COUNTY OF SAN MATEO
PLANNING AND BUILDING DEPARTMENT

DATE: April 5, 2018

TO: Zoning Hearing Officer

FROM: Planning Staff

SUBJECT: Consideration of a Grading Permit, pursuant to Section 9290 of the County Ordinance Code, for the removal of the Lagunita Diversion Dam within San Francisquito Creek and restoration of the creek channel in the Stanford Weekend Acres area of unincorporated San Mateo County. The project is located on properties in both Santa Clara and San Mateo Counties and, within San Mateo County involves 763 cubic yards (c.y.) of cut, 2,390 c.y. of fill, land clearing, and the removal of one (1) significant tree. The project area, which extends approximately 480 linear feet along San Francisquito Creek, includes work on four parcels in the County (APN 074-290-130 owned by Stanford University and 15 Happy Hollow Lane, 40 Sneckner Court, and 43 Sneckner Court which are privately owned).

County File Number: PLN 2017-00530 (Stanford)

PROPOSAL

Project Description

The applicant, Rachel Bejarano for Leland Stanford Jr. University (Stanford), requests a Grading Permit for the Lagunita Diversion Dam Removal and Creek Restoration Project which involves the removal of the dam facility within San Francisquito Creek and the creek channel restoration. The dam facility was built by Stanford University in the late 1800s and was used to supplement the University's water supply for on-campus irrigation. The dam facility consists of a low concrete dam approximately 8 feet in height, various concrete headwalls, two sliding gate valves, a fish ladder, and a flume channel that parallels the creek and extends to Lake Lagunita (once a recreational swimming and boating facility and now a protected wetland). The facility has not been used to divert water since approximately 1985. The applicant proposes to remove the dam and restore the creek channel in this section which would enhance habitat and passage for the threatened Central California Coast Distinct Population Segment (DPS) of steelhead (*Oncorhynchus mykiss*) and other native aquatic species.

Specifically, the project would include the following tasks:

Land Clearing and Demolition: The project involves vegetation removal in San Mateo County in the area of work, including the removal of one significant tree (a 36" d.b.h White Alder tree along the creek bank at 40 Sneckner Court as shown in Attachment I). In Santa Clara County, the project involves vegetation removal in the area of work and along an existing unpaved maintenance road to be used as an access road for this project. With an anticipated start date of June 1, 2018, Stanford would demolish and remove most, or all, of the Lagunita Diversion Dam including the diversion dam concrete weir and apron, fish ladder, diversion gates, gate guides and pipes, and all associated wing and headwalls and off-haul of approximately 790 c.y. of concrete debris. Demolition would be completed by hoe ramming using a hydraulic excavator. Proposed demolition is described in the Demolition Plan in Attachment C and in Section 3.5 of the AECOM Memorandum to the San Francisco Bay Regional Water Quality Control Board (RWQCB), dated October 2, 2017 (Attachment F). Vegetation removal outside of the stream channel may occur prior to June 1, 2018, but not before the final approval of the subject grading permit.

Excavation and Channel Construction: The project involves excavation upstream of the dam to remove accumulated sediment and grading upstream and downstream of the dam and construction of channel banks, floodplain terraces, and a pool-riffle channel bedform designed to mimic reference reaches located nearby, stabilized using biotechnical methods, such as live willow poles, stakes, or other cuttings or plantings of species native to (and preferably sourced from) the San Francisquito Creek riparian corridor. Since the elevation difference in the channel bed upstream and downstream of the dam would be primarily replaced by a central riffle between the upstream and downstream pools, the sustainability of this riffle is of paramount importance to the success of the project. The primary in-stream structural component for the channel design includes the boulder grade control structures to emulate the naturally forming jams of boulders that are proposed at the upstream and downstream end of each riffle and pool. Channel design and related earthwork is described in detail in Sections 3.6 through 3.8 of the AECOM Memorandum to the RWQCB, dated October 2, 2017 (Attachment F).

Revegetation: The project involves revegetation of the entire site using native species appropriate for the proposed soils, hydrology, and climate. The riparian wetland plants that constitute the proposed planting zones grow naturally both at the project site and in its immediate vicinity. They were grouped into three planting zones based on their water needs that are reflected by the vertical distance from the ground water table at which they typically grow. The three planting zones are: the channel planting zone, the bank planting zone, and the floodplain terrace planting zone. The planting palette is described in detail in Section 3.9.2 of the AECOM Memorandum to the RWQCB, dated October 2, 2017 (Attachment F).

Monitoring and Reporting: The project involves revegetation monitoring and reporting as mandated by NOAA, USFWS, and CDFW. The applicant proposes a 5-year post-construction monitoring period to assess and document short-term effectiveness of

the project. Monitoring would involve the qualitative assessment of instream habitat, bank stabilization, fish passage, and revegetation in the project area. Project monitoring and reporting is described in detail in Section 3.9.2 of the AECOM Memorandum to the RWQCB, dated October 2, 2017 (Attachment F).

Project Timing

Per measures required by the RWQCB, in-channel work would be performed from June 1, 2018 through October 31, 2018, with creek dewatering, diversion, and fish capture and relocation activities to occur during that time period (low flow period). Land clearing and tree removal activities outside of the creek channel may start in May 2018. Planting activities, including limited soil preparation outside the active channel, may occur beyond October 31, if necessary, to better ensure successful plant establishment during the onset of winter precipitation.

Project Access Roads

The aerial extent of the project would include the project limit of work (0.87 acres), new access roads (0.54 acres), staging areas (up to 1.6 acres), and existing access roads, which are shown in detail on the drawings provided as Attachment C. The project area within San Mateo County is approximately 0.3 acres. Primary construction access to the project would be attained via Piers Lane, off of Alpine Road, and an existing unpaved maintenance road on the Stanford property, which runs along the top of the south bank slope. Access along the unpaved maintenance road would require minor vegetation clearing and grading. A secondary access route is proposed via Ranch Road, off of Junipero Serra Road, which also connects to the unpaved existing maintenance road referenced above.

Project Staging Areas

Project implementation would involve the use of two staging areas, a 0.63-acre area located next to an historic and abandoned isolation hospital and a 0.95-acre open field area, for proposed equipment and material staging. Both areas are on lands owned by Stanford and located in Santa Clara County. The two areas are identified on Sheet 3 of Attachment C. Both of the identified areas are relatively flat with minimal vegetation coverage. The contractor would store equipment and imported fill materials within the staging areas including, but not limited to, boulders, channel substrate material, and large woody debris. In addition, the contractor may store a construction trailer and portable toilet within the staging areas.

Special-Status Species and State, Federal, and Local Review

Steelhead trout (Oncorhynchus mykiss), which belong to the family Salmonidae which includes all salmon, trout, and chars, is listed as threatened under the Federal Endangered Species Act and occurs in the San Francisquito Creek in the project area. San Francisco dusky-footed woodrat, a California Department of Fish and Wildlife Species of Special Concern, also occurs in the project area. Other special-status

species that occur in the region include western pond turtle, California red-legged frog, California tiger salamander, San Francisco gartersnake, white-tailed kite, burrowing owl, special-status bats, migratory birds, and special-status plants.

Species avoidance measures to be utilized during project implementation are broken up into three categories below: environmental awareness training, fish capture and relocation, and species specific measures. These measures, which are listed in Measures to Reduce Potential Impacts in Section 4 of the Memorandum from AECOM to the RWQCB, dated October 2, 2017(Attachment F), are included in the proposal. CDFW is the Lead Agency under CEQA for the project and has filed a Notice of Exemption (Attachment G). The conditions included in Attachment A are standard conditions and do not constitute mitigation measures.

The project has been reviewed by:

1. The California Department of Fish and Wildlife (CDFW) for a Habitat Restoration or Enhancement Project under Fish and Game Code Section 1652. CDFW is the Lead Agency under CEQA for the project and has filed a Notice of Exemption (Attachment G). Permit Status: Approved per letter dated March 20, 2017.

2. San Francisco Bay Regional Water Quality Control Board (RWQCB). Permit Status: Pending.

3. The US Army Corps of Engineers (USACE) for a nationwide permit (NWP) that would authorize the placement of fill in the San Francisquito Creek associated with the removal of the Lagunita Diversion Dam under Section 404 of the Clean Water Act. Permit Status: Authorized under USACE Nationwide Permit (NWP) 27 per letter dated March 1, 2018.

