Berryessa Creek Element
Coyote and Berryessa Creeks
Flood Control Project
Santa Clara County, California

Appendix A: Environmental

Part V

404(b)(1) Water Quality Evaluation

BERRYESSA CREEK
GENERAL REEVALUATION STUDY

SECTION 404(b)(1) WATER QUALITY EVALUATION

SANTA CLARA COUNTY, CALIFORNIA

I. Project Description

a. Purpose and General Description

The U.S. Army Corps of Engineers (Corps) and the project sponsor, Santa Clara Valley Water District (SCVWD), have coordinated to initiate a General Reevaluation Study to determine the acceptability and feasibility of modifying a flood damage reduction project along Berryessa Creek. The proposed project would modify the channel downstream of the I-680 Bridge to consist of an earthen trapezoidal shape. Replacement of bridges and free-standing concrete floodwalls at a maximum height of 6feet would also be constructed.

The proposed project would result a reduction of flood risk to populated areas and a reduction of sedimentation and maintenance requirements. In addition, the project would use a cellular confinement system to control erosion and encourage revegetation of native grasses.

This analysis has been prepared in accordance with 40 CFR Part 230- Section 404(b)(1) guidelines and USACE Planning Guidance Notebook, ER 1 105-2- 100.

b. Location

The project area is located along Berryessa Creek between East Calaveras Blvd and Interstate 680, Milpitas, California. The project area extends approximately 2.25 miles.

c. Background

The proposed action is needed to reduce the risk of flood damages to the cities of Milpitas and San Jose. The Berryessa Creek Project was authorized by the Water Resources Development Act (WRDA) of 1990 following transmittal of the Chief of Engineer's Report in Coyote and Berryessa Creek in February 1989. After Congressional authorization in WRDA 1990, discussions with SCVWD, and interested environmental groups and community members showed that the project did not have wide support in the community. Issues included the damages to the riparian zone from a trapezoidal concrete channel, loss of aesthetics, recreation, and natural resources in the upstream project area. In 2001, SCVWD requested that the Corps reevaluate the flood protection alternatives along Berryessa Creek to find a more economical and environmentally acceptable solution.

d. Authority

The Berryessa Creek Project was initiated in partial response to Section 4 of the 1941 Flood Control Act, Public Law 77-228 and focused on flood and related problems and solutions along lower Coyote Creek and on Berryessa Creek. An Interim Feasibility Report for Coyote Creek and Berryessa Creek was transmitted to Congress and

authorized under Section 101(a)(5) of the Water Resources Development Act (WRDA) of 1990, Public Law 101-640.

e. Project Alternatives

It is not possible to avoid placing fill material into the waters of the United States (U.S.) and meet the project purpose. Under Alternatives 2a, 2B, and 4, material from the channel would be primarily excavated and removed but some reshaping and recontouring of the slopes would be necessary. Fill material needed to reshape the channel would be used from onsite material. Some sections of the side channel banks would require riprap slope projection. Alternative 5, proposes a trapezoidal concrete lined channel from Interstate 680 to Calaveras Blvd, where a rock transition would place transition flows from the concrete channel into the existing earth-bottomed channel.

f. General Description of Dredged or Fill Material

(1) General Characteristics of Material

Streambanks are formed of fairly erosion-resistant material; the soils contain a large clay component primarily consisting of silty and sandy clay. Upstream of I-680, soils retain a significant clay component but exhibit more frequent clayey silt and clayey sand lenses with occasional gravels. As a result, eroded sections of streambanks in this area are near vertical. Bed material is somewhat variable due to the high level of channel alteration and the presence of numerous bridges and several other hydraulic structures. In general, the bed material is composed of sands and gravels. The average distribution for the entire urbanized reach upstream of Calaveras Boulevard, is 28 percent sand, 69 percent gravel and 3 percent cobble with a median diameter of 5.5 mm (fine gravel). Completion of the actions would require excavation of native alluvial substrate and topsoil within some of the adjacent areas. The excavated material would be placed on-site and spread out to build up upland areas adjacent to the creek or removed from the site.

