# Alum Rock Park Bank Repair and Stream Restoration Project Biological Assessment

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## 1.0 INTRODUCTION

The purpose of this biological assessment is to review the proposed Alum Rock Park Bank Repair and Stream Restoration Project in sufficient detail to determine to what extent the proposed project may affect any of the threatened, endangered, proposed, or sensitive species and designated or proposed critical habitats listed below. In addition, the following information is provided to comply with statutory requirements to use the best scientific and commercial information available when assessing the risks posed to listed and/or proposed species and designated and/or proposed critical habitat by proposed federal actions. This consultation initiation package is prepared in accordance with legal requirements set forth under regulations implementing Section 7 of the Endangered Species Act (50 CFR 402; 16 U.S.C. 1536 (c)).

This document covers activities proposed for two bridge footing repair projects and ten bank repair, floodplain restoration, and fish passage improvement projects. A detailed project description of individual project activities is provided below. U.S. Army Corps of Engineers (COE) issuance of a Section 404 permit for work within its jurisdiction is expected to constitute the federal action.

### 1.1 Threatened, Endangered, Proposed Threatened or Proposed Endangered Species

Information on Threatened and Endangered species is based on review of the U.S. Fish and Wildlife Service (USFWS) list of Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Calaveras Reservoir Quad, in addition to the CDFG California Natural Diversity Database (CNDDB) RareFind Report for the U.S. Geological Survey (USGS) 7.5-minute Calaveras Reservoir quadrangle.

The following discussion of special-status plants and animals focuses on those species for which habitats are available within the Santa Clara-Alum Rock Corridor. A review of the USFWS and CNDDB species lists and habitat requirements indicated that the following listed and proposed species may be affected by the proposed project:

***Central California Coastal steelhead*** (*Oncorhynchus mykiss*) **T**

***California red-legged frog*** (*Rana draytonii*) **T**

***Alameda whipsnake*** (*Masticophis lateralis euryxanthus*) **T**

These three species are addressed in detail in the body of this document. Several additional listed species identified by the CNDDB and USFWS species lists as potentially present within the Calaveras Reservoir quadrangle have been eliminated from further consideration because they do not occur within or near the Action Area. These species, and the specific reason(s) to exclude them from further evaluation, follow:

***Bay checkerspot butterfly*** (*Euphydryas editha bayensis*) **T**

The nearest documented record of the bay checkerspot butterfly is approximately 6.5 miles south of the park boundary, on Coyote Ridge (USFWS, 1998a). Normally this species is associated with serpentine, which is not known to occur within the park boundary. The larval form is associated with dwarf plantain (*Plantago erecta*) and

sometimes with purple owl's clover (*Castilleja [Orthocarpus]densiflora*). In the absence of serpentine soils and these two serpentine-associated host plants, occurrence is unlikely. Project related impacts are within or in proximity to partially wooded riparian habitat, which would not support this open habitat species.

***Delta smelt*** (*Hypomesus transpacificus*) **T**

Delta smelt are not known to occur in the Upper Penitencia Creek watershed, and they have not been noted in regional surveys (Buchan et al., 1999; Leidy 1984, Stillwater Sciences, 2006). The distribution is primarily within the Sacramento-San Joaquin River Delta, which will not be affected by this project.

***Central Valley steelhead*** (*Oncorhynchus mykiss*) **T**

Steelhead in the project area belong to the Central California Coastal evolutionarily significant unit (ESU). The project will have no effect on the Central Valley ESU.

***Central Valley spring & winter-run chinook salmon*** (*Oncorhynchus tshawytscha*) **T**

Chinook salmon may have spawned in the lower parts of the Coyote Creek drainage historically. None have been reported from Upper Penitencia Creek or nearby drainages during recent sampling events (Stillwater Sciences, 2006; Li, 2001).

***California tiger salamander, central population*** (*Ambystoma californiense*) **T**

California tiger salamanders are known historically from the Calaveras Reservoir Quadrangle. One record is old (1895) and without specific locality data; the others are 1994 reports of larvae 3.1 miles NNE and 6.9 miles NNW of the park boundary. All are associated with stock ponds within annual grassland near ridgetops. Terrain within Alum Rock Park includes level floodplain and steep Diablo sage scrub, neither of which is likely to provide suitable habitat for the California tiger salamander. Floodplain areas are typically excluded from habitat even where the species occurs nearby, because fish predation on eggs or larvae would preclude successful breeding. Project impacts are associated with riparian and floodplain portions of the park and this species is reported to avoid wooded corridors and prefer open grasslands for dispersal (Trenham, 2001). Thus the species is excluded from consideration based on an absence of suitable habitat, and because the Action Area is well beyond the known maximum dispersal distance of 2.1 miles (Trenham, 2001) from documented breeding ponds.

***California least tern*** (*Sternula antillarum*) **E**

The California least tern is a coastal species known mostly from central and southern California and Baja California. There are known populations along the San Francisco Bay shoreline in Alameda and San Mateo Counties. Nesting habitat consists of open, unvegetated ocean or bay beaches; this habitat type is not present within or near the Action Area.

***San Joaquin kit fox*** (*Vulpes macrotis mutica*) **E**

The San Joaquin kit fox is associated with open habitats within and bordering the San Joaquin Valley, including grassland and scrub. The nearest records are in the Pajaro River drainage (including an old record in southern Santa Clara County) and in eastern

Alameda County and western San Joaquin and Stanislaus Counties. (USFWS, 1998b); most regional records are associated with interior foothills and valleys many miles inland of the project area. Project impacts are within partially wooded riparian areas which would not provide suitable San Joaquin kit fox habitat even if records were available in closer proximity.

## 1.2 Candidate Species, Sensitive Species, and Species of Concern

The CNDDB includes historical records for the following candidate species, sensitive species, and species of concern within the Calaveras Reservoir 7.5 minute USGS quadrangle. This includes state species of special concern (SSC) and California Native Plant Society (CNPS) rare plants:

1) The western pond turtle (*Actinemys marmorata*) known to occur in nearby Coyote Creek and the Overfelt percolation ponds.

2) The California tiger salamander (*Ambystoma californiense*) known to occur at 12 separate locations approximately 3to 5 miles from the project site.

3) The Golden Eagle (*Aquila chrysaetos*) from one known nest site 7 miles north near Milpitas. Little or no foraging habitat is to be affected and it is not expected to nest in the heavily used recreational portions of the park.

4) The Great Blue Heron (*Ardea herodias*) is known from a colony site in the upper Calaveras Reservoir.

5) The chaparral harebell (*Campanula exigua*) is known approximately 2 miles northeast from the project site.

6) The Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*) known from a 1908 collection approximately 2 miles from the project site.

7) The robust spineflower (*Chorizanthe robusta* var. *robusta*) is known only from an 1882 collection in the vicinity of San Jose.

8) The Townsend's big-eared bat (*Corynorhinus townsendii*) is known from a mine tunnel near Calaveras Reservoir.

9) The Berkeley kangaroo rat (*Dipodomys heermanni berkeleyensis*) is known from a 1940 collection from Calaveras Reservoir.

10) The fragrant fritillaria (*Fritillaria liliacea*) is known from a pre-1941 collection in Alum Rock Park, it was not seen in a 1994 search or during this survey.

11) The arcuate bush-mallow (*Malacothamnus arcuatus*) was reported from Alum Rock Park but the 1936 report has not been confirmed.

12) The robust coyote mint (*Monardella villosa* ssp. *globosa*) is known to occur north of Alum Rock Park, although no upland habitat (chaparral) is to be affected.

13) The Yuma myotis (*Myotis yumanensis*) is known from a capture at Calaveras Reservoir, north of Alum Rock Park.

14) The foothill yellow-legged frog (*Rana boylii*) is reported from area streams, including Upper Penitencia Creek within Alum Rock Park.

15) Maple-leaved checkerbloom (*Sidalcea malachroides*) is reported from the project area, but the identity is questioned.

16) The most-beautiful jewel-flower (*Streptanthus albidus* ssp. *peramoenus*) is known from nearby Alameda Creek and east of Calaveras Reservoir.

These species do not have federal status and are not addressed in this biological assessment. Potential impacts to these species will be addressed as part of the CEQA process.

### 1.3 Critical Habitat

Critical Habitat was designated for the Central California Coastal steelhead effective January 2, 2006 (NMFS, 2005). Upper Penitencia Creek, Arroyo Aguague, and Coyote Creek are included within the area designated as Critical Habitat for this ESU.

The action addressed within this document falls entirely within Critical Habitat for the California red-legged frog effective April 16, 2010 (USFWS, 2010)[1].

The Poverty Ridge Critical Habitat Unit for the California tiger salamander is located a short distance northeast of Alum Rock Park, on private land. No portion of the action addressed within this document is in designated Critical Habitat for this species.

The action addressed within this document does not fall within Critical Habitat for the bay checkerspot butterfly. The nearest Critical Habitat is located approximately 6.5 miles to the south on Coyote Ridge.

The action addressed within this document does not fall within Critical Habitat for the Alameda whipsnake. The nearest Critical Habitat is in Alameda County.

The action addressed within this document does not fall within critical habitat for any other species.

## 2.0 CONSULTATION HISTORY

This biological assessment represents the initiation of consultation for the proposed project.

[1] Red legged frog critical habitat map available at http://criticalhabitat.fws.gov/docs/crithab/zip/fch_71fr19244_raad_2009.zip.

Over the past decade or more, efforts have been made to identify and implement restoration opportunities within the park. The Alum Rock Park Riparian Management Plan, published in 2001, defines objectives and identified restoration opportunities within the park. The Quail Hollow bridge repair, weir removal, and prior stabilization and revegetation efforts were distinct from the current set of projects, and, hence, were subject to independent environmental review and consultation.

The present effort was initiated in the summer of 2007, with key events as follows:

- July 31, 2007. Project kickoff meeting and site visit, City of San Jose and Winzler & Kelly.
- August 1, 2007. Preliminary run of USFWS and CNDDB species lists
- March 4, 2008. USFWS species list updated (no changes); begin preparation of biological assessment.
- March 26, 2008. Winzler & Kelly site visit.
- May 29, 2008. Winzler & Kelly site visit (rare plant survey).
- August 19, 2008. USFWS species list updated (no changes). Draft biological assessment completed. Draft 404, 401, and Streambank Alteration Agreement applications completed.
- September 7, 2010. USFWS and CNDDB list updates for revised draft biological assessment and permit applications. Updates to California red legged frog critical habitat.
- May, 2011. City of San Jose review of Draft BA

## 3.0 DESCRIPTION OF THE PROPOSED ACTION

### 3.1 Background Information

The proposed project is intended to restore portions of Upper Penitencia Creek and its floodplain, as well as associated historical structures, within Alum Rock Park. The applicant is the City of San Jose, Department of Parks, Recreation and Neighborhood Services, 200 E. Santa Clara Street, San Jose, CA, 95113-1905. The contact person is Ms. Evelyn Velez-Rosario. The U.S. Army Corps of Engineers (COE) is the federal action agency.

### 3.2 Location and History

Alum Rock Park is located in the foothills of the Diablo Range east of San Jose in Santa Clara County, California (Appendix A, Figures 1 and 2). Established in 1872, Alum Rock Park is one of the oldest municipal parks in the State of California. The park covers 720 acres, and is managed by the City of San Jose.

Upper Penitencia Creek flows through the park and is bordered on both sides by steep upland terrain. The park was extensively modified beginning in the late 1800s, with stone bridges crossing the creek, stone grottos covering some of the associated springs, and with stone walls and weirs constraining much of the creek itself. In the 1970s an effort was made to return portions of the park to a more natural condition, and some of the structures were removed. However, the older remaining structures have historical significance.

In March of 2008, LSA Associates completed a comprehensive historic resource report for Alum Rock Park (Hibma, 2008). Also in 2008, the Anthropological Study Center of Sonoma State University (SSU) conducted an archaeological inventory of 12 streamside sites to aid in regulatory permitting of the proposed restoration projects (Massey, 2008). The SSU survey located one historic-era archaeological site with the potential to be impacted by proposed restoration work. SSU subsequently conducted archaeological test excavations within the site and concluded that it appears to be eligible for the National Register of Historic Places (NRHP) (Massey et al., 2008). As such, a qualified archaeologist will be required to be on site during work within the identified site.

## 3.3 Project Objectives

The 2001 Alum Rock Park Riparian Management Plan identified a broad goal to "restore and enhance the riparian and aquatic resources along Upper Penitencia Creek to enhance native aquatic and riparian species, restore stream functions and protect public health and safety" (Biotic Resources Group, 2001). The management plan identified the following more specific goals:

a. **Biological Resource Goal:** Preserve and restore the ecological resources of the riparian and aquatic habitat along Upper Penitencia Creek.

b. **Hydrologic and Erosion Control Goal:** Restore natural hydrologic functions, to the extent possible, to the channel and stream banks of Upper Penitencia Creek, to reduce erosion and bank instability, allow habitat restoration and protect public safety and Park property.

c. **Cultural and Recreation Resource Goal:** Acknowledge and preserve the significant historical and cultural resources along Upper Penitencia Creek. Continue existing compatible uses and provide opportunities of potential compatible uses along Upper Penitencia Creek, including educational, recreational and scientific uses.

The Alum Rock Park Riparian Management Plan identified the need for the proposed projects and other high priority projects which were completed in 2004. The proposed project is intended to further contribute to the implementation of these goals.

## 3.4 Project Description

The City of San José, Department of Parks, Recreation, and Neighborhoods Services proposes to implement 12 distinct stream and bank restoration activities on Upper Penitencia Creek within Alum Rock Park. Proposed activities include two bridge abutment repairs and ten bank repair,

floodplain restoration, and fish passage improvement projects. Several of the specific project elements are intended to restore riparian and aquatic habitat, reduce erosion and sedimentation in the creek, and repair damage to historic structures. Potential project benefits and impacts to jurisdictional waters are displayed in Table 1, below. Winzler & Kelly conducted a delineation of the ordinary high water mark (OHWM) of the project area in 2010 (W&K, 2010).

Work would generally occur in immediate proximity to Upper Penitencia Creek. Floodplain restoration would extend as much as 40 feet away from the existing bank; most other project activities would not extend beyond top of bank except for vehicle parking, temporary stockpiling of materials, and use of construction equipment. Most individual project activities are very limited in spatial extent. While several small areas may be dewatered at the edge of the creek if water is actively flowing during construction, only Project 13/CEMAR would require dewatering of the entire active channel.

Construction would begin upon acquisition of regulatory permits and program funding and would be implemented over a five-year period from 2012 to 2017. All work would occur in the dry season from June 15 through October 15.

***Project Identification*** - Project locations and plans are included in Appendix A and B. Descriptions of each project follow.

The individual projects presented in this document are arranged in spatial (not numerical) sequence from upstream to downstream and are grouped into three distinct clusters. The upstream cluster extends over an area of about 1,200 linear feet, from the Creekside Bridge to just below Bridge K, and includes projects 1, 11, 3, 10, and 4.

The middle cluster begins about 1,000 feet downstream, just above Bridge I, extends about 1,200 feet to a point about 250 feet below the Visitor Center Bridge, and includes projects 2, 5, 6, and 9, and 13 (also known as Center for Ecosystem Management and Restoration.[CEMAR]).

The downstream cluster begins nearly a mile below the middle cluster, extends for about 600 feet, and includes projects 7 and 8.

***Project 1. Creekside Bridge Abutment Repair.***

Project 1 is located on the existing left (south) bank of Creekside Bridge, which lies at the Project 1 is located on the existing left (south) bank of Creekside Bridge, which lies at the outside bank at the end of a minor bend. Erosion at the left downstream face abutment and adjacent, over-steepened bank threaten the stability of the bridge abutment and the bank. Scouring of the bank has exposed the roots of a 12-inch maple which currently acts as a retaining wall for the bank.

Erosion along portions of the left bridge footing has created a gap between the footing and the underlying bedrock, which acts as a foundation for the footing. Because of the underlying bedrock, erosion is not likely to continue vertically, however, there is potential for it to migrate longitudinally and dislodge the footing. The Project 1 bank repair consists of removing the Maple, laying the bank back, trenching in a toe of boulders (1 T), and placing riprap (1/4 T) up the bank supported by the toe boulders. Because the bank will be laid back, grout will be

avoided, and the interstices of the toe boulders will be filled with native streambed material or ¾" drain rock and planting soil. A geosynthetic layer around the toe and between the bank and riprap will prevent wicking away of bank soil. Coir fabric, planting soil, and an erosion control blanket will cover the surface of the riprap, and the system will be staked with diagonal cut, notched, 2x4s tied together and cinched down with woven jute rope. Toe boulder interstices, lower, and middle bank will be planted with live stakes. The upper bank will be planted with shrubs, and a 2-inch minimum layer of a native hydroseed mix will be applied to the bank and any other exposed areas.
A 4-inch stone veneer would be added to the existing pilaster to cover exposed concrete superstructure at the location of the former retaining wall and to blend aesthetically with the bridge. Mortar and ¼ T riprap will fill any gaps in the bottom of the wall (currently buried).

In locations of erosion along the left pilaster base and abutment footing, high strength, non-shrink grout would be installed by hand or similar underpinning methods to fill the void and prevent further undercutting. Except for the underpinning of the left abutment footing and a potential for part of the toe boulder trench to fill a total of 164 $ft^2$ of COE jurisdictional waters, the proposed structures are located above ordinary high water.

This repair prevents the extensive excavation required for more invasive approaches, such as construction of retaining walls, protects the structural integrity of this historic bridge, and compromises between an enduring design (laying back and armoring the banks, stabilizing with toe rock) and a softer design (planting rock joints and bank; bolstering with geosynthetic, coir, and erosion control blankets; bolstering and cinching with stakes and jute rope).

***Project 11. Expansion of Floodplain***
Floodplain expansion and restoration is proposed along the east bank downstream of the Creekside Bridge. A stream segment from 200 to 300 feet downstream of the bridge is currently constrained by a stacked rock wall which functions as a retaining wall for an adjacent picnic area. The recommended restoration activity is removal of the wall, relocation of the existing picnic area, and creation of a floodplain by grading the left (east) bank to an elevation equal to ordinary high water. There would be no placement of fill or impacts to existing wetlands or within the OHWM of the creek. The project would require the removal of one large sycamore tree. It is estimated that the restoration action would create approximately 1986 $sf^2$ (0.045 acre) of new floodplain and COE jurisdictional waters.

The expansion area will be revegetated as specified in the Habitat Mitigation and Monitoring Plan (HMMP), including mitigation of the mature sycamore at a 5:1 ratio.