   USACE requested Formal Consultation with the following agencies:

   a. US Fish and Wildlife Service (USFWS). *Consultation Status*: Programmatic Biological Opinion provided.

   b. California State Historic Preservation Officer (SHPO), State of California Department of Parks and Recreation, Office of Historic Preservation. *Consultation Status*: Per letter dated December 28, 2017, the SHPO concurs that the Lagunita Diversion Dam and the Coon/Piers Ranch Property are not eligible for listing on the NRHP and does not object to a finding of no adverse effect for this undertaking.

   c. National Oceanic and Atmospheric Administration (NOAA). *Consultation Status: Completed per email dated December 4, 2017*.

RECOMMENDATION

That the Zoning Hearing Officer approve the Grading Permit, County File Number PLN 2017 00530, by making the required findings and adopting the conditions of approval listed in Attachment A.

BACKGROUND

Report Prepared By: Camille Leung, Senior Planner, Telephone 650/363-1826

Applicant: Leland Stanford Jr. University/Rachel Bejarano, P.E. (Civil Project Manager), Sustainability and Energy Management, Utilities Division

Owner: Leland Stanford Jr. University

Location/APNs and Ownership:

- APN 074-290-130 (undeveloped) - owned by Stanford University
- 15 Happy Hollow Lane (APN 074-290-620) - owned by Margaret Anita Sensenbrenner Trust
- 40 Sneckner Court (APN 074-290-500) - owned by Johanna Putnoi Trust
- 43 Sneckner Court (APN 074290600) - owned by Michael P. Fischbein

Size: The aerial extent of the project in both Counties would include the project limit of work (0.87 acres), new access roads (0.54 acres), and staging areas (up to 1.6 acres), and existing access roads. The project area within San Mateo County is approximately 0.3 acres.

Existing Zoning: R-1/S-75 (One-Family Residential District; S-75 Combining District 5,000 sq. ft. minimum parcel size)

General Plan Designation: Medium Density Residential (6.1 - 8.7 du/net ac)

Sphere-of-Influence: Menlo Park

Existing Land Uses: Single-Family Residential and vacant (APN 074-290-130) land uses.

Flood Zone: Zone X; FEMA Panel 06081C0311E, effective October 16, 2012

Environmental Evaluation: The California Department of Fish and Wildlife (CDFW) has filed a Notice of Exemption (Attachment G) which states that the project is categorically exempt under the provisions of Section 15333 of the California Environmental Quality Act, consisting of small projects not to exceed five acres in size to assure the

maintenance, restoration, enhancement, or protection of habitat for fish, plants, or wildlife.

Setting: The project area would extend approximately 480 linear feet along the San Francisquito Creek and, in San Mateo County, includes work on four residential properties and an undeveloped parcel owned by Stanford, and includes creek and staging areas located within Santa Clara County.

Chronology:

Date		Action
March 23, 2017	-	The lead agency (California Department of Fish and Wildlife) filed a Notice of Exemption (NOE) with the State Office of Planning and Research (OPR), with a determination that the project is exempt under CEQA.
December 15, 2017	-	Application submitted to the County.
February 1, 2018	-	Application deemed complete after staff's receipt of letters of concurrence from the three associated private property owners.
March 1, 2018	-	Santa Clara County approves the Discretionary Permit for grading at a Zoning Administrator Hearing. The appeal period ended on March 16, 2018. No appeal has been filed.
April 5, 2018	-	San Mateo County Zoning Hearing Officer public hearing.

DISCUSSION

A. KEY ISSUES

1. Compliance with the General Plan

Upon review of the applicable provisions of the General Plan, staff has determined that the project complies with all General Plan Policies, including the following:

a. Vegetative, Water, Fish, and Wildlife Resources

Policies 1.1 (*Conserve, Enhance, Protect, Maintain, and Manage Water, Fish, and Wildlife Resources*), 1.2 (*Protect Sensitive Habitats*), 1.21 (*Importance of Sensitive Habitats*), 1.24 (*Regulate Location, Density, and Design of Development to Protect Vegetative, Water, Fish, and Wildlife Resources*), 1.26 (*Protect Water Resources*), and

1.32 (*Regulate the Location, Siting, and Design of Development in Sensitive Habitats*) seek to conserve, enhance, protect, maintain, and manage the use of the County's vegetative, water, fish, and wildlife resources and sensitive habitats. The applicant proposes to remove the dam and restore the creek channel in this section which would enhance habitat and passage for the threatened Central California Coast DPS of steelhead and other native aquatic species. The fish passage design for the restored San Francisquito Creek channel is based on the stream simulation approach[1], utilizing the pool-riffle channel observed upstream and downstream of the dam as reference reaches that allows for passage of adult steelhead.

Policies 1.23 (*Regulate Development to Protect Vegetative, Water, Fish, and Wildlife Resources*), 1.27 (*Protect Fish and Wildlife Resources*), and 1.28 (*Regulate Development to Protect Sensitive Habitat*) seek to regulate land uses and development activities to prevent or, if infeasible, to mitigate significant adverse impacts on vegetative, water, fish, and wildlife resources and sensitive habitats. Per measures required by the RWQCB, in-channel work would be performed from June 1, 2018 through October 31, 2018, a creek low-flow period, including creek dewatering, diversion, and fish capture and relocation activities. Species avoidance measures to be utilized during project implementation are broken up into three categories below: environmental awareness training, fish capture and relocation, and species specific measures. These measures, which are listed in Measures to Reduce Potential Impacts in Section 4 of the Memorandum from AECOM to the RWQCB, dated October 2, 2017(Attachment F), are included in the proposal. As proposed, the project would have no significant adverse impact on endangered, rare, or threatened species or their habitat. The conditions included in Attachment A are standard conditions and do not constitute mitigation measures.

Policy 1.39 (*Control Incompatible Vegetation, Fish, and Wildlife*) seeks to encourage and support the control of fish and wildlife resources which are harmful to the surrounding environment. Measures to reduce potential impacts and revegetation monitoring tasks described in Attachment F include measures that would be taken to prevent the import of invasive plants, animals, and pathogens to the project area,

[1] Stream simulation is a geomorphic approach to fish passage design that is endorsed by CDFW and described in the California Salmonid Stream Habitat Restoration Manual (CDFW 2010). The objective of the stream simulation approach is to create a channel that mimics the dimensions, slope, bedform, and materials that comprise of the surrounding natural creek channel and therefore presents no more of a passage obstacle than the surrounding creek. This is accomplished by designing the restoration to simulate the channel conditions of one or more natural reference reaches near the restoration site that are known to provide passage for the target species. When properly designed and constructed, the simulation reach should accommodate the natural discharge and sediment regime.

including thorough cleaning of all personal (e.g., boots, wading gear) and heavy equipment (including construction vehicles) brought to the project area prior to arrival at the project area. During monitoring, successful revegetation would be based on the survival and health of trees and shrubs planted in the bank and floodplain terrace zones and the control of non-native invasive species within the project site. The establishment of native willows, sedges, and rushes in the channel planting zone is expected to provide important ecosystem benefits and contribute to the enhancement of steelhead habitat in the long term.

b. Soil Resources

Policies 2.17 (*Regulate Development to Minimize Soil Erosion and Sedimentation*) and 2.23 (*Regulate Excavation, Grading, Filling, and Land Clearing Activities Against Accelerated Soil Erosion*) seek to regulate development to minimize soil erosion and sedimentation. As described previously, the project entails vegetation removal and 763 cubic yards (c.y.) of cut and 2,390 c.y. of fill on lands within the County involving dam removal, stream channel, channel banks, and floodplain terraces construction. The applicant proposes to use erosion control devices, such as coir rolls or erosion control blankets that would not contain plastic netting of a mesh size that would entrain fish, reptiles, or amphibians; temporary stockpiling measures; and filtering of sediment-laden water before release. Water quality protection measures are described in detail in Section 4.3 of Attachment F and are shown on the Erosion Control Plan in Attachment C.