(2) Quantity of Material

Approximately 45 thousand cubic yards of material would be excavated and redistributed on-site.

(3) Source of Material

Fill would come from on-site material. Riprap would be trucked into the project site from a local quarry.

g. Description of the Proposed Discharge Site

(1) Location

The location of the discharge sites would be along Berryessa Creek between Calaveras Blvd and Interstate 680 (Exhibit C). provide a map that outlines the waters.

(2) Size

Total area of disturbance to waters of the United Sates are approximately 2.25 acres.

(3) Type of Site

The type of disposal site is a river channel.

(4) Type of Habitat

The project area into six reaches for the habitat surveys. The following habitat types were identified at and around the project area.

In Reach H-6, upstream of Old Piedmont Road, the riparian vegetation is diverse, including willows (*Salix* sp.), western sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii*), and blue elderberry (*Sambucus mexicana*). The herbaceous species included many non-natives such as pennyroyal (*Mentha pulegium*) and Canada thistle (*Cirsium arvense*). The lower end of this reach is dominated by eucalyptus, which may be a cause of the subsurface flow at the lower end of the reach, due to high rates of evapotranspiration.

In Reach H-5, the riparian zone ranges from mostly bare dirt to forest in the greenbelt. Dominant species in the greenbelt include blue elderberry, California black walnut (*Juglans californica*), English walnut (*Juglans regia*), Coast live oak (Q*uercus agrifolia*), and willows. Mowed grass is present within and adjacent to the riparian zone.

In Reach H-4, the riparian zone is minimal to non-existent. The bank slopes are dominated by weedy annuals such as spiny sow thistle (*Sonchus asper*), dock (*Rumex* sp.), and perennial rye grass (*Lolium perenne*). This reach has the least vegetation present and the most channel alteration (concrete).

In Reach H-3, the riparian zone is very similar to Reach H-4, with weedy annuals such as rabbit foot grass (*Polypogon monspeliensis*) and barnyard grass (*Echinochloa crusgalli*). This reach has the highest banks (levees) and is entrenched in a narrow ditch.

In Reach H-2, the riparian zone is also very minimal, but the channel is much wider and more emergent wetland species are present. Species include cattails, floating primrose willow (*Ludwigia peploides*), hyssop loosestrife (*Lythrum hyssopifolia*), watercress (*Rorippa nasturtium aquaticum*), brooklime (*Veronica americanum*), and knotweed (*Polygonum* sp.). A few very sparse trees are also present.

In Reach H-1, the creek is tidal, and the vegetation is dominated by emergent wetland species such as bulrushes (*Scirpus acutus* and *S. maritimus*), cattails (*Typhsa angustifolia* and *T. latifolia*), and sedges (*Carex* sp). Willows and other riparian vegetation are present in a few locations, but the riparian zone is primarily dominated by weedy annual herbaceous species. Lower Penitencia Creek is still confined between steep-sided levees in much of this reach.

(5) Timing and Duration of Discharge

Construction of the project would be conducted in one phase and is estimated to take 60-90 days, with earthwork beginning in August and going to October. Revegetation would occur immediately after construction from October to December

h. Description of Disposal Method

A hydraulic excavator would be used to remove and stockpile material. Backfill would be performed with a front end loader. Riprap would be placed with a hydraulic excavator. Upland staging areas have been designated at each site for stockpiling of excavated and/or fill material.

II. Factual Determinations

a. Physical Substrate Determinations

(1) Comparison of Existing Substrate and Fill

The proposed fill material is from the same parent source as the existing material in the project area. No toxic or unnatural materials would be introduced at the sites, and substrates would retain their existing characteristics.