(Continued on page 10

| Table 1: Impacts to Waters and Area of Restoration[1] | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Number** | **Location** | **Description** | **Temporary Impacts[2]** | **Permanent Impacts[3]** | **Volume of Fill** (cubic yards) | **Mitigation/ Creation** | **Net Change Waters of US** |
| **1** | Creekside Bridge | Abutment repair | 0.0617 ac<br>2,690 sf | 0.0038 ac<br>164 sf | 8.6 cy | 0 | (-) 0.0038 ac<br>164 sf |
| **11** | Downstream of Creekside Bridge | Floodplain expansion | 0.09 ac<br>3,958 sf | 0 | 0 | 0.0456 ac<br>1,986 sf | (+) 0.0456 ac<br>1,986 sf |
| **3 and 10** | Downstream of Bridge L | Floodplain expansion, wall removal | 0.1486 ac<br>6,473 sf | 0 | 0 | 0.061 ac<br>2,657 sf | (+) 0.061 ac<br>2,657 sf |
| **4** | Downstream of Bridge K | Rock wall repair | 0 | 0 | 0 | 0 | 0 |
| **2** | YSI Bridge | Abutment repair | 0.091 ac<br>3,957 sf | 0 | 0 | 0 | 0 |
| **13/ CEMAR** | Downstream of YSI Bridge | Fish passage improvement | 0.0046 ac [1]<br>200 sf | 0.197 ac<br>8,572 sf | 1,430 cy | 0.197 ac<br>8,527 sf | 0<br>self mitigating |
| **5** | Downstream of YSI Bridge | Repair eroded rill/wall | See 13/CEMAR | 0.0015 ac<br>65 sf | 19.25 cy | 0 | (-)0.0015 ac<br>65 sf |
| **6** | Adjacent to Visitor Center | Repair failed bank protection | 0.028 ac<br>1,213 sf | 0.006 ac<br>261 sf | 41.5 cy | 0 | (-) 0.006 ac<br>261 sf |
| **9** | Visitor Center Bridge | Abutment repair | 0.061 ac<br>2,650 sf | 0.0018 ac<br>78 sf | 2.98 cy | 0 | 0 |
| **7** | Downstream of Quail Hollow | Bank repair | 0 | 0 | 0 | 0 | 0 |
| **8** | Downstream of Quail Hollow | Repair failing sack concrete wall | 0.074 ac<br>3,211 sf | 0.0016 ac<br>69 sf | 2.6 cy | 0 | (-)0.0016 ac<br>69 sf |
| **TOTAL** | | | **0.6 ac<br>~24,352 sf** | **(-)0.21 ac<br>~9,209 sf** | **1,505 cy** | **(+) 0.30 ac<br>~13,170 sf** | **~0.09 ac<br>~4,000 sf<br>net gain** |

1 All numbers approximate based upon surveyed topography and best available design accuracy and information.
2 Temporary impacts include entire in-channel area below OHW to be dewatered during construction, except 13/CEMAR where dewatered section is included as self-mitigating permanent impact because the channel will be reconstructed for improved fish habitat..
3 Permanent impacts include permanent fill or alteration of streambed below OHW

(Continued from page 8)

***Project 3. Removal of Rock Wall Downstream of Bridge L***

Project 3 consists of removal of an approximately 120-ft long section of existing undercut, mortared, stone masonry retaining wall located on the left (east) overbank immediately downstream of historic foot bridge, Bridge L. The stream channel is confined by grouted rock walls on both sides. The encroachment of the wall on the stream channel has increased the channel velocity and caused undercutting. The rock wall is undercut for approximately 25 feet. In some locations the wall has been separated from its poured concrete footing and hangs unsupported above the creek. The scour extends under the rock wall by a distance of up to 36 inches.

Portions of the removed rock wall would be used on other projects that require masonry façade and to repair sections of wall located elsewhere in the park. The end points of the existing retaining wall would be curved around the existing grotto and the existing left, downstream abutment of Bridge L as scour protection. This would also allow adjacent existing grades to be maintained.

***Project 10. Expansion of Floodplain Downstream of Bridge L***

Project 10 includes widening of the floodplain for high flow relief, sediment exchange, and creation of refugia for juvenile steelhead. Project 10 would occur in the same location as Project 3, following rock wall removal. Grading would commence during the summer season just below ordinary high water with the resulting floodplain extending approximately 120 feet along the creek with a maximum width of 30 feet. This would create an estimated 2,590 square feet (.06 acre) of new floodplain and COE jurisdictional waters.

***Project 4. Repair Undercut Rock Wall Downstream of Historic Bridge K***

Project 4 is located on the left (east) overbank immediately downstream of Bridge K and consists of a failing section of mortared stone masonry retaining wall which retains the left bank. The dimensions of failure are approximately 19 feet long by approximately 7 to 11 feet in height.

An in-kind repair of native rock and mortar would be placed to fill in the existing void space and to conform to the existing wall. The existing 12-inch buckeye tree would remain; placement of rock would occur around the rootwad and base of the tree. To alleviate groundwater seepage, weepholes would be installed in the repaired sections of wall.

***Project 2. Youth Sciences Institute (YSI) Bridge abutment repair***

Project 2 is located at the left (south) upstream bank of Youth Science Institute (YSI) Bridge and consists of repair of erosion and failure of the upper bank. The bank failure occurs under a low, curved, stone masonry approach wall immediately adjacent to the bridge. Remnants of either a failed rock wall or cobble fill comprise the bank. This project would also protect and preserve an undercut mature (+/- 36-inch diameter) Deodar cedar, located on the left bank. The lower segment of the bridge abutment is in good condition and does not require repair.

The repair begins above ordinary high water and consists of a curved retaining wall with a return

into bank to prevent future scour. The wall would protect the root mass of the cedar and bank. The length of the proposed wall is approximately 17 feet.

A mini-pile foundation (drilled and grouted into the typically shallow bedrock) would be used to support a cast-in-place concrete strip footing. The continuous, curved footing would support the new retaining wall. The base of the wall may be protected with new, selectively placed boulder revetment. The curved retaining wall would be constructed of cast-in-place concrete. For appearance, the curved retaining wall would be faced with stone masonry veneer to match the existing bridge construction.

***Project 13. CEMAR fish passage improvement project***

An undercut weir serving as a grade control structure 75 feet downstream of the YSI Bridge has caused a scour pool and a 4.5-foot vertical drop from the crest of the weir to the normal pool surface, creating a salmonid migration barrier. Weir removal could trigger upstream channel degradation and threaten the structural integrity of the bridge. This project proposes to leave the weir in place and to create a stable roughened channel suitable for fish passage.

The mitigation project will modify the existing concrete grade control structure and install a roughened channel. The roughened channel will extend approximately 48 linear feet upstream and 254 downstream of the modified concrete grade control structure. The roughened channel includes 12 rock band structures to control grade and six chutes and five pool structures. The overall slope of the channel would be approximately 4%. All work in the stream channel would occur while the channel is dewatered using coffer dams. Fill material would be placed within an area of approximately 0.2 acres to create the roughened channel. The new streambed would be compacted with tamping and water to reduce subsurface flow; water used for jetting would be captured and recycled to prevent downstream escape of sediments.

As a result of the channel design, the OHW line would be elevated through the restored channel reach. There would be no significant net change in channel cross section, area of jurisdictional waters, or wetted area other than a slightly increased elevation of both channel bed and OHW line. There would be a significant improvement in fish migration capability, and there would also be a net gain in aquatic habitat quality.

Associated bank improvements include slope regrading, rock wall removal, and revegetation in the downstream part of the project reach, with some rock protection placed at the toe of slope.

***Project 5. Repair of Eroded Rill***

Adjacent to a grade control structure (see Project 13/CEMAR, above) 70 feet downstream of the YSI Bridge, a gap between two existing concrete sack walls has resulted in streambank erosion on the north bank. The failure may be related to existing runoff from a nearby parking lot. The unprotected section of bank is approximately 7 feet in length. The proposed project would connect the existing walls using rock and grout and conform to the existing side slope. Installation of steel piles may be required. This would reduce the amount of exposed soil at risk of erosion. Permanent impacts (0.002 acres) would be limited to a small area of wall footing

extending below the ordinary high water line. The Project 5 work area overlaps with that described in the CEMAR project, above.

***Project 6. Repair of failed bank protection adjacent to Visitor's center***
About 150 feet upstream of the Visitor Center Bridge, an approximately 150-foot stretch of previous bank protection project on the south bank has failed. A paved path/access road is located approximately 7 feet from the top of bank. An approximately 50-foot long by 5-foot high crib wall has failed and no longer retains the slope. About 30 feet upstream a 6 by 15-foot rock and mortar wall has failed and slid into the channel. Downstream of the crib wall, a 7 by 20-foot section of rock and mortar bank facing has been undercut by erosion and has slid down to the edge of the stream. This section also has an exposed a failed 15-inch culvert. In this area of multiple failures, a 30 to 40-foot long section of the bank protrudes into the channel and is near vertical.

The project would lay the bank back to a slope between 2:1 and 3:1 horizontal to vertical. The hinge point of excavation would be sited above ordinary high water and near existing boulders located along the channel, which would be augmented with a trenched toe of ¼ T boulders seated in geosynthetic. A retaining wall with an average height of 4 to 5 feet is incorporated in the design to make up the vertical grade difference in order to allow the current asphalt path to remain without relocation. This configuration would maximize the preservation of trees located at top of bank and preclude the need to move the pathway. Banks will be covered with planting soil and an erosion control blanket. Toe bolder interstices, lower, and middle bank will be planted with live stakes, and the upper bank will be planted with shrubs. A 2-inch minimum layer of a native hydroseed mix will be applied to the bank and any other exposed areas. As part of this work, failed remains of existing bank retaining structures would be removed and the slope would be revegetated. Existing park fencing would be extended as necessary along the project perimeter.

***Project 9. Abutment and bank protection and repair at the Visitor Center Bridge***
The Visitor Center Bridge is a rock and mortar arch footbridge with a 40-foot span supported on approximately 9-foot by 4-foot rock and mortar abutments. The south (left) bank exhibits extensive erosion both upstream and downstream of the bridge. On the upstream bank, a rock and mortar wing wall in relatively good condition lies on the upstream side of the bridge abutment. Adjacent to the wing wall are failed remnants of wall sections and former stairs leading down slope. These features are surrounded by a slope surface that is exposed/unvegetated and raveling from foot traffic. Portions of the stair remnants and railing are embedded in and support the bank, and these should not be altered.

The downstream bank immediately adjacent to the bridge pilaster and wing wall is also exposed and eroded.

Because the bridge and abutments are intact and the banks themselves require no major repair, we recommend treatment of south banks that avoid interfering with structural components. For the upstream south bank, the section of retaining wall that is unsupported should be removed.

The bank itself will be scarified, filled with a layer of planting soil, covered with erosion control blanket, staked, and planted with live stakes and shrubs. Bank plantings will obscure the pathway down the banks, and a row of native blackberry at the top of bank will further discourage foot traffic. Fencing will be replaced and augmented to discourage public access.

Immediately downstream of the bridge on the top of the north bank is an eroded section of stacked rock wall. The adjacent downstream wall is intact. Filling in the voids by rebuilding the failed section of wall with rock and mortar from top of bank to existing ground and conforming to existing grade is recommended. The new section of wall will rest on a concrete footing.

***Project 7. Repair/protect failing south bank along trail downstream of Quail Hollow***
Project 7 repairs a collapsed portion of the right (southwest) overbank downstream of the Quail Hollow Bridge. The collapsed section is approximately 10-foot wide by 6-foot high and appears to have been composed of loose bank material (cobble, gravel and sand fill) constructed at a steep slope. The failure encroaches approximately 1-foot into an existing trail located at the top of the bank. The adjacent, downstream bank is retained by a rock masonry wall supported by a partially undercut footing.

The objective of Project 7 is protect the trail and to avoid major construction in the creek and removal of riparian trees. Timber lagging similar to the repair on the trail's opposite bank would provide a vertical repair to the upper portion of the bank in this highly confined space to shield the eroded area. Backfill would be placed behind the new timber lagging to re-build the shoulder of the trail. A cluster of willows which currently act as a retaining wall for the lower portion of the bank would be preserved. Construction would not encroach upon the creek.

High strength, non-shrink grout would be installed by hand to fill the void underneath the undercut footing and prevent further undercutting. Dewatering for construction would not be required because the concrete footing is located above ordinary high water.

***Project 8. Repair of failing north bank sack concrete wall and bank***
Project 8 is approximately 1600 feet downstream of Quail Hollow Bridge and is comprised of two components. The first component addresses a section of undercut concrete sack wall footing on the right (northeast) overbank located on the outer bank of a 90-degree bend in the creek. The second is immediately adjacent and upstream and consists of a failed bank.

The downstream portion of the project occurs between a 15-inch culvert that extends through the concrete sack wall and a 36-inch poplar tree. Damage extends for approximately 33 lineal feet and consists of undercutting of the rough concrete footing supporting a 9-foot high concrete wall. A bedrock bank is exposed immediately downstream and adjacent to the sack concrete wall. The undercut concrete footing would be protected with high strength, non-shrink grout to fill the void and prevent further deterioration.

The upstream component of this project is an approximately 50-ft long section of bank failure ending near the 36-inch poplar tree. Sloughing of the upper bank has exposed a near vertical

bank with a sloping lower bank. Cobbles, boulders, large concrete debris along with sandy and gravelly soil are exposed in the bank. This material has also accumulated at the base of the failure. Opposite the bank failure, the channel is constricted by a near-vertical bedrock inner bank. Upper bank failure has undermined a portion of the outer pavement edge of the roadway. The roadway has been relocated away from the failure and an asphalt concrete dike has been constructed in this area.

In order to repair the failed bank and preserve the existing road a pile and lagging wall would be installed with a roughened slope at the bottom. Steel H piles driven 5 to 6 feet on center and cast into underlying bedrock with concrete lagging provides a durable vertical solution. The bottom portion of the wall would be roughened with ¼ T riprap stacked at a 2:1 horizontal to vertical slope from above the OHW mark to the new pile and lagging wall. The riprap would be trenched in at the toe, underlain by a geosynthetic, and covered with coir fabric, plantings soil, and an erosion control blanket and then planted with live stakes.

## 3.5 Project Activities and Schedule

Excavation and repair activities would utilize standard construction equipment including an excavator, a dump truck, a dozer, a backhoe, a gas powered generator, a tamper, a concrete truck, and asphalt paving equipment. A drum compactor may be used on Project 8, and a small pile driving hammer on Project 5, and 8. Work would occur June 15 through October 15, beginning in 2011 and completing in 2016. One to four projects would be initiated each year and completed in the same year. Equipment would normally stage on uplands away from the stream, on nearby paved parking areas when possible. Only essential construction activities would occur in or immediately adjacent to the streambed.

## 3.6 Operational Characteristics

Although the project would result in some permanent changes to channel configuration (i.e., floodplain restoration and roughened channel), there would be no operational activities in the usual sense of the term. The project does not require future operations or activities outside of those already ongoing in the park.

## 3.7 Proposed Conservation Measures and BMPs

The following general measures would be utilized to avoid or minimize the risk of adverse impacts to listed species. These measures have been utilized during previous instream work within Alum Rock Park (City of San Jose, 2002):

- Prior to construction, a qualified biologist shall conduct a training program to familiarize all construction personnel with identification of steelhead, red-legged frogs, and selected state special concern species; their habitat, general provisions and protections afforded by the Endangered Species Act, measures implemented to protect steelhead and red-legged frogs, and a review of the project boundaries. A representative of the City of San José shall be present during any training sessions.

- Construction shall be limited to daylight hours in the period between June 15th and October 15th unless extended in writing by the permitting agencies. Hand planting and low impact revegetation activities may occur between October 15th and June 15th in order to establish plants in the planting season.
- Every effort shall be taken to ensure that pollutants including: soil, chemicals, fuel, concrete, slurry, or washings thereof are not permitted to enter the flowing stream. Prior to the start of construction, the stream shall be diverted around or through the work area and the work area shall be isolated from the flowing stream. If any concrete, cement, slurry, or washings thereof inadvertently enters the stream, all construction activities shall immediately cease until the material is cleaned up and removed from the channel.
- Watertight cofferdams shall be constructed around all instream work areas to isolate flowing water from the project area. No work shall occur within any active channel prior to dewatering. Project 13/CEMAR shall receive cofferdams upstream and downstream of instream work areas and water shall be diverted through a suitably sized pipe or trench, as approved by NMFS, from upstream of the upstream cofferdam and discharged downstream of the downstream cofferdam. The water diversion shall extend for the entire length of the area instream work is to occur. All other small instream work areas shall receive a cofferdam built around the instream work area. The diversions shall remain in place for the duration of active construction at each site and for sufficient time to allow any instream concrete or mortar to cure and harden.
- Cofferdams shall be constructed of a non-erodible material that does not contain soil or fine sediment. Cofferdams and the stream diversion system shall remain in place and function through the construction period. If, for any reason, the cofferdams or stream diversions fail, they shall be repaired immediately. Upon completion of construction, all stream channels shall be returned to their pre-construction condition or shall meet the specified design for the site.
- Block nets shall be installed prior to installation of the cofferdams and bypass pipes or channels. The block nets shall be removed after these stream diversion facilities are completed.
- Cofferdams shall be constructed in a manner that will allow and encourage voluntary movement out of the work area by fish or frogs. The downstream end will be closed off last, after hand removal of any remaining instream or bank cover within the work area.
- A biologist with all necessary state and federal permits shall be on site to rescue all steelhead or red-legged frogs within the work site prior to dewatering. Rescued fish or frogs shall be moved to the nearest appropriate site on the stream. Capture and relocation of all steelhead, including capture techniques and storage temperatures, shall be conducted pursuant to NMFS protocol and subject to NMFS approval. Capture and relocation of all red-legged frogs shall be conducted pursuant to USFWS protocol and subject to USFWS approval.
- A qualified biologist will be present on-site when work occurs within the stream and during dewatering activities to rescue stranded amphibians if necessary.

## 3.8 Mitigation

To offset impacts, the project includes mitigation which would result in a net long-term gain of ecological functions and values in addition to a net gain of 0.09 acres of jurisdictional waters created by floodplain expansion. Proposed mitigation is integral to the projects and would occur concurrent with the implementation of individual projects. The project is expected to result in beneficial effects including:

- The project shall create and restore wetlands and waters, leading to a net gain of approximately 0.09 acres, as described in the Habitat Mitigation and Monitoring Plan (HMMP) prepared for the project.
- Revegetation within created wetlands/waters shall be consistent with: the HMMP; Santa Clara Valley Transportation Authority C111 Alum Rock Fish Passage Project Plans and Specifications Plans and Specifications; City of San Jose, Department of Public Works, City Facilities Architectural Services Plans for the Construction of Alum Rock Park Nine Streambank Repair and Floodplain Expansion Projects; and City of San Jose, Department of Public Works, City Facilities Architectural Services Plans for the Construction of Alum Rock Park Bridge Protection and Bank Repair Creekside Bridge and specifications.
- All invasive exotic plant species shall be removed from the project site. Any Vinca, Cape, or German ivy, castor bean, arundo, or other exotic plant species shall be bagged and appropriately disposed of at a landfill. Exotic species shall not be used in composting or left otherwise exposed in or around the project site. Heavy equipment and other machinery shall be inspected for the presence of undesirable species prior to on-site use and cleaned to reduce the risk of introducing exotic plant species into the project site.

## 3.9 Action Area

In defining the action area, factors considered included actual construction activity, construction traffic, construction noise, and instream sediment disturbance. The action area boundaries are shown in Appendix A, Figure 3.

The upper limit of the action area is 300 feet upstream (northeast) of Creekside Bridge, to account for noise, visual, and traffic impacts. Above this point, a bend in the canyon and the sound of the rushing high-gradient stream is likely to mask or suppress any effects.

Below this point, the action area boundaries parallel either side of Upper Penitencia Creek. The boundary is 150 horizontal feet either side of Upper Penitencia Creek, or at the outer limit of access road pavement, whichever is greater. This accounts for construction traffic and includes a buffer area for construction sites that are immediately in or adjacent to the stream.

The downstream limit of the action area is just outside the western limit of Alum Rock Park, at Dorel Road. This is about 2,200 feet west of the last downstream project site and includes the area which could potentially be affected by any inadvertent sediment release or increase in turbidity. Below this point Upper Penitencia Creek becomes low-gradient and ephemeral,

flowing through a predominantly urban area. Because construction activity would be limited to the late summer period when much of the stream below this point would normally be dry, impacts would not extend to ephemeral portions of the lower drainage.