c. Visual Quality Policies

Policy 4.26 (*Water Bodies*) allows for the development of approved dams and impoundments and stream clearance operations; discourages structures which would adversely impact the appearance of a stream and associated riparian habitat; and discourages the alteration of streams and other natural drainage systems which would affect their appearance, reduce underground water recharge, or cause drainage, erosion, or flooding problems. The project would remove a dam and associated non-functional water distribution facilities constructed in the late 1800s and restore the creek channel through the construction of a pool-riffle bedform analogous to the reference reaches within the San Francisquito Creek. In addition to visual benefits of a restored channel that resembles a natural channel, the project would improve steelhead trout habitat. Additionally, in a No-Rise Certification Letter, dated February 16, 2017 (Attachment H), Balance Hydrologics, Inc. staff states that “hydraulic modeling completed along the reach of the San Francisquito Creek surrounding the project site indicates that the Stanford Lagunita Diversion Dam

Removal Project would provide an overall benefit in terms of reducing flood impacts estimated to result from the 100-year flood event." In most locations, the post-project water surface would be lower than the pre-project conditions. The San Mateo County Flood Control District has reviewed and preliminarily approved the project.

d. Urban Land Use

The County General Plan land use designation for the property is Medium Density Residential (6.1 - 8.7 du/net ac). As proposed and conditioned, the project is consistent with the existing residential use of the associated private properties. Based on the No-Rise Certification Letter prepared by Balance Hydrologics, Inc., the Stanford Lagunita Diversion Dam Removal Project would result in an overall benefit to flood protection.

2. Compliance with the Zoning Regulations

The project site is located within the One Family Residential District (R-1/S-75) Zoning District. The project would result in no new uses, only the removal of an existing dam, construction of creek stabilization components that would result in an overall benefit to flood protection for adjoining residential development, and restoration of creek and steelhead trout habitat.

3. Grading Regulations

In order to approve a Grading Permit for 763 cubic yards (c.y.) of cut, 2,390 c.y. of fill, and associated land clearing for the project, the Zoning Hearing Officer must make the following findings pursuant to Section 9290 of the San Mateo County Ordinance Code:

a. *The granting of the permit will not have a significant adverse effect on the environment*.

The proposed grading is necessary to remove accumulated sediment upstream and downstream of the existing dam and to facilitate construction of channel banks and floodplain terraces, with pool-riffle channel bedform designed to mimic reference reaches located nearby. The California Department of Fish and Wildlife, as lead agency, has determined that the project is categorically exempt under the provisions of Section 15333 of the California Environmental Quality Act Guidelines, relating to small projects not to exceed five acres in size to assure the maintenance, restoration, enhancement, or protection of habitat for fish, plants, or wildlife. See Section B of this report for further discussion.

b. *The project conforms to the criteria of Chapter 8, Division VII, of the San Mateo County Ordinance Code, including the standards referenced in Section 9296*.

The project, as proposed and conditioned, conforms to the standards in the Grading Ordinance, including those requiring an erosion and sediment control plan, dust control plan, fire safety, and the timing of grading activity. The project plans have been reviewed and recommended for approval by both the Geotechnical Section and the Department of Public Works - Flood Control. Conditions of approval have been included in Attachment A to ensure compliance with the County's Grading Regulations.

c. *The project is consistent with the General Plan*.

The project has been reviewed against the applicable policies of the San Mateo County General Plan and found to be consistent with its goals and objectives. See Section A.1 of this report for a detailed discussion regarding the project's compliance with applicable General Plan Policies.

B. ENVIRONMENTAL REVIEW

On March 21, 2017, the California Department of Fish and Wildlife (CDFW), as lead agency, filed a Notice of Exemption (NOE) with the State Office of Planning and Research (OPR), with a determination that the project is categorically exempt under the provisions of Section 15333 of the California Environmental Quality Act, relating to small projects not to exceed five acres in size to assure the maintenance, restoration, enhancement, or protection of habitat for fish, plants, or wildlife. The NOE is included in Attachment G. The overall project footprint, which is depicted on Sheet 3 of Attachment C and includes the project limit of work (dam removal, grading, and excavation); staging areas; existing paved access path along Piers Lane; and new access road, is approximately 3.5 acres in size. In the NOE, CDFW staff states that the project removes a non-operational concrete dam and restores the stream bed to improve fish passage and sediment transport. CDFW staff states that habitat complexity would be increased by removing the dam, headwalls, and gate valves, and by creation of a pool-riffle bedform along the 480-ft. reach of stream. CDFW staff states further that the project would provide a net benefit to steelhead by increasing the length and depth of pools, improving spawning gravel retention and deposition downstream of scour areas, and providing additional pool shelter.

To qualify for this exemption, Class 33, requires that the project meet the following additional criteria:

1. There would be no significant adverse impact on endangered, rare, or threatened species or their habitat pursuant to section 15065. Species avoidance measures to be utilized during project implementation are broken up into three categories below: environmental awareness training, fish capture and relocation, and species specific measures. These measures, which are listed in Measures to Reduce Potential Impacts in Section 4 of Attachment F, are included in the proposal. As proposed, the project would have no significant adverse impact on endangered, rare, or threatened species or their habitat. The conditions included in Attachment A are standard conditions and do not constitute mitigation measures.

2. There are no hazardous materials at or around the project site that may be disturbed or removed. The applicant states that the overall project footprint, which is depicted on Sheet 3 of Attachment C and includes the project limit of work (dam removal, grading, and excavation); staging areas; existing paved access path along Piers Lane; and new access road, is approximately 3.5 acres in size and does not contain hazardous materials that may be disturbed or removed. Historic land uses in the project area are unlikely to have introduced hazardous material to the project site. BMPs associated with hazardous material spill prevention are included in the proposal, as listed in Section 4.3 of Attachment F.

3. The project will not result in impacts that are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. The applicant states that Stanford owns the majority of the land within the project footprint and the surrounding area to the east and manages the land as an open space with limited recreation. Past, current, and future projects on this land are unlikely to contribute to cumulative significant impacts as their purpose is most often to maintain the value of the land for special-status species and native plants and wildlife. A small portion of the project footprint and the surrounding area to the west consist of residential properties. Past, current, and future projects on this land are unlikely to contribute to significant impacts as they are typically small in scale and limited to the boundaries of the individual properties. The proposed activities are part of the ongoing steps that Stanford is taking to enhance natural habitats on its lands. Therefore, the project is not expected to result in cumulative significant impacts. Additional information concerning temporary disturbance, impact analysis and avoidance, and minimization measures is provided in Sections 4 and 6 of Attachment F.

Class 33 gives examples of small restoration projects including, but not limited to, stream or river bank revegetation (the primary purpose of which is to improve habitat for amphibians or native fish), as well as stream or river bank stabilization with native vegetation or other bioengineering techniques, the primary purpose of which is to reduce or eliminate erosion and sedimentation.

Planning staff and County Counsel have reviewed the project's compliance with the criteria for the Class 33 Categorical Exemption and the NOE filed by the CDFW, and concurred that the project meets the criteria for Class 33 as described above.

C. REVIEWING AGENCIES

County Building Inspection Section
County Building Inspection Section's Geotechnical Consultant
County Department of Public Works - Flood Control
Stanford Weekend Acres Homeowners' Association
County of Santa Clara, Department of Planning and Development
California Department of Fish and Wildlife (CDFW)
Regional Water Quality Control Board (RWQCB)
Army Corps of Engineers (USACE)
Agencies consulted by the USACE:

- US Fish and Wildlife Service (USFWS)
- California State Historic Preservation Officer (SHPO), State of California Department of Parks and Recreation, Office of Historic Preservation.
- National Oceanic and Atmospheric Administration (NOAA).