(2) Changes to Disposal Area Elevation

Substrate elevations will be modified from existing elevations throughout the project area. The current channel gradient varies dramatically from near 3 percent at the upstream end to below 0.5 percent at the downstream end. Though there is a strong trend for decreasing gradient in the downstream direction, there are localized areas where the gradient changes abruptly. This is partially due to the wide range of channel configurations currently found in the project area. At the current level of design, the proposed channel sections have been superimposed on the existing channel gradient. In the next level of design, the profile needs to be refined considering minimizing changes in sediment transport capacity that result from local variations in the gradient. Additionally, this exercise will likely have benefits to the providing the most efficient flood control design.

(3) Migration of Fill

The increased volume and velocity of flow is expected to flush silts and to increase the diversity of in-channel habitat structure. Geotextie fabric and cellular confinement system will be installed for bank stabilization.

(4) Duration and Extent of Substrate Change

Soil compaction could occur from heavy equipment operation. Most of the project area is located in areas that already experience sediment and soil compaction due to ongoing sediment removal and maintenance.

(5) Changes to Environmental Quality and Value

Native grasses and forbs would be established on banks to stabilize soils and prevent recolonization by invasive species.

(6) Actions to Minimize Impacts

Construction would have minor, short-term impacts. Standard erosion prevention practices would be employed. These measures would minimize erosion of soils and substrate during and after construction.

b. Water Circulation, Fluctuation, and Salinity Determinations

(1) Alteration of Current Patterns and Water Circulation

The project would not alter current flows.

(2) Interference with Water Level Fluctuation

Water levels in Berryessa Creek seasonally fluctuate from an intermitted flow in the winter and low to no flow in the summer. The project would not alter stream hydrology.

(3) Salinity Gradients Alteration

Salinity gradients would not be affected.

(4) Effects on Water Quality

(a) Water Chemistry

Disposal material would be excavated from on-site sources and would not contain foreign chemicals. The project would not change water chemistry.

(b) Salinity

The project would not change salinity levels.

(c) Clarity

Excavation and placement excavated material would be timed to occur in the dry or low water conditions.

(d) Color

Excavation and placement excavated material in the disposal area would material would be timed to occur in the-dry or low water conditions.

Construction activities would be short in duration and conditions would return to pre-construction levels.

(e) Odor

The project would not affect odor.

(f) Taste

The project would not affect taste.

(g) Dissolved Gas Levels

The proposed project would have no effect on dissolved gas levels.

(h) Temperature

The project would not change the temperature of the creek.

(i) Nutrients

The proposed project would not result in nutrient loading and reduction.

(j) Eutrophication

The project would not input excess nutrients into the stream or promote excessive plant growth. The project would not contribute to eutrophication.

(k) Other Characteristic

During construction

(5) Changes to Environmental Quality and Value

Flow patterns in the stream are greatly modified from natural patterns, due to various human disturbances. Sediment deposited would nearly equal to that under without-project conditions. The implementation of the project would not change the value and quality of the stream.

(6) Actions to Minimize Impacts

Construction and excavation would be timed with low water stages to minimal impacts. Best management practices (BMP) listed in section 5.4.3 of the environmental impact statement/ environmental (EIS/EIR) would avoid or reduce the potential for adverse impacts.

c. Suspended Particulate/Turbidity Determinations

(1) Alteration of Suspended Particulate Type and Concentration

Material excavated onsite would be used to beneficially to stabilize banks and create (aquatic, riparian) habitat. Excavation and placement excavated material would be timed to occur in the-dry or low water conditions. Particulates suspended during project construction would dissipate after construction activities are complete.

(2) Particulate Plumes Associated with Discharge

Temporary and local particulate plumes may occur during construction activities but would quickly dissipate after construction is complete.

(3) Changes to Environmental Quality and Value

Particulate plumes resulting from any construction activity are not expected to persist after project completion. Particulates suspended within the disposal area are not expected to differ in type from particulates currently within the project area.