# 4.0 STATUS OF THE SPECIES AND CRITICAL HABITAT IN THE ACTION AREA

## 4.1 Central California Coastal steelhead (*Oncorhynchus mykiss*)

*Overview*

Steelhead associated with the San Francisco Bay drainage, including those in the Coyote Creek-Upper Penitencia Creek watershed, belong to the Central California Coast ESU. This ESU is listed as federally threatened (NMFS 1997, 2000). Upper Penitencia Creek is one of a handful of streams draining into San Francisco Bay which still supports a steelhead run of substantial size (Leidy et al. 2003). Critical Habitat was designated for the Central California Coastal steelhead effective January 2, 2006 (NMFS, 2005). Upper Penitencia Creek, Arroyo Aguague, and Coyote Creek are included within the area designated as Critical Habitat for this ESU.

*Life History*

Both resident (rainbow trout) and anadromous (steelhead) forms of *Oncorhynchus mykiss* are thought to occur in Upper Penitencia Creek. Anadromous fish spend their adult lives in marine environments, returning to freshwater at the age of four or five to spawn, usually in their stream of origin.

The steelhead in Upper Penitencia Creek are winter-run, and spawn mostly from January through March, although some individuals spawn as early as late December or as late as April (Hallock et al. 1961). Eggs are deposited in redds constructed in gravel, and hatch after three to 14 weeks. The hatchlings, or alevins, emerge from the gravel after an additional two to five weeks. During the egg and alevin stages, survival depends in part on the presence of clean, well oxygenated gravel. Excessive siltation contributes to mortality at these stages (Stillwater Sciences, 2006; Barnhart, 1991). In Upper Penitencia Creek, juveniles remain in fresh water for one or two years before returning to saltwater, with emigration typically occurring from March through June. A second year of growth is thought to contribute to a much higher probability of survival in the open ocean (Stillwater Sciences, 2006).

*Habitat*

Juvenile steelhead use a variety of instream habitats depending on age and size. Smaller fish inhabit shallow, slow moving margins of streams or other open situations. Larger juveniles move to deeper water with more cover and vegetation.

In 2006, Stillwater Sciences identified winter habitat as a limiting factor for age 1+ steelhead in Upper Penitencia Creek. During the winter steelhead move to interstitial spaces between cobble greater than 90 mm in diameter. These spaces offer refuge from fast winter storm flows, and protect the fish from predation as they become inactive at lower water temperatures. If these

interstitial spaces are filled with silt, as is the case in many parts of Upper Penitencia Creek, survival may be greatly reduced.

*Factors of Decline*

Historical impacts contributing to declines of Central California Coastal ESU steelhead include dam construction on the Russian River and Dry Creek, urbanization, poor land use practices, flooding, and dewatering from irrigation and diversion (Busby et al., 1996). Many of these factors remain important today; for example urbanization in the rapidly growing South Bay Area. Steelhead numbers are thought to have declined substantially within the ESU, but data are limited for most streams in the area.

Within the Coyote Creek watershed, historical habitat modification has almost certainly affected steelhead. Stream diversions occurred in the lower part of the watershed as early as the 1870s. Much of the floor of the Santa Clara Valley is now heavily urbanized, with extensive sections of Coyote Creek channelized (Stillwater Sciences, 2006). Upper Penitencia Creek has been directly affected by channel modifications described above which constrained the floodplain, increased water depth and flow rate, and reduced input of large woody debris within Alum Rock Park. Cherry Flat Dam was constructed in 1932; although the dam is above the barrier waterfalls and thus did not cause a direct loss of steelhead habitat, operation would have modified flow and sediment dynamics. Ironically, releases from the dam may contribute to consistent perennial flow in the Alum Rock Park portion of Upper Penitencia Creek. In spite of historic modifications, juvenile steelhead continue to be relatively abundant in Upper Penitencia Creek, which is thought to support one of the largest populations in streams tributary to San Francisco Bay.

*Limiting Factors*

Stillwater Sciences (2006) completed a detailed limiting factors analysis for steelhead in Upper Penitencia Creek, and except where noted otherwise information in this section is from their findings. The analysis was based on existing habitat and abundance information (Li, 2001), direct observation surveys, and quantitative modeling. Spring and fall population estimates for age 0+ and age 1 and older fish served as the basis for the model.

Steelhead spawning requires the availability of relatively clean, well oxygenated gravel. Under ideal conditions, survival to emergence can be as high as 70 to 85 percent (Shapovalov and Taft, 1954). The presence of fine sediment in Upper Penitencia Creek gravel deposits limits steelhead survival to emergence, which has been estimated at 36 percent. However, population modeling by Stillwater Sciences indicated that improving spawning gravel quality would result in only a very slight increase in smolt production. Thus, spawning gravel is not believed to be a limiting factor in Upper Penitencia Creek.

Fine sediments can also reduce the depth of pools and reduce the availability of juvenile rearing habitat. Surveys of pool habitat by Stillwater Sciences found that while fine sediment was present in pools, it had resulted in relatively little filling. Nearly half of the pools surveyed had less than 5 percent filling, and only one exceeded 20 percent. This is most likely a function of high sediment transport capacity within the Alum Rock Park portion of the channel, due to the

lack of floodplains and a low flow channel.

The typically small size of pools in Upper Penitencia Creek and the limited amount of large woody debris may be more limiting than sediment related impacts. These are related to the relatively low channel complexity resulting from historic modifications within the park.

The availability of interstitial spaces in cobble or boulder substrate is a crucial component of winter habitat. Steelhead use these spaces for cover as they become inactive at low winter temperatures. In coastal streams subject to periodic high winter flow events, the availability of deeper refugia within the cobble and boulder layer becomes important. When fine sediment fills these interstitial spaces, the availability of winter habitat declines rapidly.

Cobble and boulder habitat is fairly evenly distributed within Upper Penitencia Creek and makes up about 52 percent of the total wetted channel (FAHCE, 2000). However, this figure includes smaller cobble; steelhead winter habitat is generally in the larger cobble size classes above 90 mm. The exact amount of potentially suitable habitat is unknown, but is presumed to be less than the figure identified above.

Surveys of Upper Penitencia Creek by Stillwater Sciences found a high degree of embeddedness in cobble/boulder habitat. They estimated carrying capacity for age 0+ steelhead at 0.034 fish/ft$^2$ and for age 1+ steelhead at 0.010 fish/ft$^2$. Thus, "the high levels of embeddedness observed in Upper Penitencia Creek probably results in a relatively low winter carrying capacity for juvenile steelhead" (Stillwater Sciences, 2006). The analysis by Stillwater Sciences indicated that increases in the "quantity or quality" of winter habitat would be expected to result in "dramatic increases in smolt production."

In summary, spawning success and summer survival of juveniles appears to be high enough to support a viable steelhead population. However, winter habitat for age 1+ steelhead has been identified as a limiting factor. Juveniles remain common through their first summer, but are greatly reduced in number by the following spring (Stillwater Sciences, 2006). As noted above, the 1+ age class is an important contributor to the adult breeding population, because smaller and younger fish returning to the ocean environment are thought to have a much lower survival rate.

The source of sediment choking interstitial spaces in cobble beds is unclear. Other reports identify this reach of Upper Penitencia Creek as sediment starved; there are substantial sediment inputs, but fine sediment is carried through the system because of high flows and constrained banks (Biotic Resources Group, 2001). If sedimentation is from historical sources which are no longer active, or if proposed restoration of floodplain areas captures additional silt, then restoration of suitable instream winter habitat (clean cobble with interstitial spaces) may address a significant limitation to steelhead survival in Upper Penitencia Creek. If sediment input and capture in cobble/boulder substrate is ongoing, then habitat improvements may be temporary at least in lower gradient reaches where sediment can settle out.

*Local Abundance and Distribution*

Relatively few tributaries of San Francisco Bay currently support steelhead runs, and only a few of these are in the South Bay (Buchan et al. 1999). Most of these populations are thought to be

small. Upper Penitencia Creek is believed to include some of the better remaining steelhead habitat in the immediate region, and probably is the source of most steelhead in the Coyote Creek drainage (Li 2001, Smith 1998).

Quantitative monitoring in Upper Penitencia Creek is relatively recent, and includes electrofishing samples taken in late summer 2000 (Li, 2001) and snorkel surveys in the spring and fall of 2005 (Stillwater Sciences, 2006). Smolt Surveys were also done in Coyote Creek just below Upper Penitencia Creek in 1998 to 2000, by the Santa Clara Valley Water District (Stillwater Sciences, 2006).

Steelhead are present throughout the perennial reaches of the Upper Penitencia Creek watershed, from near the lower (western) park entrance at approximately river mile (RM) 3.5 upstream to a barrier waterfall at RM 6.8 on Upper Penitencia Creek, and on Arroyo Aguague up to about 0.7 miles above the confluence with Upper Penitencia Creek, where another barrier waterfall exists. Under suitable flow conditions, migration occurs through the lower ephemeral reaches of the drainage. Adult steelhead migrate from San Francisco Bay through Coyote Creek and into Upper Penitencia Creek, a distance of about 16 miles. Juveniles also move downstream and into San Francisco Bay. However, in most years, Upper Penitencia Creek below the park boundary is dry for at least part of the summer and early fall. Lowest flows tend to occur in September (Stillwater Sciences, 2006).

Stillwater Sciences (2006) estimated the number of age 1+ steelhead within the Upper Penitencia Creek study area in 2005 to be 1,094 and 1,121 in the spring and fall, respectively. These estimates are in general agreement with estimates made a few years earlier but with different methods (Li, 2000). The available information, which is limited to a few sample events, shows no clear trend.

## 4.2 California red-legged frog *Rana draytonii*

*Overview*

The California red-legged frog is known only from portions of California and Baja California. The species no longer occurs within much of its historic range. Effective June 24, 1996, the California red-legged frog was listed as threatened (USFWS 1996). The action addressed within this document falls entirely within Critical Habitat for the California red-legged frog effective April 16, 2010 (USFWS, 2010)

Until recently the California red-legged frog was considered a subspecies. Recently published papers have determined that, based on mtDNA analysis, the California red-legged frog is deserving of specific status as *Rana draytonii*, with a narrow boundary between the northern red-legged frog, *R. aurora*, and *R. draytonii* located near Elk in Mendocino County (Shaffer et al., 2004). This boundary is well north of the project area. Populations in Santa Clara County are clearly and unambiguously California red-legged frogs. For purposes of this document we follow the updated taxonomy.

*Life History*

California red-legged frogs breed throughout the rainy season (November to April), with the exact timing varying depending on location and elevation (Storer, 1925). Most eggs are reportedly deposited in March.

Eggs are deposited on the surface of the water but attached to emergent vegetation (Hayes and Miyamoto, 1984). This attachment anchors the eggs in flowing water, although fast flow after storm events can wash away eggs. The eggs hatch in 6 to 22 days, and the tadpole stage is relatively long at 11 to 20 weeks (Jennings 1988b; Bobzien et al. 2000; Storer, 1925; Wright and Wright, 1949). Even longer intervals in the tadpole stage have been reported, including overwintering tadpoles noted in the East Bay Area (Bobzien et al., 2000).

*Habitat*

California red-legged frogs utilize a variety of habitat types at relatively low elevations (usually below 1,000 meters). Breeding may occur in "streams, deep pools, backwaters within streams and creeks, ponds, marshes, sag ponds, dune ponds, and lagoons" (USFWS, 2002). In streams, deeper areas with slow flow and emergent vegetation may be preferred; however streams are subject to variable flow in the spring, and storm flows may pose some risk to eggs or recently hatched tadpoles (USFWS, 2002). During the day, frogs utilizing streams in Marin County tended to be in or near pools more than 0.5 m deep and with root wads, logjams, or overhanging banks; or on the banks up to 2 m from the water, and under dense vegetation (Fellers and Kleeman, 2007). Ponds, both natural and man-made, are also used for breeding. Frogs were observed under deep water, on banks, or in seasonal wetlands under dense vegetation (Fellers and Kleeman, 2007). Jennings and Hayes (1994) noted the importance of shrubby riparian vegetation, such as arroyo willow (*Salix lasiolepis*) thickets, as well as cattail (*Typha* sp.) and bulrush (*Scirpus* sp.).

Movement through upland habitat is fairly common, and may extend for distances up to at least 1.6 km (1 mile). Fellers and Kleeman (2007) found that in Marin County, some individual frogs remained at or near aquatic breeding sites all year, but that 66 percent of females and 25 percent of males moved through upland habitat. The greatest straight-line distance moved over a season was 1.4 km. Short movements were noted throughout the year, but movements of more than 30 m were often associated with winter rainfall. When longer movements did occur in the dry season, they usually were prompted by the seasonal drying of a water body. Long-distance movements through open grasslands were common, although multi-night movements tended to follow riparian corridors

*Factors of Decline*

The California red-legged frog has suffered from "elimination or degradation of habitat from land development and land use activities and habitat invasion by non-native aquatic species" (USFWS, 2002). Specific threats in the Bay Area include habitat loss or fragmentation, predation by introduced bullfrogs, alterations of flow regime or hydrology, mortality resulting from automobile traffic in areas where roads cross dispersal corridors, and spread of chytrid fungus.

*Limiting Factors*

The small size of most pools in Alum Rock Park and the relative scarcity of areas which include both quiet pools and dense vegetative or other cover are thought to limit the abundance of California red-legged frogs in the Action Area. This assumption is based on a March 26, 2008 visual inspection of available habitat, and on the number and location of the few available records. Most of Upper Penitencia Creek is fast-flowing as a result of historical floodplain fill, construction of walls, and other constrictions of the floodway. The scarcity of habitat with suitable flow regimes and complex vegetation structure to provide cover is thought to be the primary limiting factor in the park.

The record of California red-legged frogs within the park also noted the presence of bullfrogs at the same location. Bullfrogs are non-native in the western U.S., and they are known predators on California red-legged frogs. Given the limited availability of dense cover in Upper Penitencia Creek, red-legged frogs may be especially prone to bullfrog predation.

The presence of Alum Rock Falls Road parallel to and in proximity to Upper Penitencia Creek, as well as occasional park maintenance traffic on paved and unpaved trails, represents a threat of vehicle related mortality. The California red-legged frog record above the park is based on a specimen observed on a road. This risk would be greatest at night during the rainy season, when the park would typically be closed to the public and traffic would be minimal or non-existent. Diurnal movement could occur during the rainy season, although it is less likely.

*Local Abundance and Distribution*

The California red-legged frog is known from two locations in or near the project area. The following entries are taken directly from the CNDDB (2007) database:

> *Penitencia Creek, 0.5 mile downstream from the Arroyo Aguague confluence, Alum Rock Park. Riparian habitat with three large bunches of cattails, as well as coast live oak. Red-legged frogs and bullfrogs found in larger pools (up to 3.5 feet deep) with large boulders or rootwads to hide under. One adult observed 12 July 2000. Three adults observed 27 July 2000.*
>
> *Alum Rock Falls Road, 0.75 mile ESE of the Arroyo Aguague Creek/Penitencia Creek confluence, 2.5 miles E of San Jose. Frog observed on the roadway that services Cherry Flat Reservoir. One adult observed on 30 October 2000.*

These records are approximately one mile apart in straight-line distance. The first is in Alum Rock Park, between the Creekside and YSI bridges. The second is upstream (east) of the park boundary, near a small unnamed tributary of Upper Penitencia Creek.

Given the locations of these records and the known dispersal distance of California red-legged frogs (up to at least one mile) it is assumed that this species could occur almost anywhere with suitable habitat within the park. Only the lowermost/westernmost edge of the park is beyond dispersal range of the documented localities. Thus, potential presence is assumed for the entire Action Area.

On the March 26, 2008 site visit, the most extensive area of potential red-legged frog habitat observed was in an area between bridges L and K, approximately coinciding with proposed project 3/10. This is the approximate location of the 2000 CNDDB record. In this area cattail stands alternate with quiet, shallow pools of open water just above an existing weir. Less

extensive (usually very small) areas of potential habitat were noted along much of the length of Upper Penitencia Creek within Alum Rock Park. However, there are few areas of any size with both vegetative cover and quiet pools. This almost certainly limits the abundance of red-legged frogs within the park.

Only one other record is noted by CNDDB (2007) for the Calaveras Reservoir Quadrangle. This locality is just south of Calaveras Reservoir, approximately 1.75 miles north-northwest of the park boundary.

Given the limited number of reports within the Upper Penitencia Creek drainage (five individuals) and the lack of historical baseline information, it is not possible to determine abundance or trends in the project area. Based on the limited number of reports and the available habitat, California red-legged frogs are assumed to be relatively uncommon within Alum Rock Park.

## 4.3 Alameda whipsnake *Masticophis lateralis euryxanthus*

*Overview*

The subspecies was described based upon a series of morphological characters. Based upon these characters and on limited fieldwork, it appears that the Alameda whipsnake (= Alameda striped racer) and the closely related chaparral whipsnake (*Masticophis lateralis lateralis*), also known as the California striped racer, intergrade not far from the project area. The recovery plan states:

> *"… because the distribution of subspecies is unresolved within this (Sunol-Cedar Mountain) recovery unit, the definitive locations of other Alameda whipsnake populations are not identified at this time. To determine Alameda whipsnake population centers in this Recovery Unit would require extensive surveys and genetic research."*
>
> *"Surveys that include collection of genetic material, precise measurements of the eight distinguishing characteristics, and detailed habitat associations should also be conducted to the south in the Calaveras Reservoir and Watershed (and potentially further south) in Santa Clara County and east to the Stanislaus County line…" (USFWS, 2002b).*

Genetic studies of other snakes have determined that boundaries between species or subspecies based on genetic determinations do not always coincide with morphological characteristics. Because of this, and because of the apparently limited number of specimens collected to date in southern Alameda and northern Santa Clara Counties, we concur with the statement (USFWS 2002b) that additional work is necessary in this area. Specimens from southern Alameda County reportedly tend to have the morphological characteristics of the chaparral whipsnake, with a few individual specimens appearing to be intergrades. If populations follow the typical pattern, those to the north should increasingly show the characteristics of the Alameda whipsnake, while those to the south (including those in the project area) would be expected to show the characteristics of the chaparral whipsnake, which is not listed.

However, detailed genetic analysis is time consuming and well beyond the scope of the present study. Thus, pending the availability of additional information, we assume that the presence of the Alameda whipsnake in the project area is unlikely but possible. We have chosen to follow a conservative approach, and did not eliminate the Alameda whipsnake from early stages of review even though the probability of presence is assumed to be low. The following discussion is presented to facilitate a complete and open consideration of the available information.

*Habitat*

Alameda whipsnakes are associated with coastal sage scrub and chaparral habitats. Small grassland or other openings within these shrub-dominated communities may be an important component of overall habitat.

*Local Abundance and Distribution*

As noted above, the identity of whipsnakes in the project area is uncertain. Based on the limited available information, and extrapolating trends based on external characters, the more widespread and common chaparral whipsnake is more likely to occur near the project area than the protected Alameda whipsnake.

Whichever subspecies is present, the only nearby potentially suitable habitat is the Diablo scrub community which is characteristic of the steep slopes in upland parts of the park. Diablo scrub is most widespread on the south-facing steep slopes in the northern part of the park.

Project activities are directly associated with Upper Penitencia Creek, its banks, and immediately adjacent slopes. These areas are predominantly wooded and support a dense cover of riparian trees or live oaks, or they are open, partially developed, and with little cover. Alameda whipsnake habitat is not present within the direct impact area, and generally does not occur in close proximity. There will be no project-related impacts to suitable Alameda whipsnake habitat.