ATTACHMENTS

A. Recommended Findings and Conditions of Approval
B. Vicinity Map
C. Proposed Plans, submitted February 12, 2018
D. AECOM Memorandum re: Application for San Mateo County Planning and Grading Permits
E. Letters of Owners' Concurrence:
    1. Letter from Michael Fischbein and Andrea Roberts (Owners of 43 Sneckner Court)
    2. Letter from Camas Steinmetz on behalf of Margo Sensenbrenner (Owner of 15 Happy Hollow Lane), and Johanna Putnoi (owner of 40 Sneckner Court)
F. AECOM Memorandum to the San Francisco RWQCB, dated October 2, 2017
G. The California Department of Fish and Wildlife (CDFW), Notice of Exemption, filed on March 21, 2017
H. No-Rise Certification Letter, dated February 16, 2017 (Note: Excludes attachments. Please contact Project Planner for attachments.)
I. San Mateo County Tree Removal Plan, dated November 27, 2017

CML:jlh – CMLCC0135_WJU.DOCX

Attachment A

County of San Mateo
Planning and Building Department

RECOMMENDED FINDINGS AND CONDITIONS OF APPROVAL

Permit or Project File Number: PLN 2017-00530 Hearing Date: April 5, 2018

Prepared By: Camille Leung, Senior Planner For Adoption By: Zoning Hearing Officer

RECOMMENDED FINDINGS

Regarding the Environmental Review, Find:

1. The project is categorically exempt under the provisions of Section 15333 of the California Environmental Quality Act, relating to small projects not to exceed five acres in size to assure the maintenance, restoration, enhancement, or protection of habitat for fish, plants, or wildlife. The lead agency, the California Department of Fish and Wildlife (CDFW), has filed a Notice of Exemption (NOE) with the State Office of Planning and Research (OPR) on March 21, 2017. The County of San Mateo is a responsible agency for this project.

Regarding the Grading Permit, Find:

2. That the granting of the permit will not have a significant adverse effect on the environment. This project has been reviewed and approved by the Department of Public Works (Flood Control District) and the Building Inspection Section's Geotechnical Section. The proposed grading is necessary to remove accumulated sediment upstream and downstream of the existing dam and for the construction of channel banks and floodplain terraces, with pool-riffle channel bedform designed to mimic reference reaches located nearby. The CDFW, as lead agency, has determined that the project is categorically exempt under the provisions of Section 15333 of the California Environmental Quality Act Guidelines, relating to small projects not to exceed five acres in size to assure the maintenance, restoration, enhancement, or protection of habitat for fish, plants, or wildlife.

3. That the project conforms to the criteria of Chapter 8, Division VII, San Mateo County Ordinance Code, including the standards referenced in Section 9283. The project, as proposed and conditioned, conforms to the standards in the Grading Regulations, including erosion and sediment control, dust control, and timing of grading activity.

4. That the project is consistent with the General Plan. The project has been reviewed against the applicable policies of the San Mateo County General Plan and found to be consistent with its goals and objectives.

RECOMMENDED CONDITIONS OF APPROVAL

Current Planning Section

1. The project shall be constructed in compliance with the reports and plans approved by the Zoning Hearing Officer on April 5, 2018. Any changes or revisions to the approved plans shall be submitted to the Community Development Director for review. Minor adjustments to the project may be approved by the Community Development Director if they are consistent with the intent of and are in substantial conformance with this approval. Alternatively, the Community Development Director may refer consideration of major revisions to the Zoning Hearing Officer, with applicable fees to be paid.

   The approved proposal includes the following key elements:

   a. In-channel work will be restricted to occur only between June 1 and October 31.

   b. Removal of one significant tree, a 36" d.b.h White Alder tree, and vegetation along an existing unpaved maintenance road, access using Piers Lane (off of Alpine Road) may occur prior to June 1, 2018, but not before the final approval of the subject grading permit.

   c. Planting activities, including limited soil preparation outside the active channel, may occur beyond October 31 if necessary to better ensure successful plant establishment during the onset of winter precipitation.

   d. Implementation of Measures to Reduce Potential Impacts in Section 4 of the Memorandum from AECOM to the RWQCB, dated October 2, 2017 (Attachment F of the staff report).

   e. Revegetation Monitoring and Reporting, as mandated by NOAA, USFWS, and CDFW, over a 5-year post-construction timeframe.

2. The Grading Permit shall be valid for one (1) year from the date of approval, in which time a building permit shall be issued and a completed inspection (to the satisfaction of the Building Inspector) shall have occurred within 180 days of its issuance. This approval may be extended by a 1-year increment with submittal of an application for permit extension and payment of applicable extension fees sixty (60) days prior to the expiration date.

3. No grading activities shall commence until the applicant has been issued a grading permit (issued as the “hard card” with all necessary information filled out and signatures obtained) by the Current Planning Section.

4. Grading may be extended past October 31, 2018 with approval from State and Federal permitting agencies and the Community Development Director. Unless approved, in writing, by the Community Development Director, no grading shall be allowed during the winter season (November 1 to April 30) to avoid potential soil erosion. The applicant shall submit a letter to the Current Planning Section, a minimum of two (2) weeks prior to commencement of grading, stating the date when grading will begin.

5. Due to work within a waterway and the need for a Grading Permit, the project meets the County’s definition of a Stormwater Regulated Site (SWRS Site). The County will perform monthly erosion and sediment control inspections during the rainy season, as required by the Regional Water Quality Control Board.

6. Prior to any land disturbance and throughout the grading operation, the applicant shall implement the erosion control plan, as prepared and signed by the engineer of record and approved by the Zoning Hearing Officer.

7. Prior to issuance of the grading permit “hard card,” the applicant shall submit a schedule of all grading operations to the Current Planning Section, subject to review and approval by the Current Planning Section. The submitted schedule shall include a schedule for winterizing the site. If the schedule of grading operations calls for the grading to be completed in one grading season, then the winterizing plan shall be considered a contingent plan to be implemented if work falls behind schedule. All submitted schedules shall represent the work in detail and shall project the grading operations through to completion.

8. Prior to initiation of any demolition or grading operations, the applicant shall obtain a Building Permit for this project.

9. Prior to building permit issuance, please submit a copy of the Stormwater Pollution and Prevention Plan (SWPPP).

10. It shall be the responsibility of the engineer of record to regularly inspect the erosion control measures for the duration of all grading remediation activities, especially after major storm events, and determine that they are functioning as designed and that proper maintenance is being performed. Deficiencies shall be immediately corrected, as determined by and implemented under the observation of the engineer of record.

11. For the final approval of the grading permit, the applicant shall ensure the performance of the following activities within thirty (30) days of the completion of grading at the project site: (a) The engineer shall submit written certification, that all grading has been completed in conformance with the approved plans,

conditions of approval/mitigation measures, and the Grading Regulations, to the Department of Public Works and the Planning and Building Department's Geotechnical Engineer, and (b) The geotechnical consultant shall observe and approve all applicable work during construction and sign Section II of the Geotechnical Consultant Approval form, for submittal to the Planning and Building Department's Geotechnical Engineer and the Current Planning Section.

Revisions to the approved grading plan shall be prepared and signed by the project engineer and shall be submitted to the Department of Public Works and the Current Planning Section for concurrence, prior to commencing any work pursuant to the proposed revision.

12. The provision of the San Mateo County Grading Regulations shall govern all grading on and adjacent to the project site. All equipment used in grading operations shall meet spark arrester and firefighting tool requirements, as specified in the California Public Resources Code.

13. An Erosion Control and/or Tree Protection Pre-Site Inspection is required prior to the issuance of a building permit for grading, construction, and demolition purposes, as the project requires tree protection of significant tree(s) and a grading permit, to ensure that the approved erosion control and tree protection measures are installed adequately prior to the start of ground disturbing activities. Once all review agencies have approved your Building Permit, you will be notified that an approved job copy of the Erosion Control and/or Tree Protection Plan is ready for pick-up at the Planning counter of the Planning and Building Department. Once the Erosion Control and/or Tree Protection measures have been installed per the approved plans, please contact Jeremiah Pons, Building/Erosion Control Inspector, at 650/599-1592 or jpons@smcgov.org, to schedule a pre-site inspection. A $144 inspection fee will be assessed to the Building Permit for the inspection. If the initial pre-site inspection is not approved, an additional inspection fee will be assessed for each required re-inspection until the job site passes the Pre-Site Inspection, or as determined by the Building Inspection Section.