(4) *Actions to Minimize Impacts*

Effects would be minimized by performing work during low flow periods in the dormant season. The duration of construction would be limited to the shortest timeframe practicable. As a result of mitigation measures, increases in sedimentation and turbidity would be minor and temporary.

d. Contaminant Determinations

A Phase I Environmental Site Assessment completed for the project revealed there are two historic releases below the surface of the project area. Plumes may contain the following substances: volatile organic compounds, PAHs and metals such as copper, cadmium, and mercury. At this time, the depth of construction has not been determined and it is not known if these plumes would interfere with construction. If construction is expected to be at least 6 feet deep in the vicinity of the plumes, then additional testing and precautionary measures would be implemented.

To minimize the potential for soil or water contamination from fuel or grease spills, maintenance and refueling of motorized equipment will be performed in upland areas at least 100 feet from waters of the U.S. and wetlands. BMP listed in section 5.4.3 of the EIS/EIR would avoid or reduce the potential for adverse impacts.

e. Aquatic Ecosystem and Organism Determinations

(1) Effects on Plankton

Plankton are drifting organisms that inhabit the pelagic zone of oceans, seas, or bodies of fresh water. The presence of plankton is generally low in high order streams. Construction of the project would be temporary, short termed, and timed during low flow conditions. There would be no effect to plankton as a result of the project.

(2) Effects on Benthos

Benthic organisms are found in the benthic zone which is the ecological region at the lowest level of a body of water such as an ocean or a lake, including the sediment surface and some sub-surface layers. Construction would be temporary, short termed and timed during low flow conditions. There would be no effect on benthos as a result of the project.

(3) Effects on Nekton

Nekton are of actively swimming aquatic organisms. Construction would be temporary, short termed, and timed during low flow conditions. There would be no effect to nekton as a result of the project.

(4) Effects on Aquatic Food Web

The project would have no effect on the aquatic food web.

(5) Effects on Special Aquatic Sites

(a) Sanctuaries and Refuges

No sanctuaries and refuges are within the project area.

(b) Wetlands

Wetlands are typically characterized by hydric soils. Hydric soils usually require hundreds of years for development. The stream channel alignment downstream of I-680 is artificial and was constructed in 1961. The presence of hydric soils was not verified. However, wetland vegetation was present in the project area. Vegetation primarily included cattails. Other wetland plant species included horsetail, watercress, and smartweed.

Construction activities would temporarily disturb or eliminate the vegetation. However, since the stream hydrology would not be permanently affected, the cattails would reestablish within one to three years after construction.

(c) Mud Flats

No mud flats are within the project area.

(d) Vegetated Shallows

No vegetated shallows are within the project area.

(e) Coral Reefs

No coral reefs are within the project area.

(f) Riffle and Pool Complexes

The downstream portion of Berryessa Creek has been highly altered to a trapezoidal channel and levees and is regularly maintained by removal of sediment and vegetation. The instream habitat diversity is extremely low and the riparian zone within this area provide little to no cover for the creek or wildlife habitat.

(6) Threatened and Endangered Species

Chapter 4 Section 5 of the EIS/EIR discusses Federal and State listed species is detail. No special status species are in or near the project area.

(7) Other Wildlife

The project could have short-term effects on resident mammals, birds, reptiles, and amphibians. Noise from construction equipment and increased human presence could temporarily displace some wildlife, and temporary alteration of the channel

would occur. However, these adverse effects would be minor and temporary. The project area would be reseeded with native grasses.

(8) Actions to Minimize Impacts

Adverse effects would be temporary, and minimized by mitigation measures to prevent erosion and turbidity increases. Excavation would be timed to avoid spawning, nesting, or migration seasons. Placement of material excavated for construction of project features was designed in the context for beneficial use and bank stabilization to directly benefit the aquatic ecosystem.

f. Proposed Disposal Site Determinations

(1) Mixing Zone Size Determination

Not applicable.