## 5.0 ENVIRONMENTAL BASELINE

Alum Rock Park is one of the oldest municipal parks in the State of California. Thus, it has a long and varied history. Many historical activities have likely influenced the abundance and distribution of species of interest.

Prior to development, Upper Penitencia Creek is thought to have been highly seasonal in flow. Typically, flood flows would have occurred in winter, and in the summer flow may have been very low and primarily sub-surface (Biotic Resources Group, 2001). The stream probably meandered within the available floodplain. Terraces of unsorted alluvial material are still present today and document historical debris flows or landslides which would have temporarily impounded channels and resulted in downcutting of a new stream course.

Cherry Flat Dam was constructed in 1936, and is located upstream of the project area at an elevation of 1,700 feet. The dam was constructed for flood control and to help maintain perennial flow in Alum Rock Park. In most years perennial flow from Arroyo Aguague and springs on Upper Penitencia Creek are sufficient to maintain base flow, but in dry years releases from Cherry Flat Reservoir are used to augment and ensure perennial flow in the park. This

likely has increased the amount and duration of summer flow in Upper Penitencia Creek, although the effect on steelhead is uncertain (Stillwater Sciences, 2006).

Alum Rock Park was founded in 1872, and was quickly developed as a recreational resource. According to Biotic Resources Group (2001):

> *"Between the 1890s and 1932 the site offered visitors mineral baths, an indoor swimming pool, a tea garden, and a dance pavilion. The mineral springs were located in and adjacent to Upper Penitencia Creek, wherin numerous rock walls and rock bathing pools were constructed within the riparian corridor east of the existing visitor center. Additionally, the park was reached by a railroad that ran along Upper Penitencia Creek, which is now used as the existing park access road. The intensive mineral bath and swimming uses ceased in the 1970s, yet many of the historic features remain along the creek, including old rock walls, rock bridges and rock-lined mineral baths."*

Many of these structures infringed upon the original stream channel. The newly confined channel would have been characterized by faster flow rates and increased scour. As a result, the channel of Upper Penitencia Creek has downcut, with resulting bank failures, undercutting of walls and bridges, and loss of riparian vegetation. Large woody debris, an important habitat component for many aquatic and riparian species, tends to flush completely through the system and no longer accumulates, with a resulting decrease in habitat diversity and a loss of organic input. Floodplain habitat has been reduced by fill, erosion, loss of native herbaceous vegetation, and encroachment of invasive or exotic species. The walls have also prevented natural channel migration.

These changes have reportedly "reduced the habitat value for" red-legged frogs and other species (Biotic Resources Group, 2001). This has almost certainly been the case for the red-legged frog, which has suffered from loss of essential floodplain habitat and associated vegetation and structural cover, increased flow rates, increased risk of mortality on adjacent roads, and the introduction or invasion of non-native bullfrogs, which are a predator on red-legged frogs. Other factors may also have acted to limit population size, including the relative scarcity of large woody debris in and near the channel, and the siltation of interstitial spaces in large (>90 mm) cobble.

However, for steelhead the situation may be more complex and more difficult to characterize. For example, if the characterization of pre-1872 Upper Penitencia Creek as "flashy" and perhaps with an absence of surface flow at least in some years is accurate, this may have limited steelhead population numbers. If the current perennial state of the stream has proven to be a benefit for steelhead, other factors have acted to limit population size. The most important of these appear to be the relative scarcity of large woody debris in the channel, and the siltation of interstitial spaces in large (>90 mm) cobble. This latter impact is thought to limit winter survival of age 1+ steelhead (Stillwater Sciences, 2006). The weirs located near the visitor center may also, under certain lower flow conditions, impede steelhead migration although this has not yet been completely documented (Stillwater Sciences, 2006). Many of the other adverse effects identified above may also have lesser effects on this species.

Paradoxically, while Upper Penitencia Creek has been characterized as "sediment starved" because high winter flows carry fine sediment all the way through the park (Biotic Resources

Group, 2001), sediment filling interstitial spaces deep in the streambed has been identified as the single most important factor limiting the steelhead population. It will be important to determine whether this sedimentation is an artifact of past land uses or conditions which no longer exist, or if they are ongoing. Although limited data do not indicate any current decline in steelhead numbers in Upper Penitencia Creek, the answer to this question may be relevant as future restoration options are considered.

*Inventories and Surveys*

Habitat information for Upper Penitencia Creek is taken from FAHCE (2000), Biotic Resources Group (2001), and Stillwater Sciences (2006). These reports include quantitative measurements of habitat structure as well as qualitative descriptions. As is typically the case, each document concentrates on issues defined by the entity which commissioned the report. Thus some issues are addressed in considerable detail, while others are discussed only as background. Because these documents addressed habitat either as a primary goal or as one part of a wider mandate, much of the information is relevant.

*Existing Environmental Conditions*

Existing habitat conditions were categorized using protocol from "Making Endangered Species Act determinations of effect for individual or grouped actions at the watershed scale" (NMFS, 1996). Quantitative and qualitative information from the papers cited above, as well as observations made during a March 2008 site visit by an experienced ecologist, was used to complete the environmental baseline checklist. While some categories were clearly defined by existing quantitative data, others were of necessity determined by judgment and the consideration of partial or qualitative information.

In general, indicators fell within the "at risk" or "not properly functioning" categories. This reflects the extensive historic modifications to the stream channel within Alum Rock Park. Rock and concrete walls, bridges, and historic fill have constrained the channel, increased depth, flow rate, and scour, and greatly decreased the amount of bordering floodplain. Banks are often steep and sometimes eroding. While boulder, cobble, and gravel substrates are abundant, the degree of embeddedness tends to be high, with sand and gravel filling interstitial spaces in cobble and boulder areas. Pools are relatively common but tend to be small; filling of pools by fine sediment tends to be minor (usually less than 10 percent), probably because of the high sediment transport characteristics of the stream segment (Stillwater Sciences, 2006).

Available water temperature data are from the lower end of the park and from downstream parts of the watershed. Based on that information, water temperatures appear to be within acceptable ranges during the spawning and smolting seasons. Late summer water temperatures appear to rise above 70 degrees F most years at the downstream limit of the park, which could be problematic for juvenile rearing. Conditions are almost certainly better in the upper part of Alum Rock Park, where riparian shade is much more common and springs moderate water temperature. However no information is available above RM 3.7, barely inside the lower end of the park. The

large numbers of age 0+ steelhead documented in fall samples (Stillwater Sciences, 2006) imply that either water temperatures remain in more suitable ranges in most of the park, or that pools are deep enough to offer cooler refugia.

Alum Rock Park offers a degree of protection to more than three linear miles of Upper Penitencia Creek and almost a mile of Arroyo Aguague. Although the extensive historic modifications to the channel within the park continue to affect habitat quality, the impacts are much less than in urbanized sections of the watershed below the park. Also, impacts within the park are not expected to become more severe, and some restoration activity (including some of the actions proposed as part of this project) is taking place specifically to improve riparian and instream conditions, or to prevent future impacts from deteriorating structures.

The watershed above the park is generally in private ownership. However human population density is low. Grazing is the most widespread land use in the upper watershed.

# 6.0 EFFECTS OF THE ACTION

## 6.1 Direct Effects

All work would be conducted between June 15 and October 15, unless extended in writing by the permitting agencies. This avoids the spring breeding season, although juvenile steelhead, tadpoles, and subadult and adult frogs may be within the Action Area at the time of construction.

Project 13/CEMAR will require dewatering the entire active channel throughout the roughened channel construction area (approximately 300 feet in length). Prior to construction, block nets would be put in place above and below each work area, and a qualified biologist with appropriate federal and state permits would capture and remove any fish, frogs or tadpoles prior to any work taking place. Frogs could also occupy moist crevices or openings within rock walls or along culverts, where, if not located and removed, they may be injured during construction (D. Demko, pers. comm.; G. Fellers, pers. comm.). Relocated frogs would be held for the minimum length of time necessary, and released in a nearby section of stream with suitable habitat. Any bullfrogs found within the work areas would be removed from the park, following protocols agreed upon in advance with the permitting agencies.

Wherever instream work is required (including Project 13/CEMAR and other projects at the edge of the channel), coffer dams would be constructed around the work area. Dewatering the creek would cause a temporary loss of habitat. During construction of Project 13/CEMAR the entire width of the stream would be blocked to allow work. A pipe or bypass channel large enough and convey sufficient flow to allow passage would be provided. Upon completion of work all structures would be removed and the channel bed returned to original condition, with care taken not to release sediment into flowing water.

Individual direct impacts are summarized below:

Temporary loss of habitat (steelhead): Dewatering of areas within coffer dams would result in a temporary loss of habitat. This would be limited in duration, and the streambed would be returned to original condition or enhanced before removal of coffer dams. Only Project 13/CEMAR would require dewatering the entire active channel. All other dewatering would allow occur only at the edge of the creek.

Temporary loss of habitat (California red-legged frog): Dewatering of areas within coffer dams would result in a temporary loss of habitat. As noted above, this would be of relatively brief duration and the streambed would be returned to original condition or enhanced.

Temporary loss of movement corridors (steelhead): Installation of coffer dams may temporarily discourage upstream or downstream movement, particularly at Project 13/CEMAR. Bypass channels or pipes would be installed to allow flow to continue without interruption, and the work window intentionally avoids periods of adult or juvenile migration.

Temporary loss of movement corridors (California red-legged frog): Installation of coffer dams may temporarily discourage movement, although frogs would be able to use adjacent riparian habitat to bypass construction areas, and frog activity would normally be at low levels during the dry late summer/early fall period.

Direct mortality during rock wall removal or repair (California red-legged frog): Red-legged frogs sometimes seek dry-season refuge in damp crevices, and may enter spaces in damaged or eroded rock walls scheduled for removal or repair. Frogs have successfully been captured and relocated during other Bay Area construction projects (D. Demko, pers. comm.); however there remains a possibility of injury to one or more individual frogs.

Incidental mortality during capture and relocation (steelhead): Although steelhead would be encouraged to move out of the Project 13/CEMAR work area by installing downstream coffer dams last, it is expected that some capture and relocation will be necessary. There is always some low probability of injury or mortality to any individual fish during this process.

Incidental mortality during capture and relocation (California red-legged frog): Few if any red-legged frogs are expected to be encountered. However, if relocation is necessary, there will be a slight risk of injury or mortality to individual frogs. It is also possible that a well hidden juvenile frog or tadpole could escape detection and remain at risk within the work area.

Sediment transport (steelhead): Any mobilization of sediment could negatively impact steelhead habitat immediately downstream. BMPs would be in place to avoid or minimize this risk.

## 6.2 Indirect Effects

Indirect effects are caused by or result from the proposed project, but occur later in time and farther removed in time than direct project impacts. The project is anticipated to have long term positive indirect effects because it will reduce ongoing erosion, create additional floodplain

areas, and improve aquatic and riparian habitat. There is, however, a limited potential for the release of sediment to the flowing channel if BMPs fail. This would impact the water quality downstream of the project and upstream of the lower portions of the creek where summer flows are subterranean. Indirect impacts would include sediment impacts on steelhead and aquatic habitat outside of the project area. Because of the relatively low risk of such a failure and the limited scale of the instream work, any such indirect effect is anticipated to be minor and of short duration.

## 6.3 Interdependent and Interrelated Actions

An interrelated activity is an activity that is part of the proposed project and depends on the proposed project for its justification. Future restoration activities within Alum Rock Park may occur as funding becomes available. While these are not directly related to the present proposed work, they would be unlikely to occur unless or until the current round of projects is successfully completed. At least one future project (an additional weir removal or modification) has been proposed, but there are no specific plans for future work at this time. These projects are likely to be completed for restoration purposes only and are expected to have similar impacts on listed species as the proposed project.

## 6.4 Effects from Ongoing Project Activities

There are no ongoing project activities related to the proposed project. Once construction is complete, no activity is expected to occur as a result of the project.

## 6.5 Effects of the Proposed Action on the Environmental Baseline

After completion of proposed project there would be permanent beneficial effects through enhancement of habitat. Restoration of floodplain areas would moderate flow rates in the adjacent stream segments during storm events and provide flood storage capacity. The project would also provide increased vegetative cover, retention of sediment by vegetation, and in the longer term would provide additional sources of large woody debris. Repair of failing walls and streambanks would prevent future degradation by avoiding sediment input. Project 13/CEMAR would remove a barrier to steelhead migration and open access to roughly 8 miles of potential steelhead habitat.

Direct adverse and beneficial effects are summarized below by pathway, based on utilization of the NMFS matrix (Appendix C) (NMFS, 1996). In contrast to the less than optimal baseline conditions, the “effects of the action” columns show seven “restore” and eleven “maintain” results. No indicators are expected to be degraded by the proposed project. Specifically, the project would restore functions by: reducing sediment input; removing physical barriers to fish passage; increasing the area of substrate with available interstitial spaces; increasing the area of off-channel habitat and refugia; and improving streambank condition and floodplain connectivity.

*Water Quality*: There would be a temporary risk of sediment release during construction, although use of coffer dams and BMPs would prevent all or nearly all occurrences from entering the stream. In the longer term, sediment input would be reduced because of repairs to currently

eroding banks, and restored floodplain would capture and retain sediment. Other water quality indicators would be unchanged.

*Habitat Access*: There would be temporary partial or complete (at Project 13/CEMAR) channel blockage during construction due to placement of coffer dams. Because of seasonal restrictions, this would not affect breeding. Fish, tadpoles or frogs present in the work area would be removed and relocated prior to construction and a pipe or bypass channel of suitable size would allow passage during construction. Upon completion of all work there would be a net gain in available habitat because of floodplain restoration and opportunity for increased future channel migration. Steelhead movement would be possible under a greater range of flow conditions and over greater distances because a barrier to passage would be modified and, in some locations, abrupt elevation changes would be reduced or eliminated. This project would remove a barrier to steelhead migration and open access to roughly 8 miles of potential steelhead habitat

*Habitat Elements*: Where channel substrate is excavated as part of construction, it will be replaced at suitable grade with clean cobble, resulting in an immediate increase in the availability of interstitial space. Pool frequency, pool quality, and the amount of large woody debris will be unchanged in the short term, although floodplain restoration would eventually (after several decades) contribute to large woody debris input. Few trees would be cut as part of the project (probably only one mature sycamore). Floodplain restoration will result in an increase in off-channel habitat and revegetation will provide additional areas of cover.

*Channel Condition and Dynamics*: The completed project will result in improved streambank conditions through stabilization or repair of several currently eroding segments. Floodplain restoration will enhance connectivity and increase overbank flow. Width/depth ratio will be unchanged in the short term except in the floodplain restoration areas, where it will improve. In the longer term, restoration activities may help to locally reduce scour and downcutting.

*Flow/Hydrology*: There will be no changes to flow rates or drainage network, except for a slight beneficial reduction in peak flow rates near floodplain restoration areas. The channel in the area of Project 13/CEMAR will be raised from its current elevation to allow for improved fish passage.

*Watershed Condition*: No change to this pathway is expected. BMPs will function to avoid or minimize impacts.

## 7.0 EFFECTS DETERMINATION

### 7.1 Central California Coastal steelhead

The proposed project **may affect, and is likely to adversely affect**, Central California Coastal steelhead because some mortality could occur during installation of coffer dams and relocation of juvenile steelhead. There is a minor risk of indirect impacts related to sediment release to the creek. However, the project would benefit the species in the longer term by halting degradation

of rock walls and bridges, reducing sediment input by stabilizing eroding banks, and restoring floodplain habitat which would ultimately diversify streamside structure and provide areas for sediment to settle out. The project would also modify a weir to reduce impediments to fish passage thereby removing a barrier to steelhead migration and opening access to roughly 8 miles of potential steelhead habitat. The project would also result in a small net increase of cobble streambed which provides winter habitat and has been identified as the major limiting factor for steelhead in Upper Penitencia Creek. Thus, some short-term impact is a prerequisite to complete a series of stabilization and restoration projects which in the longer term would improve habitat and benefit the species.

### 7.2 Central California Coastal steelhead, critical habitat

Because construction would occur within the creek, the proposed project **may affect, but is not likely to adversely affect** critical habitat for the Central California Coastal steelhead. Upper Penitencia Creek is within the area designated as critical habitat. However, the project is intended to stabilize existing problem areas and restore habitat. In the long term, the project would be beneficial to habitat. With proper implementation of sediment control practices and other BMPs, short term impacts to critical habitat will be very minor. As discussed above, the project would modify a weir to reduce impediments to fish passage thereby removing a barrier to steelhead migration and opening access to roughly 8 miles of potential steelhead habitat.

### 7.3 California red-legged frog

The proposed project **may affect, and is likely to adversely affect** California red-legged frogs. Assuming California red-legged frogs are still present in the park (the last documented record was ten years ago), there is a possibility of incidental mortality to individual frogs or tadpoles either during relocation from work areas, or as a direct result of construction. California red-legged frogs in Marin County are known to utilize small spaces on the outside of culverts as dry season refugia (D. Demko, pers. comm.), and may also occupy crevices in deteriorating rock walls or bridge abutments. Removing frogs from these spaces may cause injury to individual frogs. However, in the long term the project would increase the amount of suitable California red-legged frog habitat by expanding the amount of floodplain habitat and increasing the diversity of the stream. An increase in overflow and backwater areas would increase the area of vegetated pool protected from routine high flows. Such vegetated refugia are currently rare in Upper Penitencia Creek.

### 7.4 California red-legged frog, critical habitat

Because construction will occur within the creek in potential habitat, the proposed project **may affect, but is not likely to adversely affect** critical habitat for the California red-legged frogs. Upper Penitencia Creek is within the area designated as critical habitat. However, the project is intended to stabilize existing problem areas or restore habitat where feasible. In the long term, the project would be beneficial to habitat. With proper implementation of sediment control practices and other BMPs, short term impacts to critical habitat will be very minor.

### 7.5 Alameda whipsnake

The proposed project will have **no effect** on the Alameda whipsnake, because the species is considered unlikely to occur in the immediate project vicinity, and because potentially suitable habitat will not be impacted by project activities.

## 8.0 CUMULATIVE EFFECTS

The City of San Jose is likely to undertake additional restoration and bank repair projects on Upper Penitencia Creek as funding allows. There are additional identified projects that are not included in the current proposal due to funding and logistical constraints.

Should the additional projects occur, they are anticipated to have a similar low-level potential to harm listed species in the short term due to dewatering and construction-related risks. However, as with the proposed project, future projects are likely to substantially benefit listed species through overall habitat improvement. In combination with the proposed project, these activities will likely contribute to beneficial cumulative effects.

## 9.0 OTHER RELEVANT INFORMATION

Recent and detailed quantitative information is available for Central California Coastal steelhead in Upper Penitencia Creek (Stillwater Sciences, 2006). Information on California red-legged frogs in and near the project area appears to be limited and qualitative (CNDDB, 2007; H. T. Harvey and Associates, 1997). The Santa Clara Valley Water Authority has various ongoing projects in the Coyote Creek watershed, although most of the readily available information appears to be for other parts of the drainage, and especially for the more heavily populated and extensively modified downstream areas.

## 10.0 SUMMARY OF CONCLUSIONS

The City of San Jose proposes a series of stream bank restoration and repair projects on Upper Penitencia Creek in Alum Rock Park. The intent of the project is to repair or stabilize eroding structures or banks which would, if left unattended, eventually contribute to additional degradation of Upper Penitencia Creek. The project would also modify a weir to reduce impediments to fish passage thereby removing a barrier to steelhead migration and opening access to roughly 8 miles of potential steelhead habitat. The project would require work within and adjacent to the active channel of Penitencia Creek.