14. A tree protection plan, for review and approval, shall be required prior to the issuance of a Building permit and shall include the following:

    a. Identify, establish, and maintain tree protection zones throughout the entire duration of the project.

    b. Isolate tree protection zones using 5-ft. tall, orange plastic fencing supported by poles pounded into the ground, located at the driplines as described in the arborist's report.

    c. Maintain tree protection zones free of equipment and materials storage; contractors shall not clean any tools, forms, or equipment within these areas.

d. If any large roots or large masses of roots need to be cut, the roots shall be inspected by a certified arborist or registered forester prior to cutting as required in the arborist's report. Any root cutting shall be undertaken by an arborist or forester and documented. Roots to be cut shall be severed cleanly with a saw or toppers. A tree protection verification letter from the certified arborist shall be submitted to the Planning Department within five (5) business days from the site inspection following root cutting.

e. Normal irrigation shall be maintained, but oaks shall not need summer irrigation, unless the arborist's report directs specific watering measures to protect trees.

f. Street tree trunks and other trees not protected by dripline fencing shall be wrapped with straw wattles, orange fence, and 2x4 boards in concentric layers to a height of eight feet.

g. Prior to Issuance of a Building Permit, the Planning and Building Department shall complete a pre-construction site inspection, as necessary, to verify that all required tree protection and erosion control measures are in place.

15. Within the monitoring timeframe, the applicant shall submit reports pertaining to Revegetation Monitoring and Reporting, as mandated by NOAA and CDFW, to the County. As proposed, the project involves a 5-year post-construction period to assess and document short-term effectiveness. Monitoring involves the qualitative assessment of instream habitat, bank stabilization, fish passage, and revegetation in the project area.

16. The applicant shall obtain the required permits from local, State, and Federal agencies (specifically, County of Santa Clara, RWQCB, USACE), prior to the issuance of a Building Permit including but not limited to, filing a Notice of Intent (NOI) with the State Water Resources Board to obtain coverage under the NPDES Permit (if applicable). Prior to the issuance of the building permit for the project, a copy of the required permits and NOI shall be submitted to the Planning Department and the Department of Public Works, prior to the issuance of the first grading permit “hard card.”

17. The applicant shall adhere to the PM10 control measures of the Bay Area Air Quality Management District (BAAQMD) including, but not limited to, the following measures during site clearing, soil deposit, and grading activities:

a. Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.

b. Limit traffic speeds on unpaved roads to 15 mph.

c. Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard.

d. All unpaved access roads, parking areas, and staging areas shall be wetted, protected, or contained using sediment control measures, so as to prevent any significant nuisance from dust, or spillage, upon adjoining water body, sensitive habitat, off-site property, or street.

e. Apply hydroseed, mulch, soil blankets, or (non-toxic) soil binders to exposed stockpiles.

f. Install wheel washers for all existing trucks, or wash off the tires of all trucks and equipment leaving the site.

18. Upon the start of excavation activities and through to the completion of the project, the applicant shall be responsible for ensuring that the following dust control guidelines are implemented:

a. All graded surfaces and material, whether filled, excavated, transported, or stockpiled, shall be wetted, protected, or contained in such a manner as to prevent any significant nuisance from dust, or spillage, upon adjoining water bodies, properties, or streets. Equipment and materials on the site shall be used in such a manner as to avoid excessive dust. A dust control plan may be required at any time during the course of the project.

b. A dust palliative shall be applied to the site when required by the County. The type and rate of application shall be recommended by the soils engineer and approved by the Department of Public Works, the Planning and Building Department's Geotechnical Section, and any appropriate State agency.

19. Noise sources associated with demolition, construction, repair, remodeling, or grading of any real property shall be limited to the hours from 7:00 a.m. to 6:00 p.m., weekdays and 9:00 a.m. to 5:00 p.m., Saturdays. Said activities are prohibited on Sundays, Thanksgiving, and Christmas (San Mateo Ordinance Code Section 4.88.360).

<u>San Mateo County Flood Control District (District) (Administered by the Department of Public Works)</u>

20. Plan sheets 27-29 refer to the County of Santa Clara General Construction Specifications and BMPs Erosion Control Details. The project shall also comply with the various construction Best Management Practices permitting and reporting requirements which could be found on the San Mateo Countywide Water Pollution Prevention Program website (www.flowstobay.org).

21. Plan sheet 7 indicates temporary facilities for creek diversion and dewatering of the site within the limits of work. Please provide information on the types of temporary facilities that would be considered as acceptable.

22. The District recommends providing a copy of the plans to the San Francisquito Creek Joint Powers Authority for review, if not done so already.

23. Any changes to the material, method of installation, location, and design of the bank and floodplain treatments due to field conditions different from those shown on the plans shall be submitted in writing to the District for review and approval.

24. The Contractor shall provide the District with one set of the as-built plans after project completion.

25. All construction debris shall be prevented from entering the San Francisquito Creek downstream of the project site. <u>This note is to be added to the plans</u>.

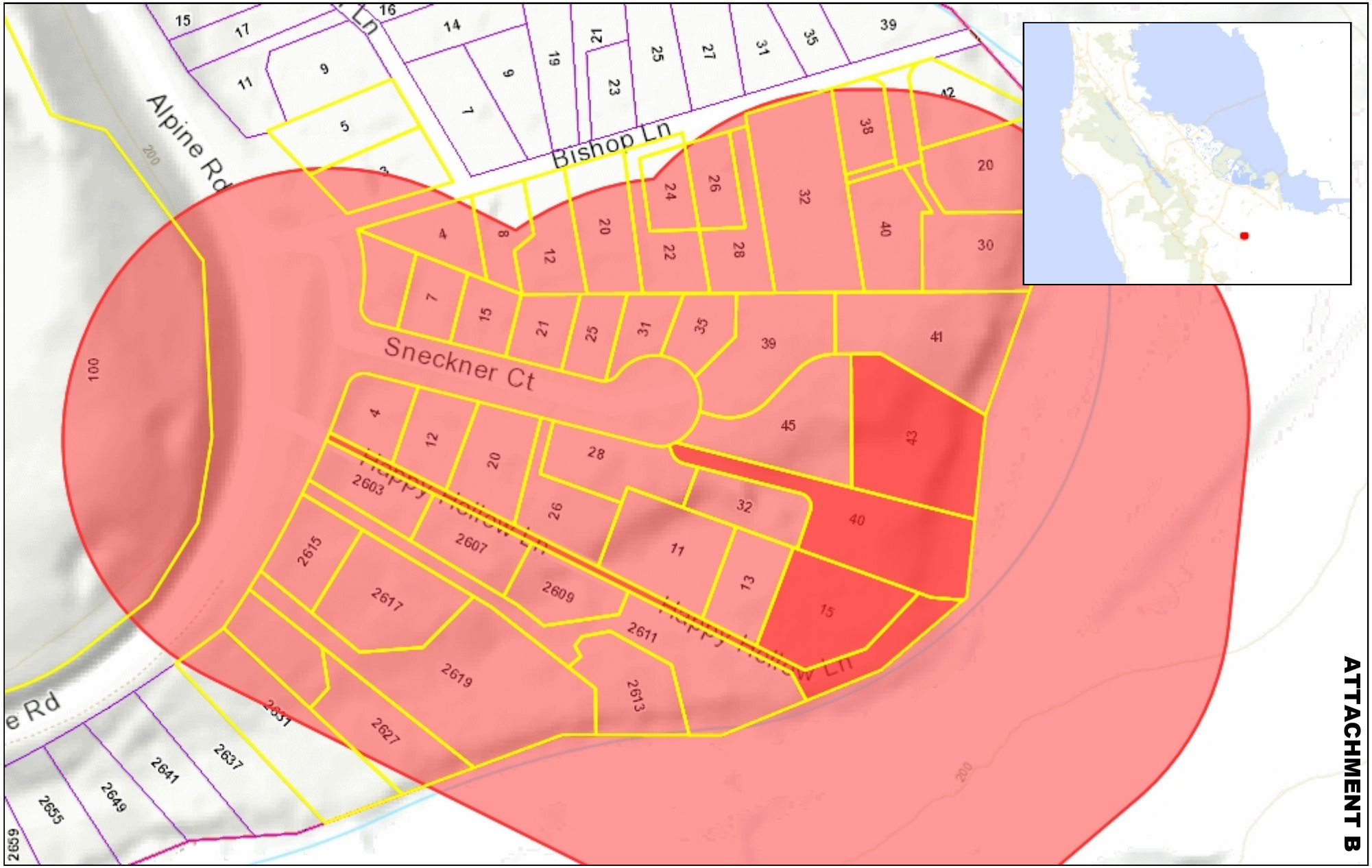
26. All storm water pollution prevention Best Management Practices (BMPs) measures shall be properly installed and maintained by the Contractor. Work within the channel or near the banks shall be in accordance with regulatory agency permit conditions or only occur during dry weather and low flow conditions.