(2) Determination of Compliance with Applicable Water Quality Standards

The fill material would not violate Environmental Protection Agency or State water quality standards or violate the primary drinking water standards of the Safe Drinking Water Act (42 USC 300 et seq.).

Project design, standard construction and erosion practices would preclude the introduction of substances into surrounding waters. Materials removed for disposal off-site would be disposed of in an appropriate landfill or other upland area.

(3) Potential Effects on Human Use Characteristics

a) Municipal and Private Water Supplies

The fill material would not violate Environmental Protection Agency or State water quality standards or violate the primary drinking water standards of the Safe Drinking Water Act (42 USC 300 et seq.).

Project design, standard construction and erosion practices would preclude the introduction of substances into surrounding waters. Materials removed for disposal off-site would be disposed of in an appropriate landfill or other upland area.

b) Recreation and Commercial Fisheries

The project area does not support recreational or commercial fishing. Two fish species, the mosquitofish *(Gambusia affinis)* and California roach *(Lavina symmetricus)* were collected during field investigations. The mosquitofish is a non-native freshwater species introduced throughout California for mosquito control. This fish is adapted for life in shallow, often stagnant water where predatory fish are absent and temperatures are too high for other species. The California roach is a native species widely distributed throughout central and northern California. This species is tolerant of high temperatures and low oxygen levels, which enables them

to survive in areas unsuitable for most other fish species. California roach thrive when found alone or in association with one or two other species. Neither the mosquitofish or California roach is State or Federally listed or has any special status (ESA, 2002). Based on the results of the ESA fisheries investigation, the only fish species likely to be found in the project area are the mosquitofish and California roach and only in the reach between Calaveras Boulevard and Piedmont Creek where there are constant flows.

c) Water-related recreation

There is no water-related recreation within the project area.

d) Aesthetics

The visual character of the creek in most areas would change permanently. The shape of the channel would change to a trapezoidal configuration with floodwalls in some sections. However, this change would not degrade the visual character because the channel would continue to be earthen. Grasses and other vegetation would be removed to construct the trapezoidal channel and floodwalls. The side channels would be planted with a seed mix to control erosion and appear as annual grassland habitat. All modification and replacement of bridges and culverts would be consistent with existing bridge designs in the area so there would be no change in the visual character of the modified or new structures.

e) Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves.

There are no parks, National Monuments, Historical Monuments, Wilderness Areas, Research Sites, Wild and Scenic Rivers, Gold Medal Trout Waters, or similar designated preserves near the project area.

g. Determination of Cumulative Effects on the Aquatic Ecosystem

Construction of the flood walls in the dry would be the environmentally preferred alternative. Without implementation of this proposed action, it is likely that this action would be constructed at a later time in the wet, which would result in adverse effects on the aquatic ecosystem. Construction of the project in the dry would avoid these adverse effects to water quality, and aquatic species.

h. Determination of Secondary Effects on the Aquatic Ecosystem

No adverse secondary effects are expected to occur.

III. Findings of Compliance or Non-Compliance with the Restrictions on Discharge

(1) No significant adaptations of the guidelines were made relative to this evaluation.

(2) No practicable alternative exists which meets the study objectives that does not involve discharge of fill into waters of the United States.

(3) The discharges of fill materials will not cause or contribute to, after consideration of disposal site dilution and dispersion, violation of any applicable State water quality standards for waters. The discharge operations will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

(4) The placement of fill materials in the project area(s) will not jeopardize the continued existence of any species listed as threatened or endangered or result in the likelihood of destruction or adverse modification of any critical habitat as specified by the Endangered Species Act of 1973.

(5) The placement of fill materials will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic species and other wildlife will not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values will not occur.

(6) Appropriate steps to minimize potential adverse impacts of the discharge on aquatic systems include cessation of disposal activities during extreme tidal velocities associated with spring tides.

(7) On the basis of the guidelines the proposed disposal site for the discharge of dredged material is specified as complying with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects to the aquatic ecosystem.