Two federally listed species, the Central California Coast steelhead and the California red-legged frog, are known to occur within Alum Rock Park. The park is also listed as critical habitat for both species. Because it is impossible to eliminate all risk of take, and because relocation of animals and project-related construction have the potential to harm individual animals, the project may affect and is likely to adversely affect the Central California Coast steelhead and the California red-legged frog. The project also may affect but is not likely to adversely affect critical habitat for the Central California Coast steelhead and California red-legged frog.

The project includes several BMPs and additional measures specifically intended to minimize the risk of adverse impacts to the two listed species and their habitat. Although limited short-term impacts may occur, the project is expected to result in a long term net gain in habitat area and quality and to have a net beneficial effect on listed species.

A third species, the Alameda whipsnake, may occur in the general vicinity. Available information indicates that any whipsnakes present in the immediate area are more likely to be the related and unprotected chaparral whipsnake. Even if Alameda whipsnakes are present in the park, there will be no effect, because the sage scrub habitat utilized by the species will not be impacted in any way by the project or related activities.

## 11.0 LIST OF DOCUMENTS

The following documents are relevant to current or previous projects in Alum Rock Park:

Alum Rock Historic Resources Report, LSA Associates, 2008.

Alum Rock Park Bank Repair and Stream Restoration Project CEQA Initial Study, W&K, 2010.

Alum Rock Park Riparian Management Plan, Biotic Resources Group, 2001.

Archaeological Inventory for the Alum Rock Park Bank and Stream Restoration Project, Sonoma State University, 2008.

Final design report for a fish passage improvement project on Upper Penitencia Creek at the Youth Science Institute in Alum Rock Park, San Jose California, W&K and Michael Love and Associates, 2008.

Upper Penitencia Creek Limiting Factors Analysis, Stillwater Sciences, 2006.

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David Demko, Winzler & Kelly, San Francisco. November 15, 2007. (415) 283-4970

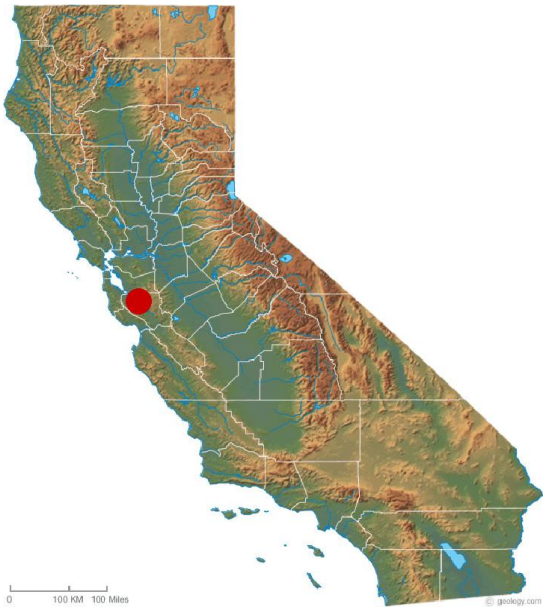
Scott Downie, California Department of Fish and Game, Fortuna CA. April 10, 2008.

Gary Fellers, USGS Biological Survey Division, Point Reyes National Seashore. September 18, 2007.

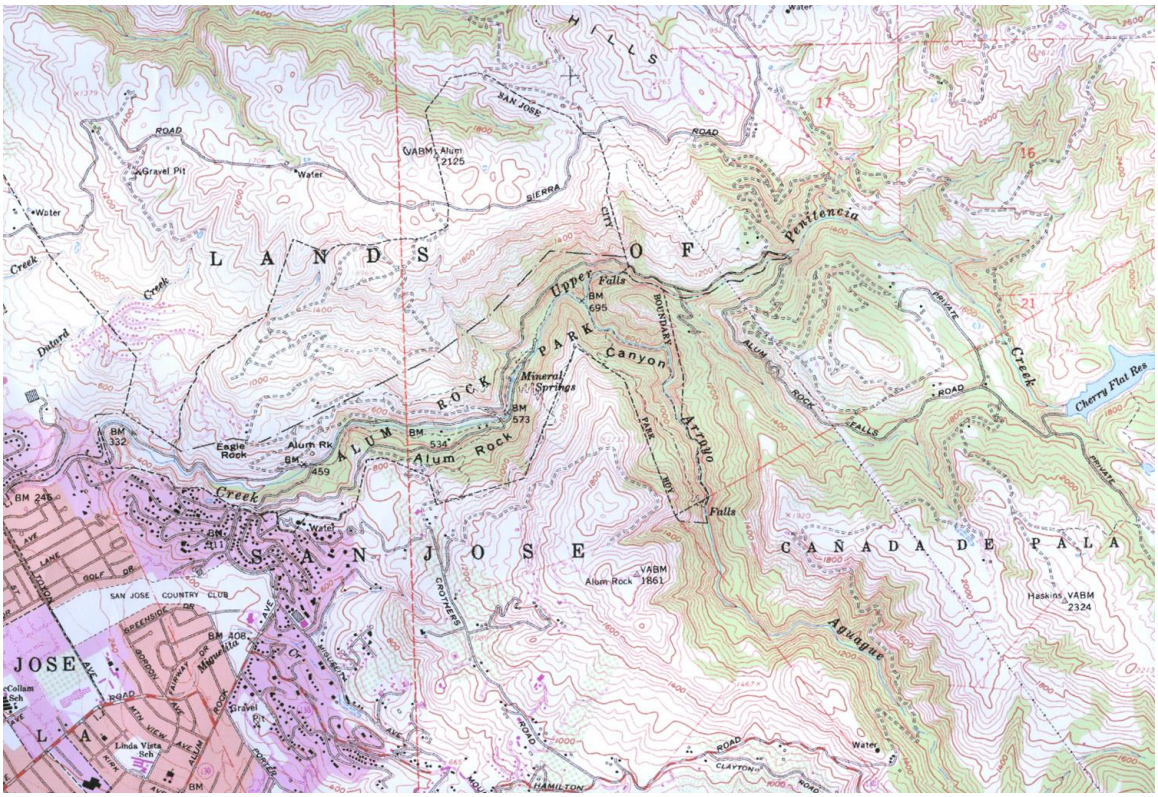
Pat Kleeman, USGS Biological Survey Division, Point Reyes National Seashore. November 15, 2007.

Neil Lassiter, Stillwater Sciences, Berkeley CA. April 3, 2008. (510) 549-2963

# Appendix A
## Project Figures

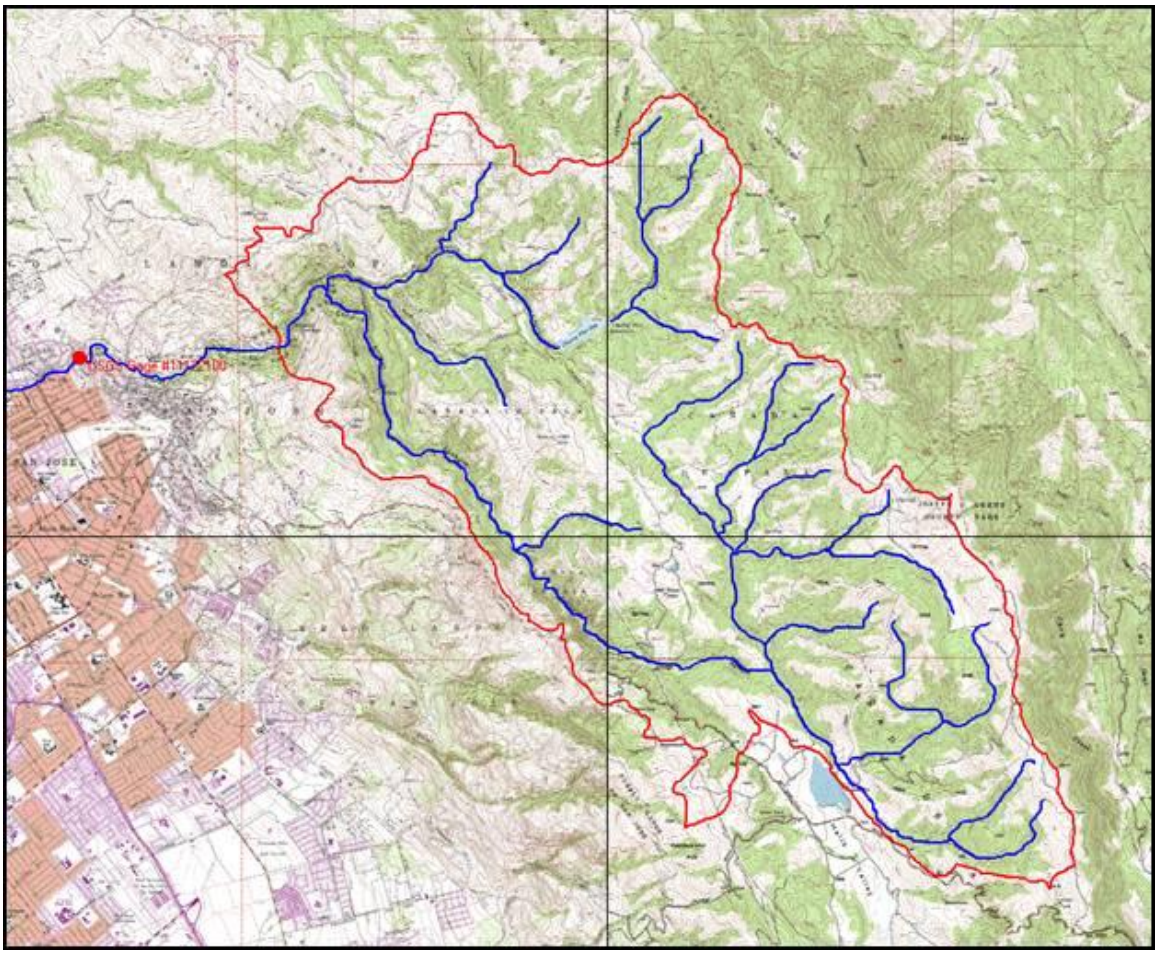



Source: California State Geological Survey



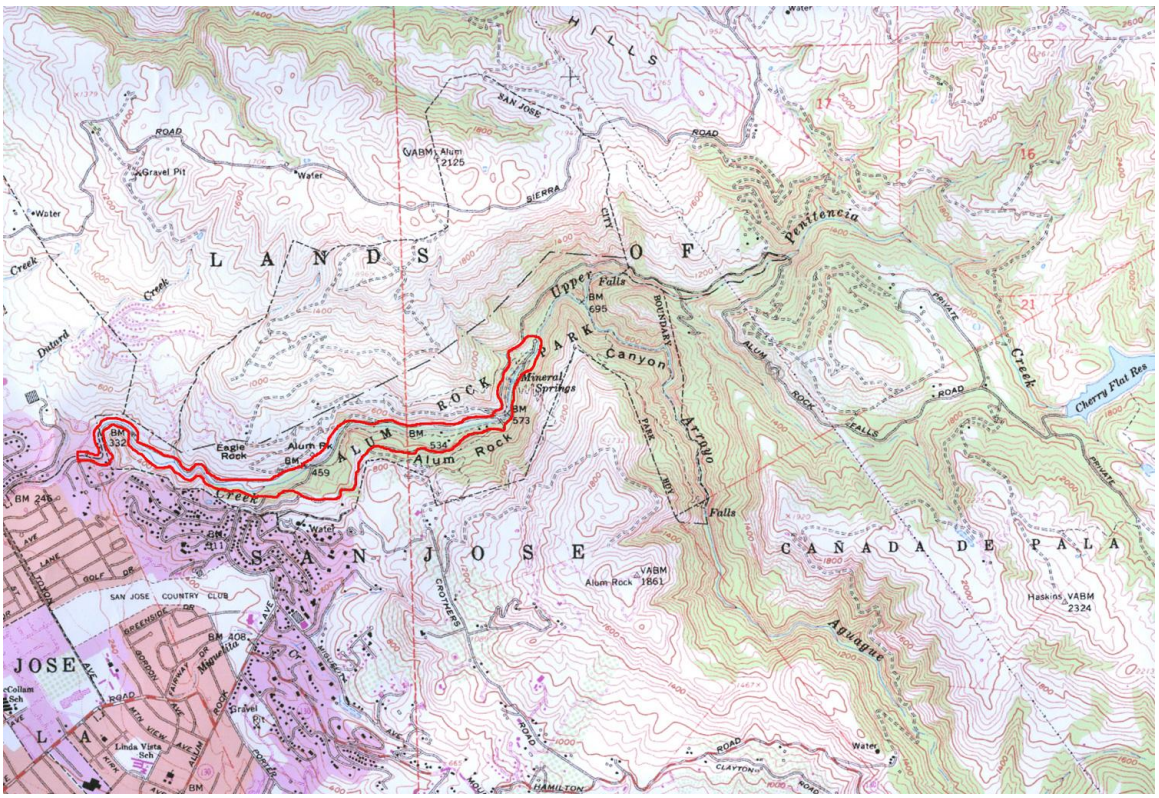

Source: USGS Calaveras Reservoir topographic quadrangle.

**Figure 1.** Location and Vicinity Maps



Source: USGS Calaveras Reservoir 7.5' topographic quadrangle

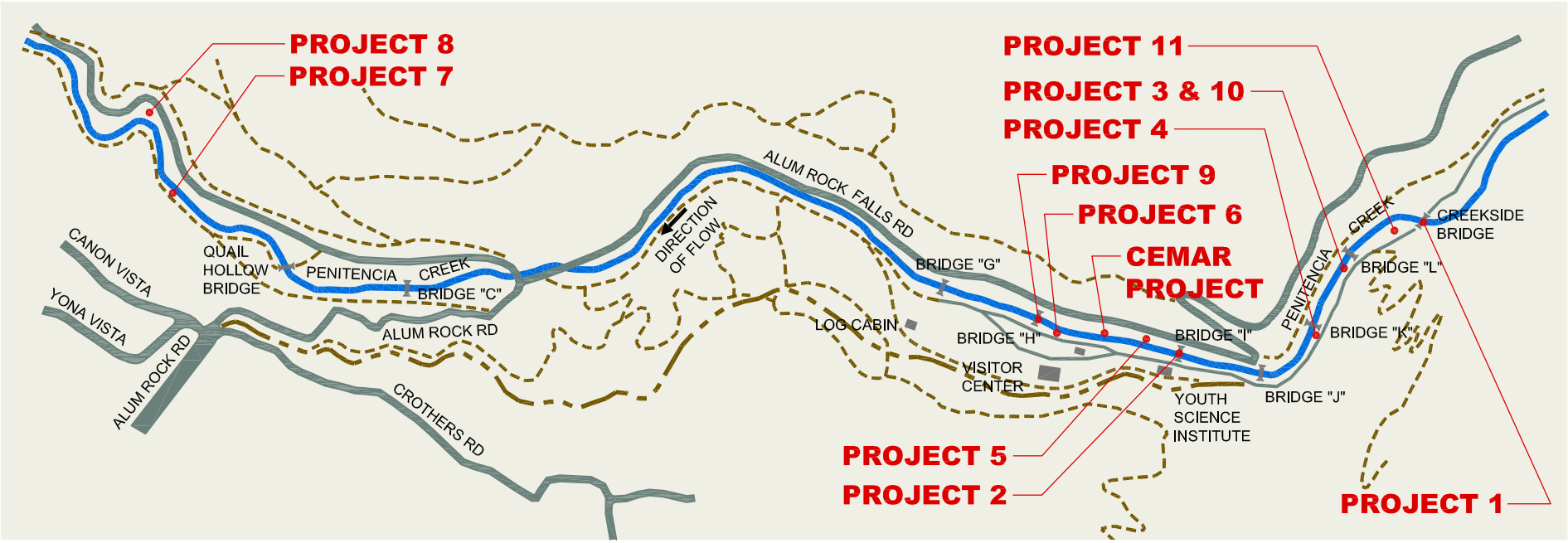
**Figure 2.** Watershed Map, showing the Upper Penitencia Creek drainage above the project site.



Source: USGS Calaveras Reservoir 7.5’ topographic quadrangle

**Figure 3.** Action Area.

# Appendix B
## Project Plans




**PROJECT 1**
Creekside bridge repair: retaining wall, new concrete apron, revetment slope, grading.

**PROJECT 2**
Youth Science Institute bridge repair: retaining wall, new asphalt concrete pavement, revetment slope, grading.

**PROJECTS 3 AND 10**
Repair of rock wall (Project 3) and expansion of floodplain on east bank immediately downstream of historic foot bridge "L" (Project 10).

**PROJECT 4**
Repair of undercut section of rock wall on east bank immediately downstream of historic foot bridge "K".

**PROJECT 5**
Repair of eroded rill at end of north bank vertical rock wall directly adjacent to grade control structure.

**PROJECT 6**
Repair of failed bank protection project adjacent to Visitors Center. This project was originally constructed as part of the Phase II projects in 2001 (RMP, "Site #18").

**PROJECT 7**
Repair/protect failing south bank along trail downstream of Quail Hollow Bridge.

**PROJECT 8**
Repair of failing north bank sack concrete wall at sharp bend in top of bank road.

**PROJECT 9**
Repair/protection of the abutments/footings, repair of the rock railing, and bank repair at the Visitors Center Bridge (Bridge "H").