27. The District requests a point of contact from the applicant to forward community questions or concerns.

CML:jlh – CMLCC0135_WJU.DOCX

San Mateo County

Stanford Dam Removal - PLN2017-00530



ATTACHMENT B

0.07 0 0.04 0.07 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere

1: 2,256

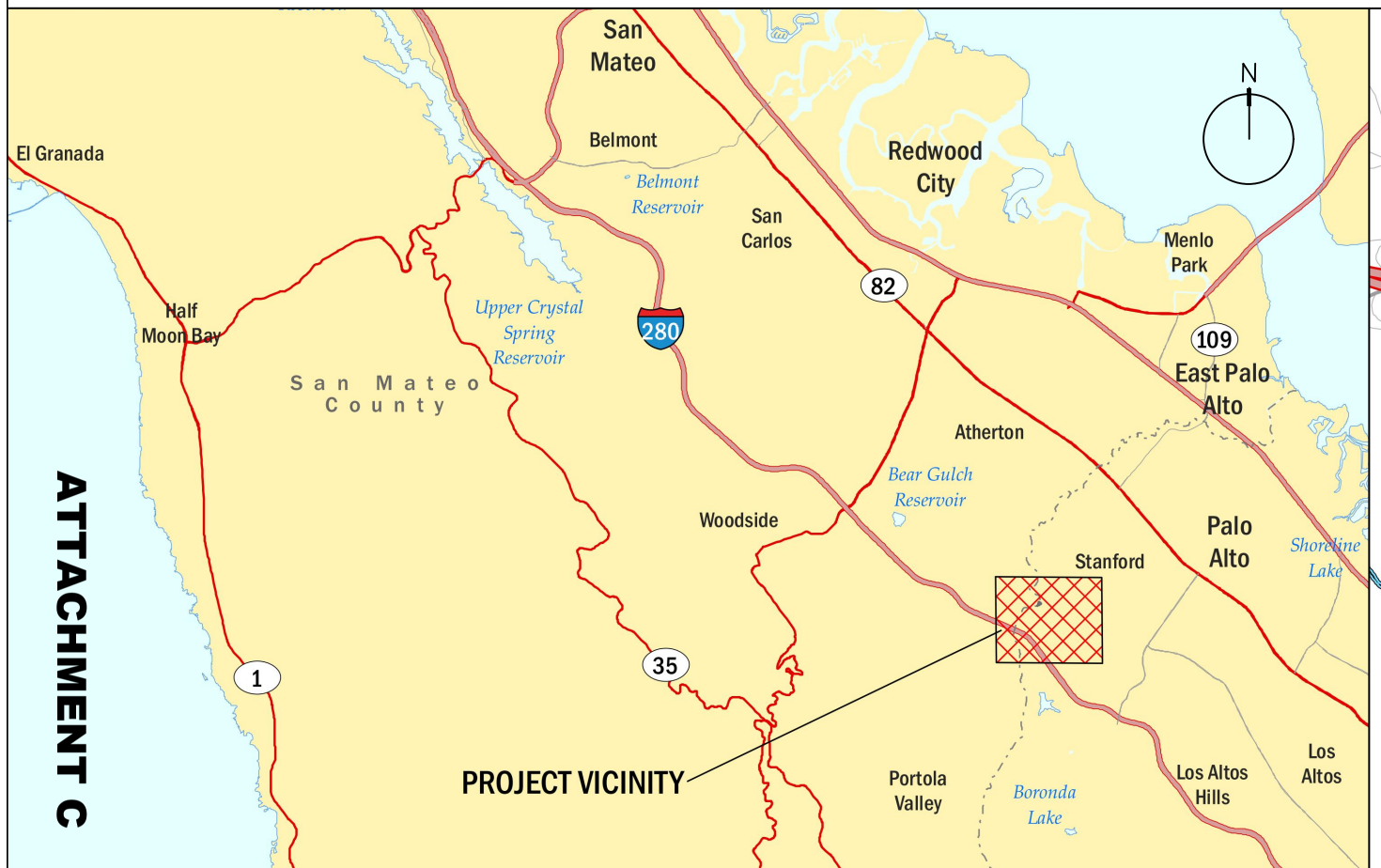
This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

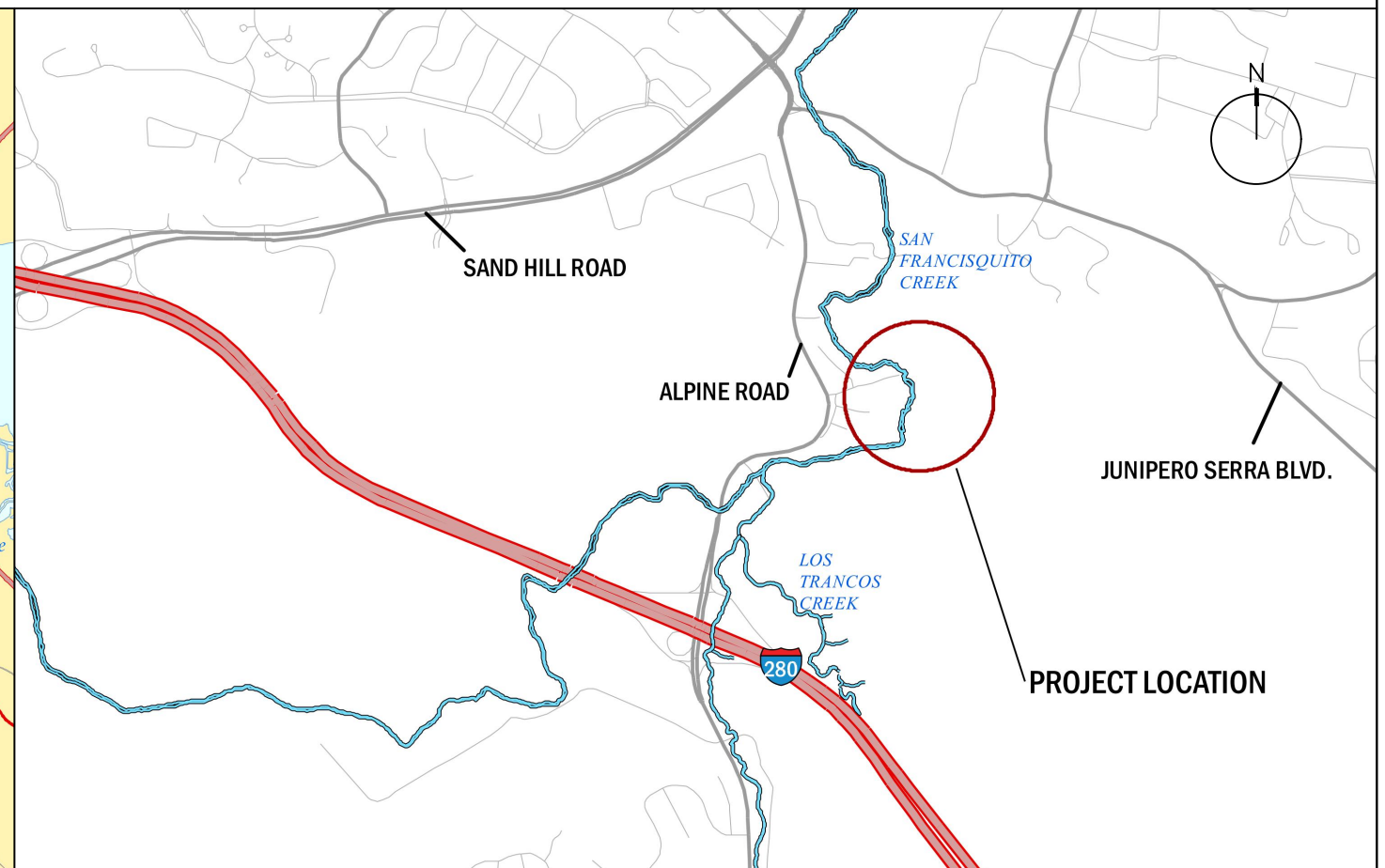
100% DESIGN DRAWINGS

STANFORD UNIVERSITY
LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT

SHEET INDEX



1 VICINITY MAP APPROXIMATE SCALE: 1" = 1.4 MI.



2 PROJECT LOCATION MAP APPROXIMATE SCALE: 1" = 0.2 MI.

ATTACHMENT C

DATE:
REVISIONS
1

AECOM

LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS
TITLE AND SHEET INDEX

REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN MCNEELY
No. 80567
Exp. 03-31-19
CIVIL
STATE OF CALIFORNIA

DRAWN BY: SMc	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018
SHEET: 1	

GENERAL NOTES

1. PROJECT VERTICAL DATUM IS AS FOLLOWS:

   HORIZONTAL COORDINATE SYSTEM: NAD83 CALIFORNIA STATE PLANE, ZONE III, US FOOT
   VERTICAL DATUM: NATIONAL AMERICAN VERTICAL DATUM OF 1988 (NAVD88), FEET

2. TOPOGRAPHY AND EXISTING FEATURES BY BKF ENGINEERS, REDWOOD CITY , CA (6504826300). THE CONTRACTOR SHALL CONFIRM TOPOGRAPHIC INFORMATION PRIOR TO THE COMMENCEMENT OF THE WORK.

