assess its significance. If the find is determined to be significant, appropriate mitigation measures shall be formulated and implemented.*

   - ***RECOMMENDED CONDITION OF APPROVAL:*** *Require all stockpiling and vehicle staging areas and stationary noise-generating construction equipment to be located as far as possible from nearby residential areas as practicable.*

   - ***RECOMMENDED CONDITION OF APPROVAL:*** *As part of construction specifications, require all equipment to be kept in good repair and fitted with superior quality mufflers. All equipment shall be properly maintained to assure that no additional noise, due to worn or improperly maintained parts, would be generated.*

- ***RECOMMENDED CONDITION OF APPROVAL:*** *Require the contractor to assure that mobile noise-generating equipment and machinery are shut off when not in use.*

- ***RECOMMENDED CONSTRUCTION SPECIFICATION:*** *Prepare and implement a traffic control plan that includes: installation of signals on each side of the Murray Street bridge to allow controlled access for each direction; changing existing signal phasing as recommended in the traffic analysis; and implementation detours and advance warning signs to address delays.*

- ***RECOMMENDED CONSTRUCTION SPECIFICATION:*** *To the extent possible, restrict any temporary lane closures on Murray Street to times outside peak traffic periods, which are generally 7-9 AM and 4-6 PM, and require implementation of traffic controls during times of lane closures consistent with provisions of a traffic control plan that includes a signal to control eastbound and westbound traffic during times of lane closures.*

- ***RECOMMENDED CONSTRUCTION SPECIFICATION:*** *Provide advance notice to emergency providers of the construction schedule, lane/road closures on Murray Street, and potential traffic disruption.*

- ***RECOMMENDED CONDITION OF APPROVAL:*** *Require water traffic controls, i.e. patrol/flagger, during periods when the boat channel must be reduced to one-way traffic, consistent with U.S. Coast Guard (USCG) bridge permit requirements.*

SECTION VII. REFERENCES

REPORT PREPARATION

Strelow Consulting with the following technical reviews:

- EcoSystems West Consulting Group, Biological Resources
- Jeffery Hagar, Fishery Resources
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