**PROJECT 11**
Expansion of floodplain immediately downstream of Creek Side Bridge.

**PROJECT 13**
CEMAR fish passage improvement project.

**CITY OF SAN JOSE**
**PARKS, RECREATION, AND NEIGHBORHOOD SERVICES**
**ALUM ROCK PARK**

**CONCEPTUAL PLANS**
**NOT FOR CONSTRUCTION**

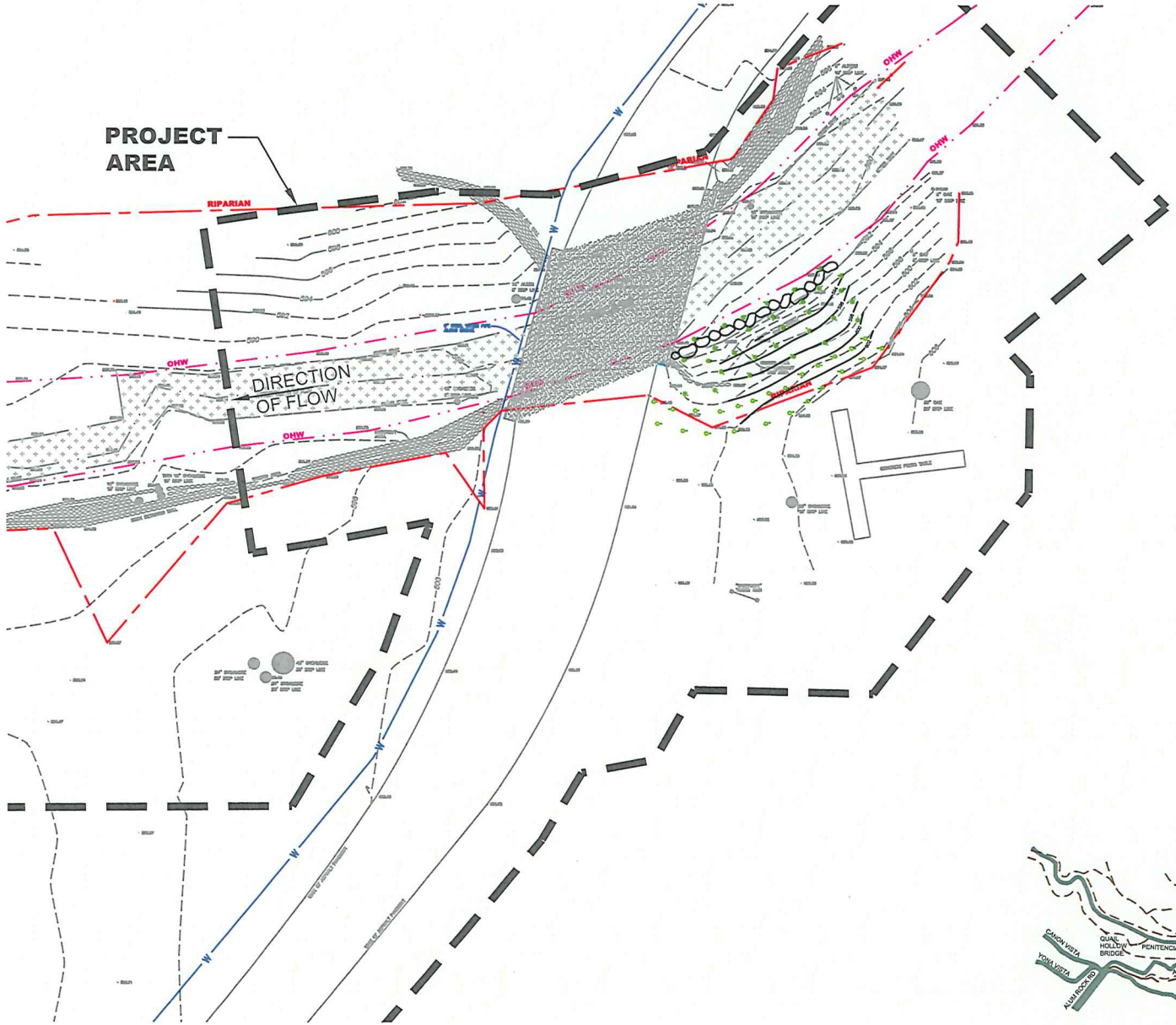
1"=900'
0' 450' 900' 1800'

NORTH

**FIGURE 1**
**PROJECT KEYMAP**
**SCALE: 1"=900'**

WINZLER & KELLY

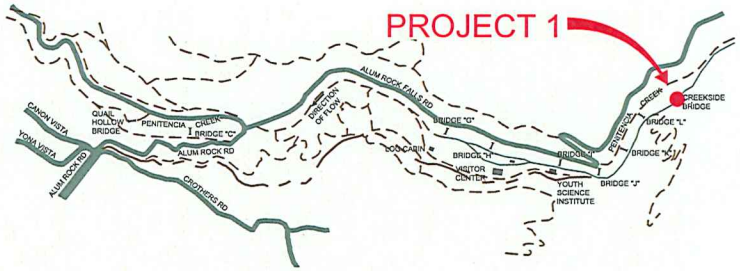
\\corp\WKProjects\SFO\10734 City of San Jose\10734-07-001 - Alum Rock Park Stream Bank Improvements\CAD\Permit Submittal 2011-08\SD_COE Permit Submittal Fig1_Overall.dwg




## SITE PLAN

SCALE: 1"=30'

NORTH




## KEY MAP - ALUM ROCK PARK

NORTH

CITY OF SAN JOSE
PARKS, RECREATION, AND NEIGHBORHOOD SERVICES
ALUM ROCK PARK

CONCEPTUAL PLANS
NOT FOR CONSTRUCTION

1"=30' 0' 15' 30' 60'

FIGURE 2
PROJECT 1
CREEKSIDE BRIDGE REPAIR

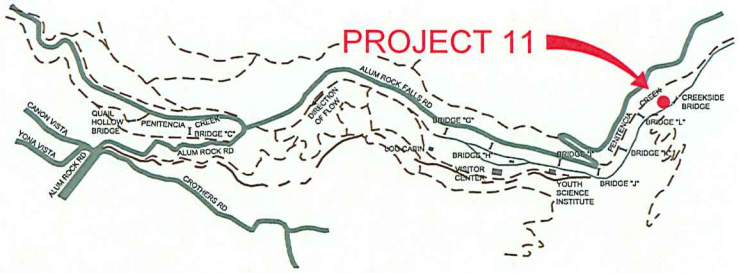
WINZLER & KELLY

P:\10734 City of San Jose\10734-07-001 - Alum Rock Park Stream Bank Improvements\CAD\Permit Submittal 2011-08\SD_COE Permit Submittal Figs2-11_Projs1-11.dwg

## SITE PLAN

SCALE: 1"=30'

NORTH




KEY MAP - ALUM ROCK PARK

NORTH

CITY OF SAN JOSE
PARKS, RECREATION, AND NEIGHBORHOOD SERVICES
ALUM ROCK PARK

CONCEPTUAL PLANS
NOT FOR CONSTRUCTION

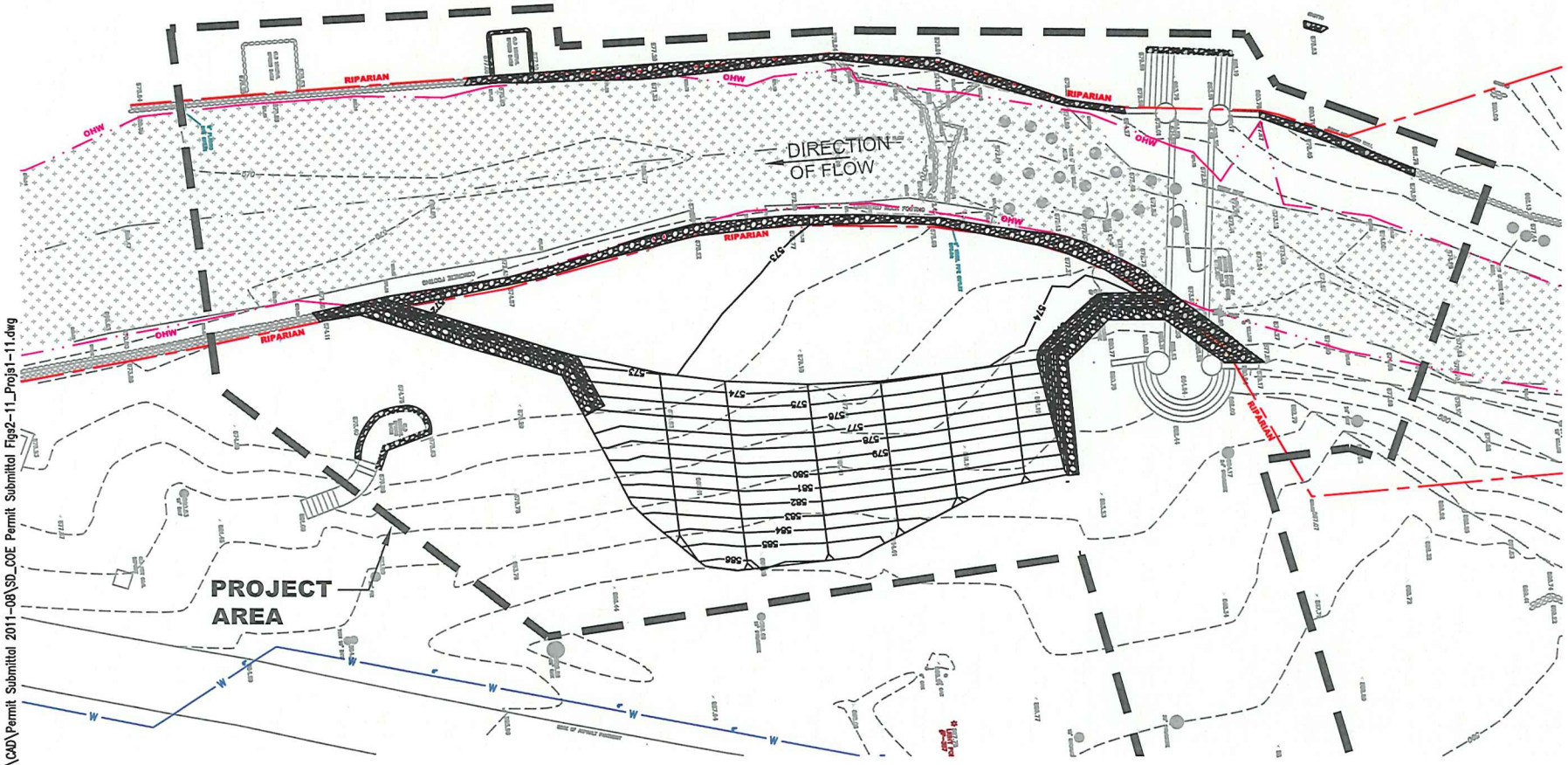
1"=30'

0' 15' 30' 60'

FIGURE 3
PROJECT 11
PROPOSED EROSION REPAIRS

WINZLER & KELLY

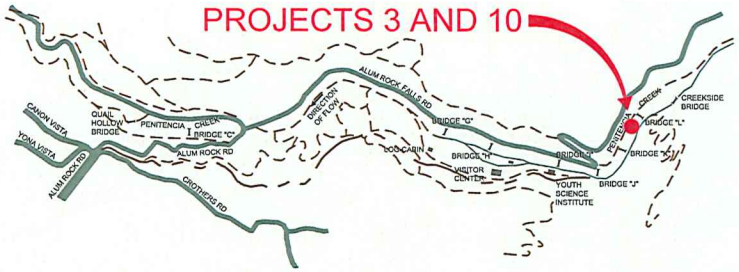
P:\10734 City of San Jose\10734-07-001 - Alum Rock Park Stream Bank Improvements\CAD\Permit Submittal 2011-08\SD_COE Permit Submittal Figs2-11_Projs1-11.dwg




## SITE PLAN

SCALE: 1"=30'

NORTH




## KEY MAP - ALUM ROCK PARK

NORTH

CITY OF SAN JOSE
PARKS, RECREATION, AND NEIGHBORHOOD SERVICES
ALUM ROCK PARK

CONCEPTUAL PLANS
NOT FOR CONSTRUCTION

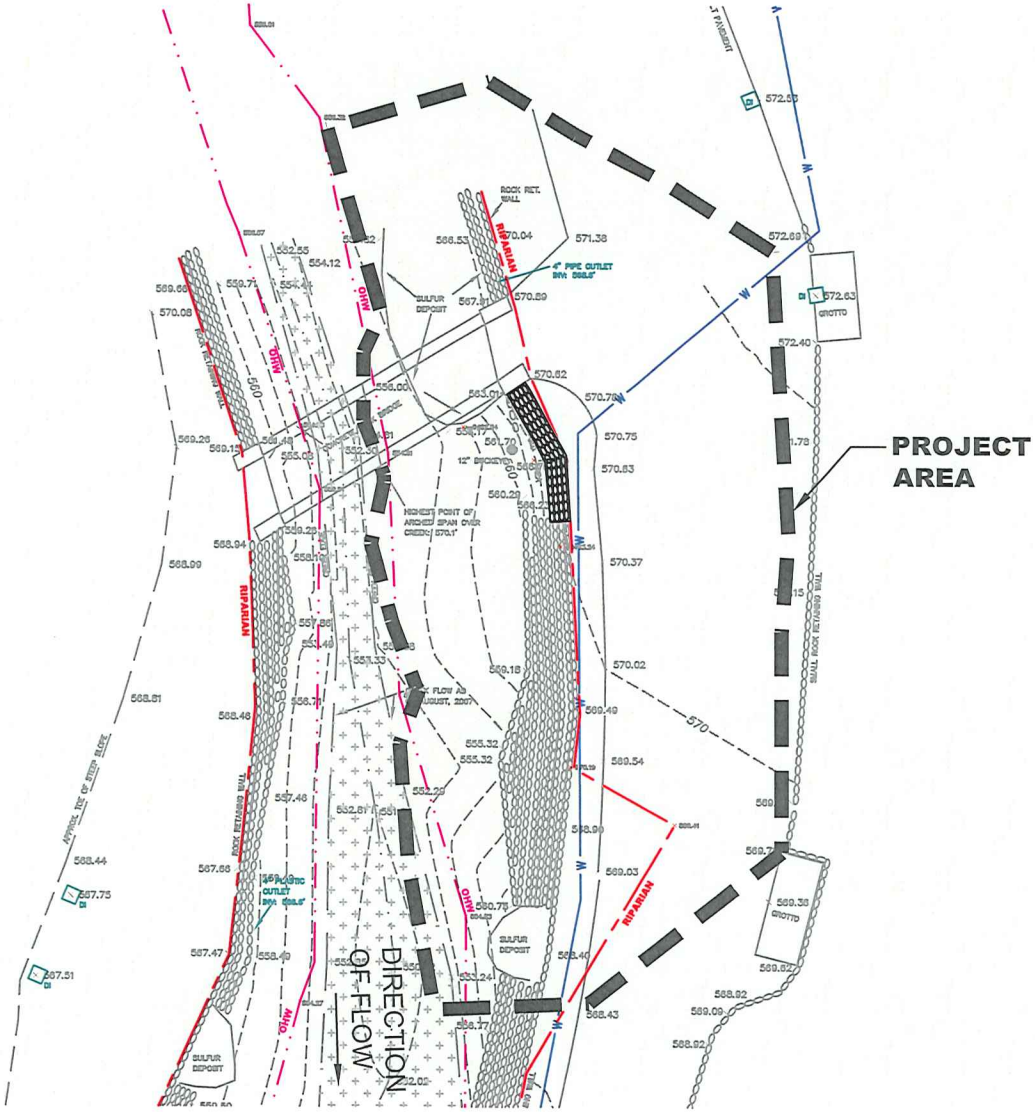
1"=30'

0' 15' 30' 60'

FIGURE 4
PROJECTS 3 AND 10
PROPOSED EROSION REPAIRS

WINZLER & KELLY

P:\10734 City of San Jose\10734-07-001 - Alum Rock Park Stream Bank Improvements\CAD\Permit Submittal 2011-08\SD_COE Permit Submittal Figs2-11_Projs1-11.dwg




## SITE PLAN

SCALE: 1"=20'

NORTH

## KEY MAP - ALUM ROCK PARK

NORTH

CITY OF SAN JOSE
PARKS, RECREATION, AND NEIGHBORHOOD SERVICES
ALUM ROCK PARK

CONCEPTUAL PLANS
NOT FOR CONSTRUCTION

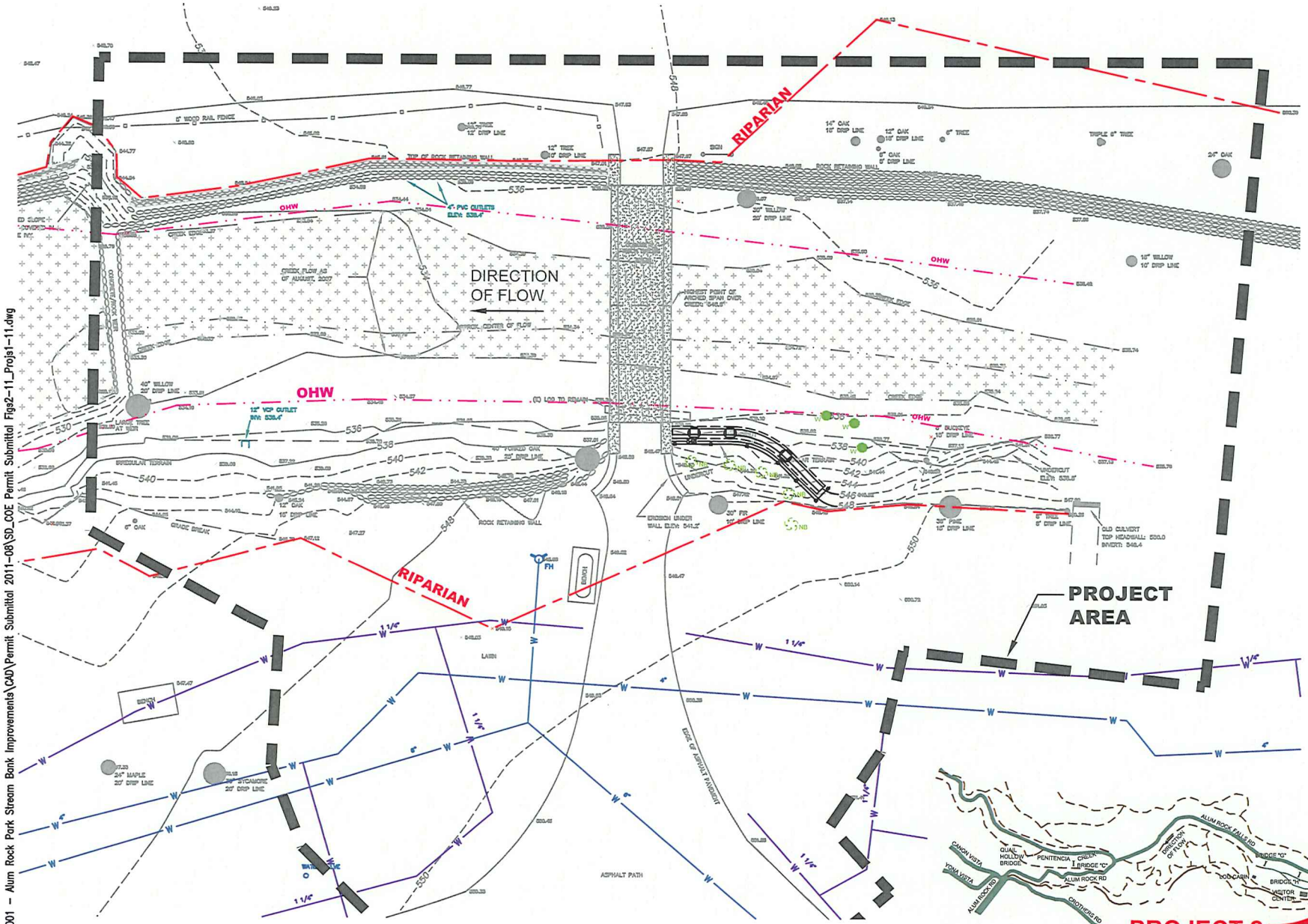
1"=20'

0' 10' 20' 40'

FIGURE 5
PROJECT 4
PROPOSED DAMAGED WALL REPAIR

WINZLER & KELLY

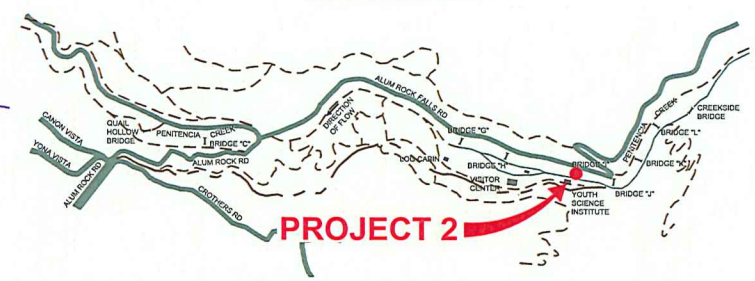
P:\10734 City of San Jose\10734-07-001 - Alum Rock Park Stream Bank Improvements\CAD\Permit Submittal 2011-08\SD_COE Permit Submittal Figs2-11_Projs1-11.dwg




## SITE PLAN

SCALE: 1"=20'