3. PROPOSED TOPOGRAPHIC CONTOUR INFORMATION IS SHOWN AT 1 FOOT CONTOUR INTERVALS, UNLESS OTHERWISE STATED.

4. LOCATIONS AND ELEVATIONS OF EXISTING FEATURES WERE DETERMINED USING FIELD SURVEY DATA. ACTUAL LOCATIONS OF SURFACE FEATURES SHALL BE CONFIRMED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF THE WORK.

5. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THESE DRAWINGS AND STANDARD DRAWINGS AND SPECIFICATIONS OF THE COUNTIES OF SAN MATEO AND SANTA CLARA (AS APPLICABLE).

6. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BE KNOWLEDGEABLE ABOUT AND OBEY ALL PERMIT REQUIREMENTS WHILE PERFORMING THE WORK SHOWN ON THESE DRAWINGS.

7. THE CONTRACTOR SHALL PRACTICE SAFETY AT ALL TIMES, PROVIDE SITE SECURITY, PROVIDE AND FURNISH, ERECT, AND MAINTAIN SUCH FENCES, BARRICADES, LIGHTS AND SIGNS NECESSARY TO GIVE ADEQUATE PROTECTION TO THE PUBLIC AT ALL TIMES.

8. THE CONTRACTOR SHALL HAVE COPIES OF THE APPROVED DRAWINGS AND SPECIFICATIONS ON THE SITE AT ALL TIMES, AND SHALL BE FAMILIAR WITH ALL APPLICABLE STANDARDS AND SPECIFICATIONS.

LEGEND

- NORTH ARROW
- FINISH INDEX CONTOUR
- FINISH INTERMEDIATE CONTOUR
- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- LIMIT OF GRADING
- LIMIT OF WORK
- TRUNKS OF EXISTING TREES TO REMAIN
- TRUNKS OF EXISTING TREES TO BE REMOVED UNDER THE SUPERVISION OF THE OWNER'S REPRESENTATIVE LICENSED ARBORIST
- TRUNKS OF EXISTING TREES TO BE TRIMMED UNDER THE SUPERVISION OF THE OWNER'S REPRESENTATIVE LICENSED ARBORIST
- BOULDER
- LOG WITH ROOTWAD
- LOG
- FLOODPLAIN TERRACE PLANTINGS
- VEGETATED BOULDER REVETMENT
- BANK PLANTINGS
- EROSION CONTROL FABRIC
- NEW ACCESS ROAD WITH CLEARING, MINIMAL GRADING
- (E) ACCESS ALONG (E) ROAD. MINOR CLEARING AND GRADING TO WIDEN TO 18 FEET.
- TREE PLANTINGS
- DIRECT MATERIALS DELIVERY PATH

ABBREVIATIONS

APPROX	APPROXIMATE
BOT	BOTTOM
℄	CENTERLINE
DIA	DIAMETER
D/S	DOWNSTREAM
(E), E	EXISTING
EG	EXISTING GROUND
EL, ELEV	ELEVATION
EXIST	EXISTING
FAC	FACULTATIVE
FACU	FACULTATIVE UPLAND
FACW	FACULTATIVE WETLAND
FG	FINISH GROUND
HOR	HORIZONTAL
IN	INCH
INV	INVERT
LBS	POUNDS
MAX	MAXIMUM
MIN	MINIMUM
(N), N	NEW
NTS	NOT TO SCALE
PLS	PURE LIVE SEED
U/S	UPSTREAM
WSL	WATER SURFACE LEVEL

Underground Service Alert of Southern California
Call: TOLL FREE 1-800 227-2600
TWO WORKING DAYS BEFORE YOU DIG

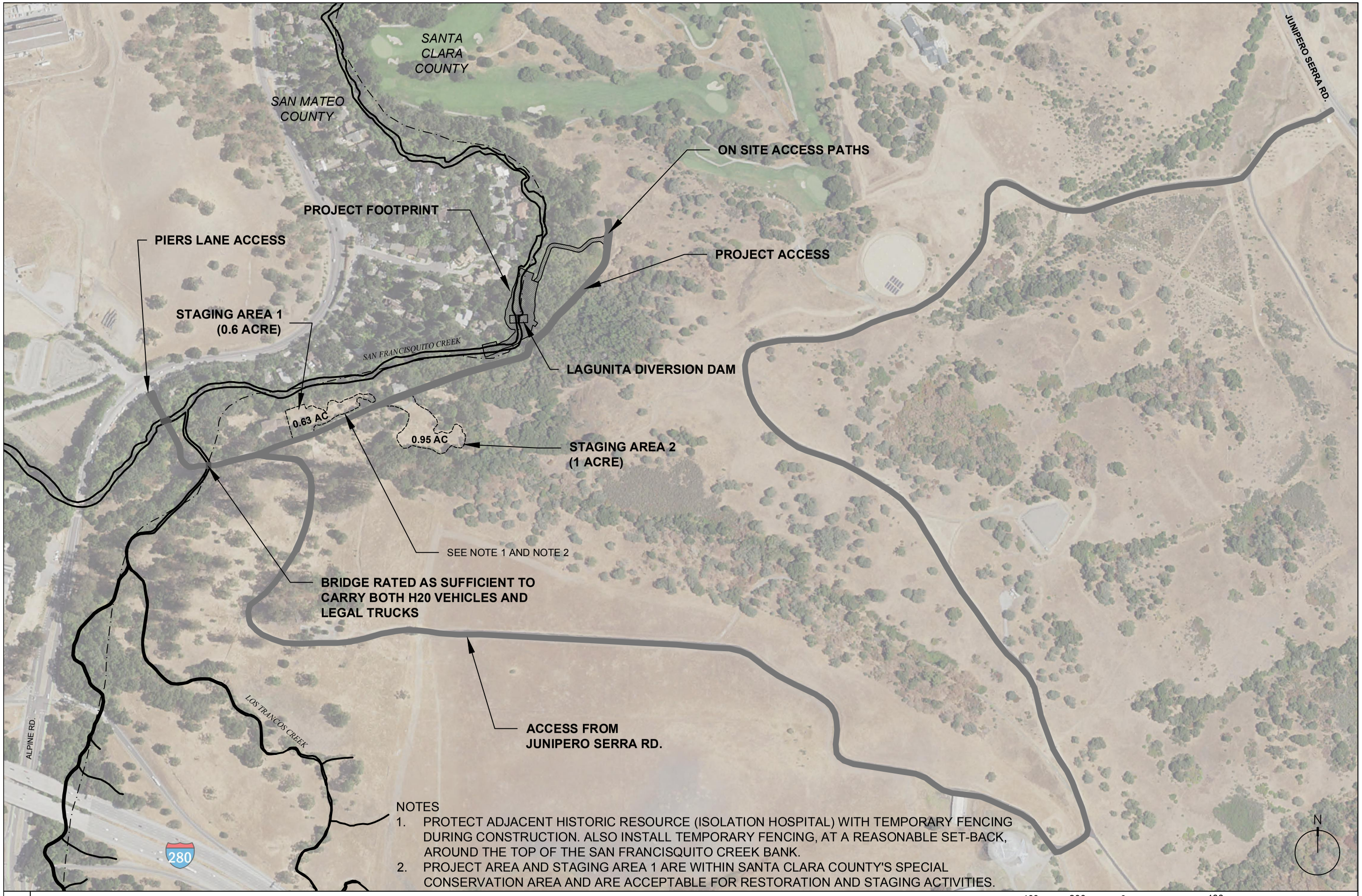
DATE:
REVISIONS
1

AECOM

LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS
GENERAL NOTES

REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN McKEELY
No. 80567
Exp. 03-31-19
CIVIL
STATE OF CALIFORNIA