NORTH




## KEY MAP - ALUM ROCK PARK

NORTH

**CITY OF SAN JOSE**
**PARKS, RECREATION, AND NEIGHBORHOOD SERVICES**
**ALUM ROCK PARK**

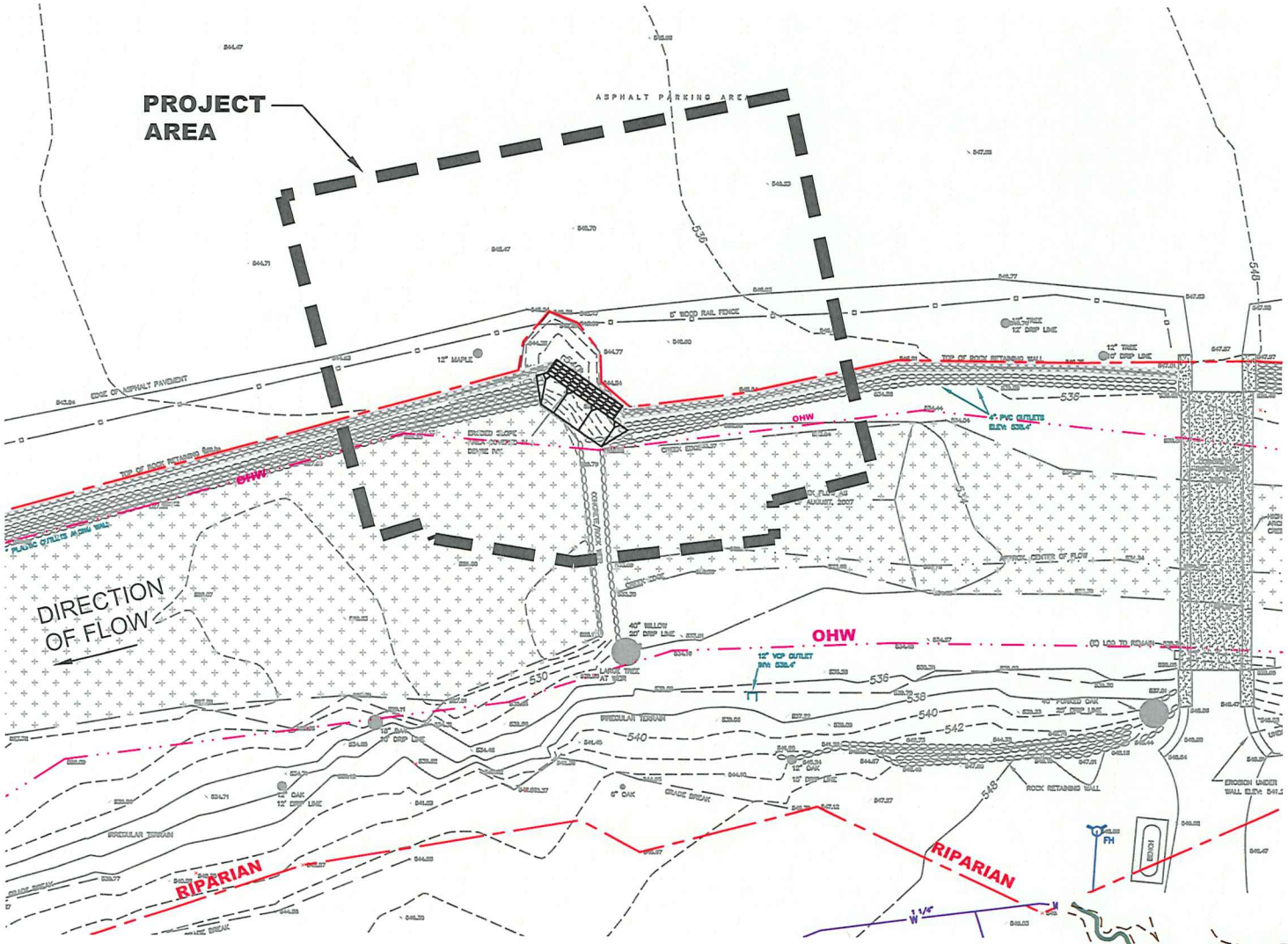
**CONCEPTUAL PLANS**
**NOT FOR CONSTRUCTION**

1"=20' 0' 10' 20' 40'

FIGURE 6
PROJECT 2
Y.S.I. BRIDGE REPAIRS

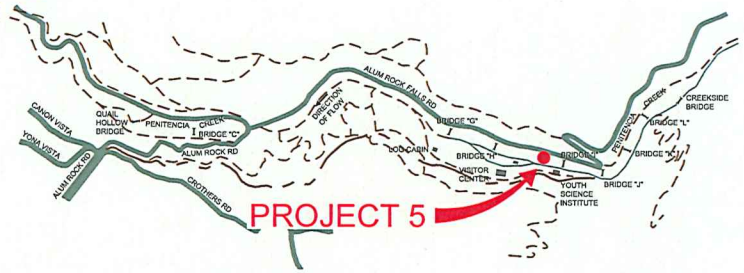
WINZLER & KELLY

P:\10734 City of San Jose\10734-07-001 - Alum Rock Park Stream Bank Improvements\CAD\Permit Submittal 2011-08\SD_COE Permit Submittal Figs2-11_Projs1-11.dwg




## SITE PLAN

SCALE: 1"=20'




## KEY MAP - ALUM ROCK PARK

NORTH

**CITY OF SAN JOSE**
**PARKS, RECREATION, AND NEIGHBORHOOD SERVICES**
**ALUM ROCK PARK**

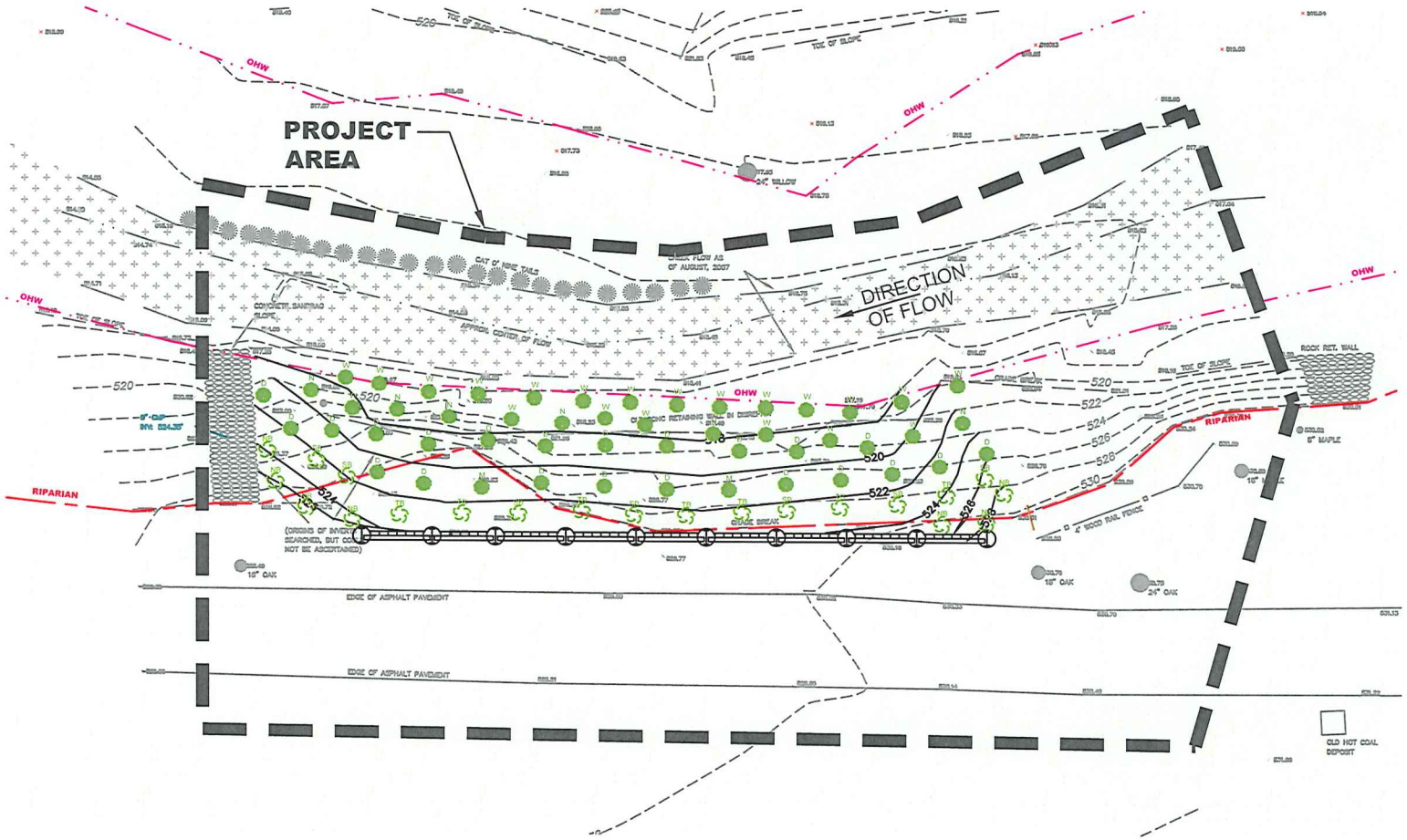
**CONCEPTUAL PLANS**
**NOT FOR CONSTRUCTION**

0' 10' 20' 40'
1"=20'

**FIGURE 7**
**PROJECT 5**
**PROPOSED EROSION REPAIR**

WINZLER & KELLY

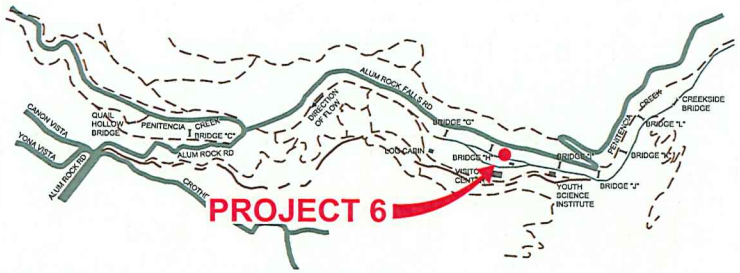
P:\10734 City of San Jose\10734-07-001 - Alum Rock Park Stream Bank Improvements\CAD\Permit Submittal 2011-08\SD_COE Permit Submittal Figs2-11_Projs1-11.dwg




## SITE PLAN

SCALE: 1"=20'

NORTH




KEY MAP - ALUM ROCK PARK

NORTH

CITY OF SAN JOSE
PARKS, RECREATION, AND NEIGHBORHOOD SERVICES
ALUM ROCK PARK

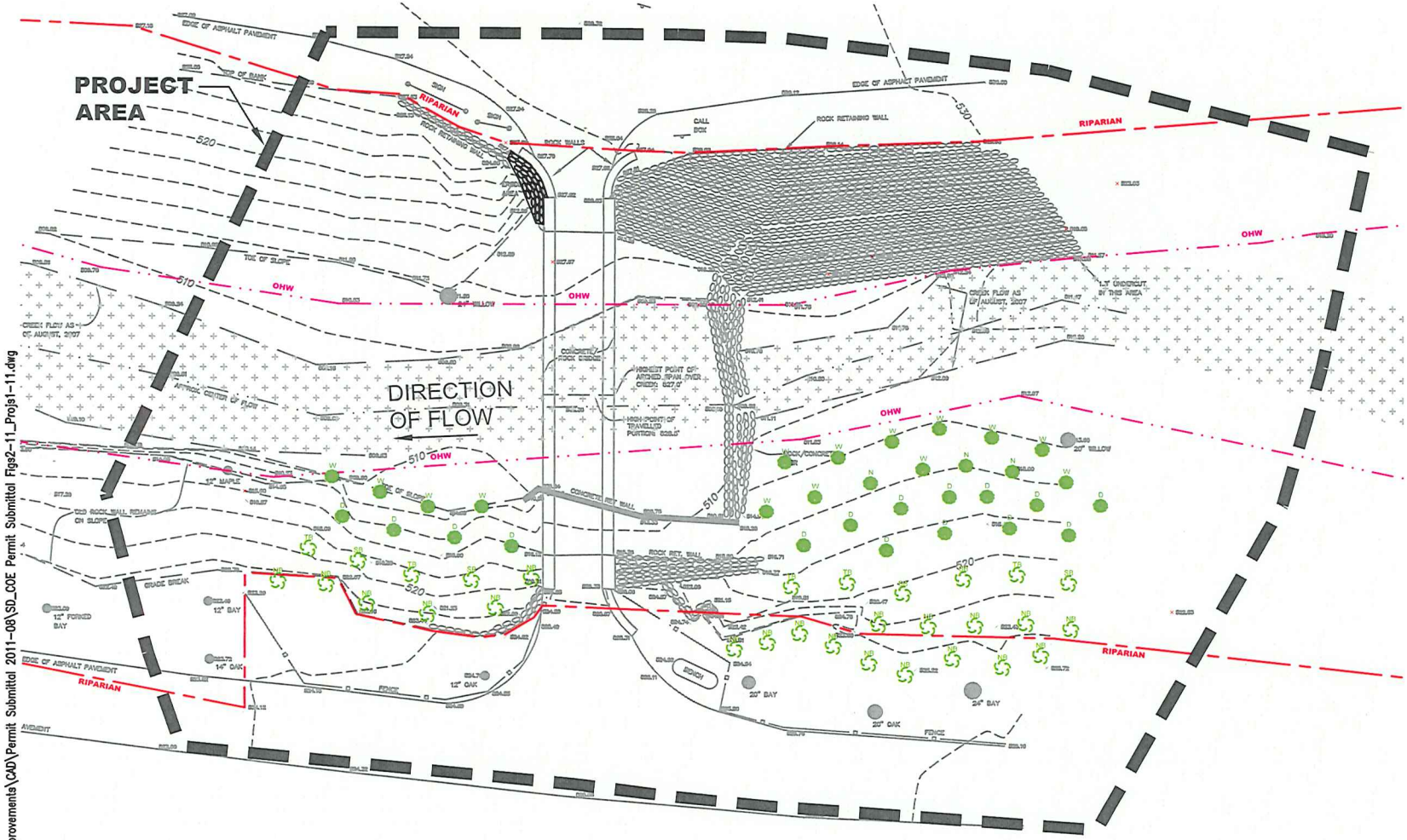
CONCEPTUAL PLANS
NOT FOR CONSTRUCTION

1"=20' 0' 10' 20' 40'

FIGURE 8
PROJECT 6
PROPOSED EROSION REPAIRS

WINZLER & KELLY

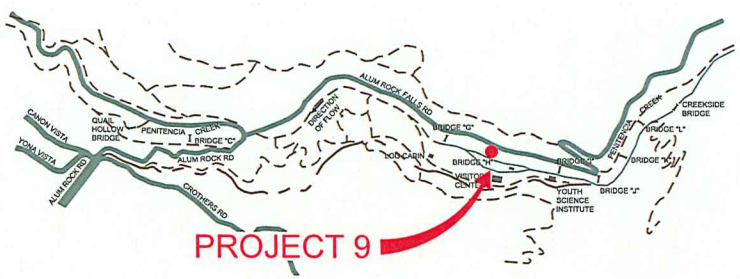
P:\10734 City of San Jose\10734-07-001 - Alum Rock Park Stream Bank Improvements\CAD\Permit Submittal 2011-08\SD_COE Permit Submittal Figs2-11_Proj1-11.dwg




## SITE PLAN

SCALE: 1"=20'

NORTH




KEY MAP - ALUM ROCK PARK

NORTH

CITY OF SAN JOSE
PARKS, RECREATION, AND NEIGHBORHOOD SERVICES
ALUM ROCK PARK

CONCEPTUAL PLANS
NOT FOR CONSTRUCTION

1"=20' 0' 10' 20' 40'

FIGURE 9
PROJECT 9
PROPOSED EROSION REPAIR

WINZLER & KELLY

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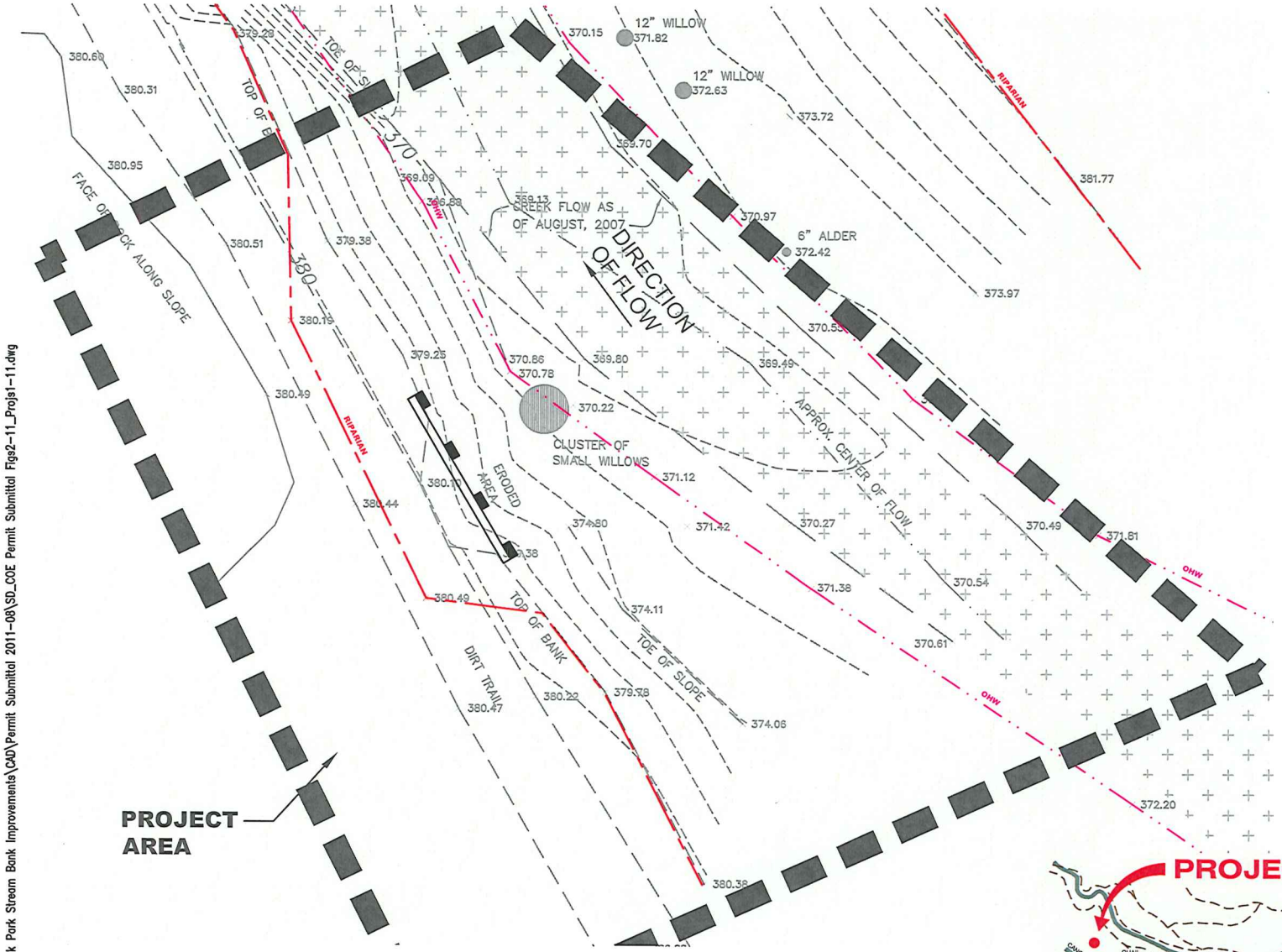
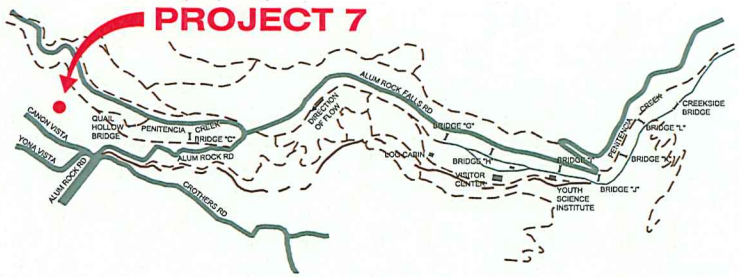



## SITE PLAN

SCALE: 1"=10'

NORTH




KEY MAP - ALUM ROCK PARK

NORTH

CITY OF SAN JOSE
PARKS, RECREATION, AND NEIGHBORHOOD SERVICES
ALUM ROCK PARK

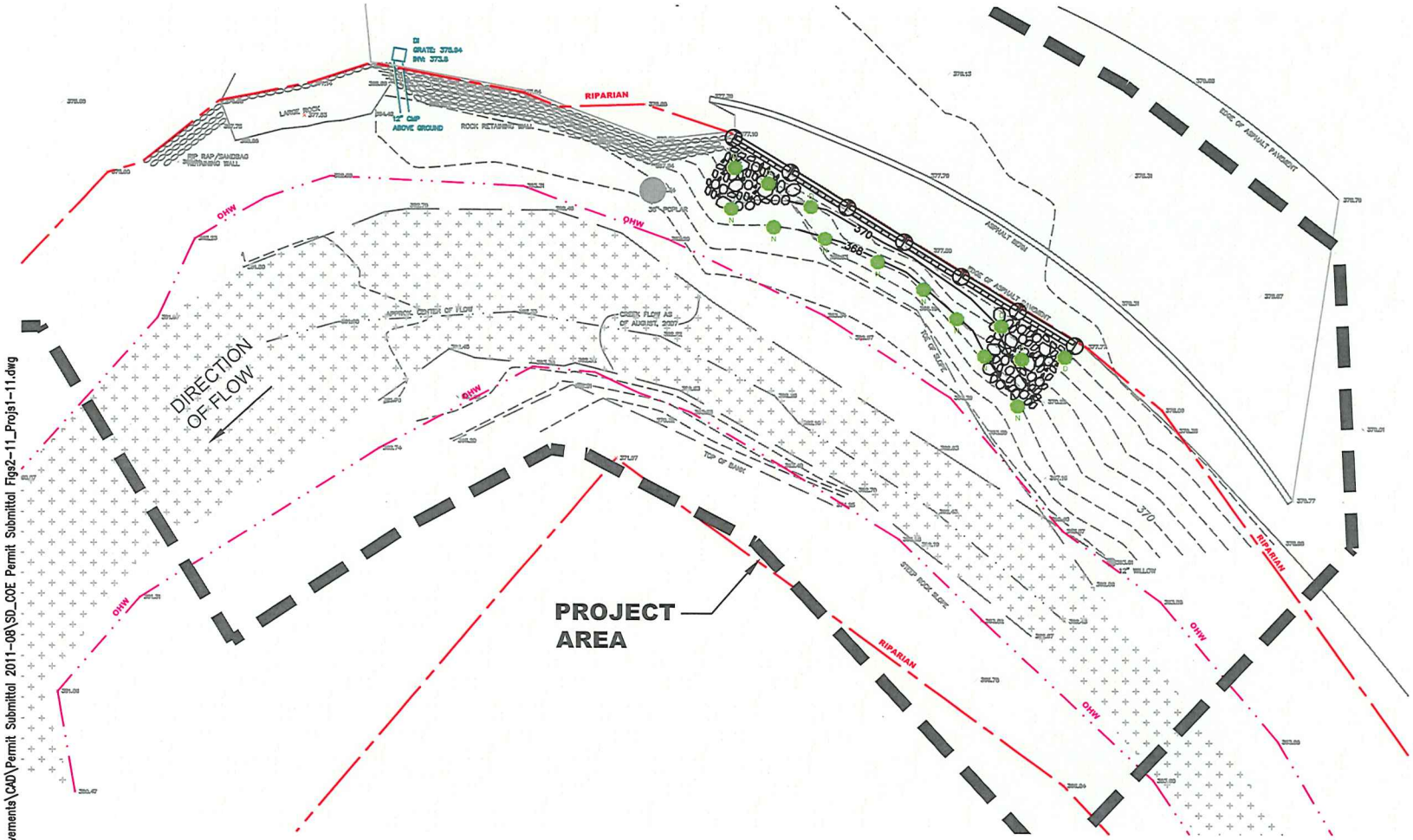
CONCEPTUAL PLANS
NOT FOR CONSTRUCTION

1"=10' 0' 5 10' 20'

FIGURE 10
PROJECT 7
PROPOSED EROSION REPAIR

WINZLER & KELLY

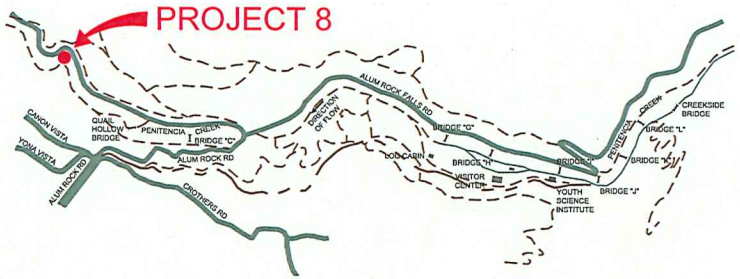
P:\10734 City of San Jose\10734-07-001 - Alum Rock Park Stream Bank Improvements\CAD\Permit Submittal 2011-08\SD_COE Permit Submittal Figs2-11_Projs1-11.dwg




## SITE PLAN

SCALE: 1"=20"

NORTH




KEY MAP - ALUM ROCK PARK

NORTH

CITY OF SAN JOSE
PARKS, RECREATION, AND NEIGHBORHOOD SERVICES
ALUM ROCK PARK

CONCEPTUAL PLANS
NOT FOR CONSTRUCTION

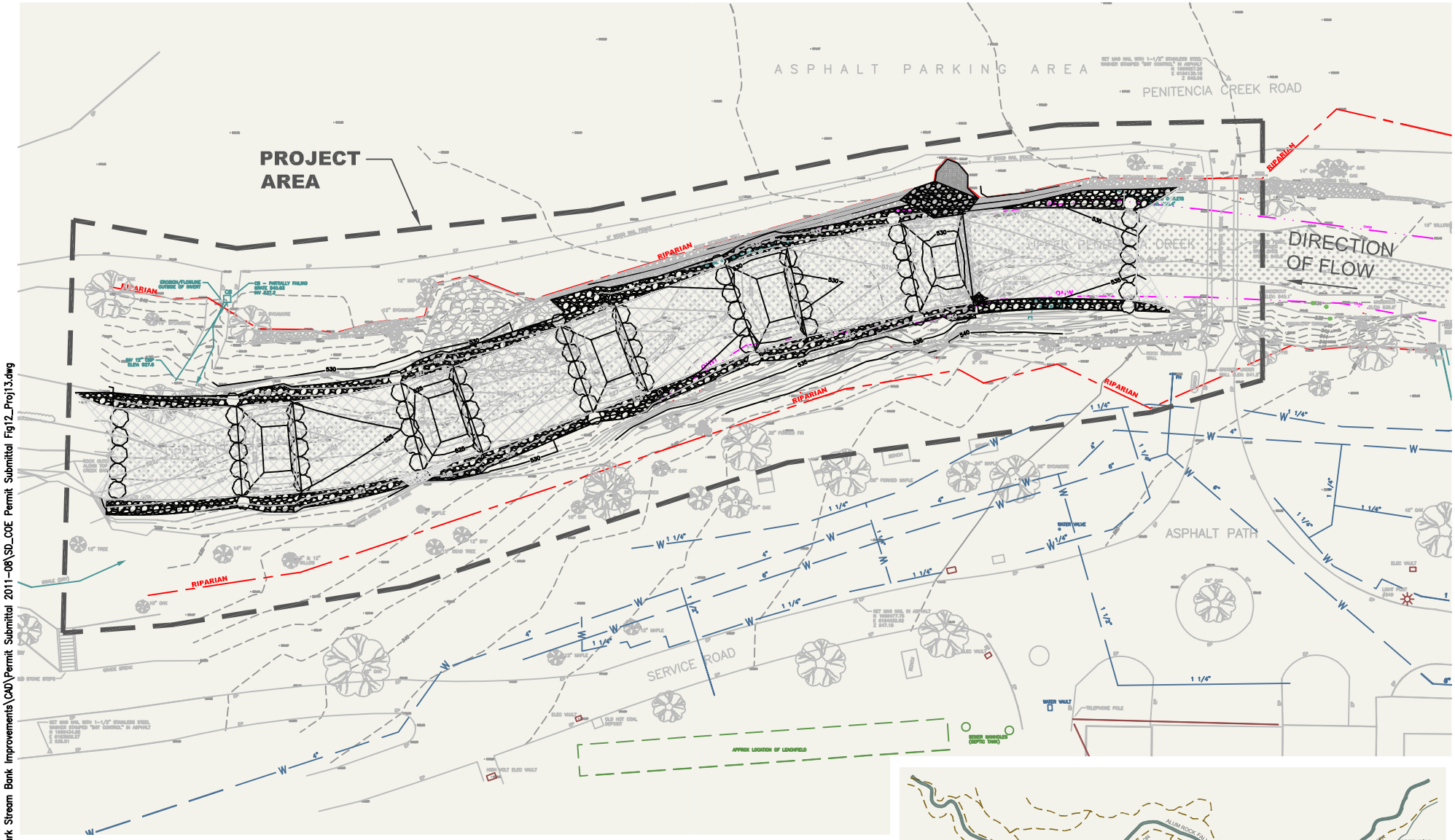
1"=20'

0' 10' 20' 40'

FIGURE 11
PROJECT 8
PROPOSED EROSION REPAIR

WINZLER & KELLY

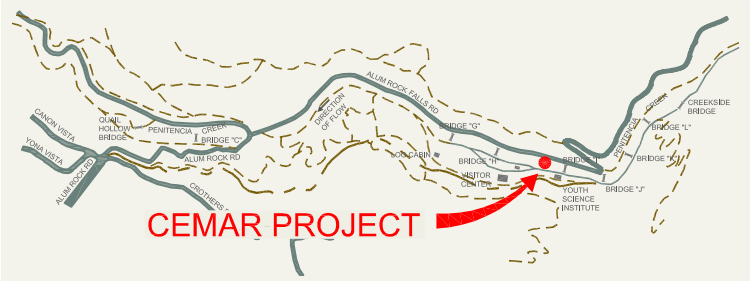
P:\10734 City of San Jose\10734-07-001 - Alum Rock Park Stream Bank Improvements\CAD\Permit Submittal 2011-08\SD_COE Permit Submittal Figs2-11_Projs1-11.dwg




## SITE PLAN

SCALE: 1"=40'

NORTH




## KEY MAP - ALUM ROCK PARK

NORTH

**CITY OF SAN JOSE**
**PARKS, RECREATION, AND NEIGHBORHOOD SERVICES**
**ALUM ROCK PARK**

CONCEPTUAL PLANS
NOT FOR CONSTRUCTION

1"=40' 0' 20' 40' 80'

FIGURE 12
PROJECT 13
CEMAR FISH PASSAGE IMPROVEMENT

WINZLER & KELLY

P:\10734 City of San Jose\10734-07-001 - Alum Rock Park Stream Bank Improvements\CAD\Permit Submittal 2011-08\SD_COE Permit Submittal Fig12_Proj13.dwg

# Appendix C
## NMFS Matrix

## CHECKLIST FOR DOCUMENTING ENVIRONMENTAL BASELINE AND EFFECTS OF PROPOSED ACTION(S) ON RELEVANT INDICATORS

| PATHWAYS: INDICATORS | ENVIRONMENTAL BASELINE | | | EFFECTS OF THE ACTION(S) | | |
|---|---|---|---|---|---|---|
| | Properly[1] Functioning | At Risk[1] | Not Propr.[1] Functioning | Restore[2] | Maintain[3] | Degrade[4] |
| Water Quality: Temperature | | ✓ | | | ✓ | |
| Sediment | | | ✓ | ✓ | | |
| Chem. Contam./Nut. | ✓ | | | | ✓ | |
| Habitat Access: Physical Barriers | | ✓ | | ✓ | | |
| Habitat Elements: Substrate | | | ✓ | ✓ | | |
| Large Woody Debris | | | ✓ | | ✓ | |
| Pool Frequency | | | ✓ | | ✓ | |
| Pool Quality | | ✓ | | | ✓ | |
| Off-channel Habitat | | | ✓ | ✓ | | |
| Refugia | | ✓ | | ✓ | | |
| Channel Cond. & Dyn: Width/Depth Ratio | | ✓ ? | | | ✓ | |
| Streambank Cond. | | | ✓ | ✓ | | |
| Floodplain Connectivity | | ✓ | | ✓ | | |
| Flow/Hydrology: Peak/Base Flows | | ✓ | | | ✓ | |
| Drainage Network Increase | | ✓ | | | ✓ | |
| Watershed Conditions: Road Dens. & Loc. | | ✓ | | | ✓ | |
| Disturbance History | | | ✓ | | ✓ | |
| Riparian Reserves | | ✓ | | | ✓ | |

Watershed Name: Upper Penitencia Creek Location: Alum Rock Park

1 These three categories of function ("properly functioning", "at risk", and "not properly functioning") are defined for each indicator in the "Matrix of Pathways and Indicators" (Table 1 on p. 10 ).

2 For the purposes of this checklist, "restore" means to change the function of an "at risk" indicator to "properly functioning", or to change the function of a "not properly functioning" indicator to "at risk" or "properly functioning" (i.e., it does not apply to "properly functioning" indicators).

3 For the purposes of this checklist, "maintain" means that the function of an indicator does not change (i.e., it applies to all indicators regardless of functional level).

4 For the purposes of this checklist, "degrade" means to change the function of an indicator for the worse (i.e., it applies to all indicators regardless of functional level). In some cases, a "not properly functioning" indicator may be further worsened, and this should be noted.

# Appendix D
## USFWS Species List

**United States Department of the Interior**
FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

August 2, 2011

Document Number: 110802043605

Seth Lancaster
Winzler and Kelly
718 3rd Street
Eureka, CA 95501

Subject: Species List for Alum Rock Park Streambank Restoration

Dear: Interested party

We are sending this official species list in response to your August 2, 2011 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be October 31, 2011.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division

TAKE PRIDE IN AMERICA

# U.S. Fish & Wildlife Service

# Sacramento Fish & Wildlife Office

## Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 110802043605

Database Last Updated: April 29, 2010

---

## Quad Lists

### Listed Species

#### Invertebrates

*Euphydryas editha bayensis*
bay checkerspot butterfly (T)

#### Fish

*Hypomesus transpacificus*
delta smelt (T)

*Oncorhynchus mykiss*
Central California Coastal steelhead (T) (NMFS)
Central Valley steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)

*Oncorhynchus tshawytscha*
Central Valley spring-run chinook salmon (T) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

#### Amphibians

*Ambystoma californiense*
California tiger salamander, central population (T)
Critical habitat, CA tiger salamander, central population (X)

*Rana draytonii*
California red-legged frog (T)
Critical habitat, California red-legged frog (X)

#### Reptiles

*Masticophis lateralis euryxanthus*
Alameda whipsnake [=striped racer] (T)
Critical habitat, Alameda whipsnake (X)

#### Birds

*Sternula antillarum (=Sterna, =albifrons) browni*
California least tern (E)

#### Mammals

*Vulpes macrotis mutica*
San Joaquin kit fox (E)

### Proposed Species

#### Amphibians

*Rana draytonii*
Critical habitat, California red-legged frog (PX)

### Quads Containing Listed, Proposed or Candidate Species:

CALAVERAS RESERVOIR (427A)

# County Lists

## Santa Clara County

### Listed Species

#### Invertebrates

*Branchinecta lynchi*
vernal pool fairy shrimp (T)

*Euphydryas editha bayensis*
bay checkerspot butterfly (T)
Critical habitat, bay checkerspot butterfly (X)

#### Fish

*Eucyclogobius newberryi*
tidewater goby (E)

*Oncorhynchus kisutch*
coho salmon - central CA coast (E) (NMFS)

*Oncorhynchus mykiss*
Central California Coastal steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)
South Central California steelhead (T) (NMFS)

*Oncorhynchus tshawytscha*
Central Valley spring-run chinook salmon (T) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

#### Amphibians

*Ambystoma californiense*
California tiger salamander, central population (T)
Critical habitat, CA tiger salamander, central population (X)

*Rana draytonii*
California red-legged frog (T)
Critical habitat, California red-legged frog (X)

#### Reptiles

*Masticophis lateralis euryxanthus*
Alameda whipsnake [=striped racer] (T)
Critical habitat, Alameda whipsnake (X)

*Thamnophis sirtalis tetrataenia*
San Francisco garter snake (E)

#### Birds

*Brachyramphus marmoratus*
marbled murrelet (T)

*Charadrius alexandrinus nivosus*
western snowy plover (T)

*Pelecanus occidentalis californicus*
California brown pelican (E)

*Rallus longirostris obsoletus*
California clapper rail (E)

*Sternula antillarum (=Sterna, =albifrons) browni*
California least tern (E)

*Vireo bellii pusillus*
Least Bell's vireo (E)

### Mammals

*Reithrodontomys raviventris*
salt marsh harvest mouse (E)

*Vulpes macrotis mutica*
San Joaquin kit fox (E)

### Plants

*Castilleja affinis ssp. neglecta*
Tiburon paintbrush (E)

*Ceanothus ferrisae*
Coyote ceanothus (E)

*Dudleya setchellii*
Santa Clara Valley dudleya (E)

*Streptanthus albidus ssp. albidus*
Metcalf Canyon jewelflower (E)

## Proposed Species

### Fish

*Oncorhynchus mykiss*
Critical habitat, South Central California steelhead (PX) (NMFS)

### Amphibians

*Rana draytonii*
Critical habitat, California red-legged frog (PX)

## Key:

(E) *Endangered* - Listed as being in danger of extinction.
(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.
(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.
(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.
*Critical Habitat* - Area essential to the conservation of a species.
(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.
(C) *Candidate* - Candidate to become a proposed species.
(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
(X) *Critical Habitat* designated for this species

# Important Information About Your Species List

## How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about th size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** project within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

## Plants

Any plants on your list are ones that have actually been observed in the area covered by th list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

## Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

## Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

## Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together tc avoid or minimize the impact on listed species and their habitat. Such consultation would resu in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and a likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

## Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and norm behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm t listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

## Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals c our candidate list when we have enough scientific information to eventually propose them fc listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidate was listed before the end of your project.

## Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

## Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as define by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

## Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be Octobe 31, 2011.

# Appendix E
## Project Photographs

Project 1: Creekside Bridge Undercut Abutment

Project 1: Creekside Bridge Looking Downstream

Project 11: Mature Sycamore Tree and Picnic Area

Project 11: Degraded Bank near Mature Sycamore Tree

Project 3 and 10: Rock Wall Looking Upstream

Project 3 and 10: Rock Wall Looking Downstream

Project 3 and 10: Overview of Floodplain Creation Area

Project 4: Bridge K

Project 2: YSI Bridge looking Downstream, Deodar Cedar at Left

Project 5: Base of Slope with Failed Rock Wall.

Project 5 and 13/CEMAR: Weir Area, Plunge Pool

Project 6: Portion of Failed Slope Protection in Creek

Project 9: Upstream of Visitor Center Bridge

Project 7: Failed Slope

Project 8: Undercut Sack Concrete Wall