DRAWN BY: SMc	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018
SHEET: 2	



NOTES

1. PROTECT ADJACENT HISTORIC RESOURCE (ISOLATION HOSPITAL) WITH TEMPORARY FENCING DURING CONSTRUCTION. ALSO INSTALL TEMPORARY FENCING, AT A REASONABLE SET-BACK, AROUND THE TOP OF THE SAN FRANCISQUITO CREEK BANK.
2. PROJECT AREA AND STAGING AREA 1 ARE WITHIN SANTA CLARA COUNTY'S SPECIAL CONSERVATION AREA AND ARE ACCEPTABLE FOR RESTORATION AND STAGING ACTIVITIES.

1 PLAN VIEW: PROJECT SITE ACCESS

400 200 0 400

SCALE: 1" = 400'

REVISIONS	DATE:
1	

AECOM

LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

PROJECT ACCESS PLAN

REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN MCKEELY
No. 80567
Exp. 03-31-19
CIVIL
STATE OF CALIFORNIA

DRAWN BY: EP	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018
SHEET: 3	

TABLE 1. TREE ACTION PLAN (SEE NOTE 3)

ID	SPECIES & TOTAL TREE DIA.	ACTION	ID	SPECIES & TOTAL TREE DIA.	ACTION
1	UNKNOWN	REMOVE	3422	WHITE ALDER (20"-30")	REMOVE
2	UNKNOWN	REMOVE	3423	CALIFORNIA SYCAMORE (20"-30")	REMOVE
3	CALIFORNIA BAY LAUREL (5"-10")	REMOVE	3424	WHITE ALDER (10"-20")	REMOVE
4	CALIFORNIA BAY LAUREL (5"-10")	REMOVE	3428	WHITE ALDER (20"-30")	REMOVE
5	WHITE ALDER (20"-30")	REMOVE	3429	WHITE ALDER (5"-10")	REMOVE
6	UNKNOWN	REMOVE	3430	CALIFORNIA SYCAMORE (20"-30")	REMOVE
7	UNKNOWN	REMOVE	3431	WHITE ALDER (5"-10")	REMOVE
8	WILLOW (5"-10")	REMOVE	3432	BOX ELDER (5"-10")	REMOVE
9	WILLOW (5"-10")	REMOVE	3433	WHITE ALDER (30"-40")	REMOVE
10	WILLOW (5"-10")	REMOVE	3434	COAST LIVE OAK (10"-20")	REMOVE
11	COTTONWOOD (>12")	TRIM	3435	CALIFORNIA BAY LAUREL (5"-10")	REMOVE
12	COTTONWOOD (>12")	TRIM	3436	COAST LIVE OAK (10"-20")	REMOVE
3408	CALIFORNIA BUCKEYE (10"-20")	TRIM	3437	CALIFORNIA BAY LAUREL (10"-20")	REMOVE
3409	CALIFORNIA BUCKEYE (5"-10")	REMOVE	3438	CALIFORNIA BAY LAUREL (10"-20")	REMOVE
3410	CALIFORNIA BUCKEYE (10"-20")	TRIM	3439	CALIFORNIA BUCKEYE (10"-20")	REMOVE
3411	CALIFORNIA BUCKEYE (10"-20")	REMOVE	3440	CALIFORNIA BAY LAUREL (5"-10")	TRIM
3412	CALIFORNIA BUCKEYE (10"-20")	REMOVE	3441	CALIFORNIA BAY LAUREL (5"-10")	TRIM
3413	CALIFORNIA BUCKEYE (5"-10")	REMOVE	3442	CALIFORNIA BAY LAUREL (5"-10")	TRIM
3414	CALIFORNIA BUCKEYE (5"-10")	TRIM	3443	CALIFORNIA BAY LAUREL (10"-20")	REMOVE
3416	CALIFORNIA BUCKEYE (10"-20")	REMOVE	3444	CALIFORNIA BUCKEYE (5"-10")	TRIM
3417	CALIFORNIA BAY LAUREL (5"-10")	REMOVE	3445	CALIFORNIA BUCKEYE (20"-30")	REMOVE
3418	CALIFORNIA BUCKEYE (10"-20")	REMOVE	3446	CALIFORNIA BAY LAUREL (10"-20")	REMOVE
3419	CALIFORNIA BAY LAUREL (10"-20")	REMOVE	3447	CALIFORNIA BAY LAUREL (5"-10")	TRIM
3420	CALIFORNIA BAY LAUREL (20"-30")	REMOVE	3448	CALIFORNIA BUCKEYE (5"-10")	TRIM
3421	WHITE ALDER (5"-10")	REMOVE			

CONTACTOR SHALL NOT GRADE OR DIG IN SENSITIVE CULTURAL RESOURCES AREA

(E) DUMP TRUCK HAUL ROAD ON (E) GRADE (WIDTH VARIES). INSTALL GEOSYNTHETIC FABRIC PER THE MANUFACTURERS SPECIFICATIONS WHERE POSSIBLE AND MAINTAIN DURING THE DURATION OF CONSTRUCTION. GEOSYNTHETIC FABRIC SHALL BE US FABRICS, INC. US 6200 OR EQUIVALENT AS APPROVED BY THE OWNERS REPRESENTATIVE.

OVERHEAD EL. (PG&E)

12" CI LW

14" PVC LW

2" PVC DW

ACCESS PATH ALONG (E) DIRT ROAD EXTENSION OF PIERS LN. VARIABLE WIDTH

OPTIONAL DIRECT MATERIALS DELIVERY VIA 20 FT WIDE SWATH OF SLOPE AT (E)GRADE. PROTECT (E) GRADE. SEE 02000 1.04.A.1 OF TECHNICAL SPECIFICATIONS AND NOTE 2.

APPROX. 600' TO PAVED PORTION OF PIERS LN.

MA IMUM 18 FT. WIDE ACCESS PATH ON (E) GRADE MA IMI ES AVOIDANCE OF TREES. TREES NEAR PATH TO BE LIMBED AS NEEDED UNDER THE SUPERVISION OF THE OWNER'S REPRESENTATIVE LICENSED ARBORIST. INSTALL GEOSYNTHETIC FABRIC PER THE MANUFACTURERS SPECIFICATIONS AND MAINTAIN DURING THE DURATION OF CONSTRUCTION. GEOSYNTHETIC FABRIC SHALL BE US FABRICS, INC. US 6200 OR EQUIVALENT AS APPROVED BY THE OWNER'S REPRESENTATIVE.

ACCESS PATH ALONG (E) FLUME CHANNEL LIMB TREES AS NEEDED TO PROVIDE 18 FT WIDTH TRACKED EQUIPMENT TO TRAVERSE (E) GRADE

LIMITS OF WORK FOR DAM REMOVAL AND CREEK RESTORATION

LEGEND

- TRUNKS OF E ISTING TREES TO REMAIN
- TRUNKS OF E ISTING TREES TO BE TRIMMED BY CONTRACTOR UNDER THE SUPERVISION OF THE OWNER'S REPRESENTATIVE LICENSED ARBORIST
- TRUNKS OF E ISTING TREES TO BE REMOVED BY CONTRACTOR UNDER THE SUPERVISION OF THE OWNER'S REPRESENTATIVE LICENSED ARBORIST
- NEW ACCESS ROAD WITH CLEARING, MINIMAL GRADING
- (E) ACCESS ALONG (E) ROAD. MINOR CLEARING AND GRADING TO WIDEN TO 18 FEET.
- DIRECT MATERIALS DELIVERY PATH
- SENSITIVE CULTURAL RESOURCE AREA

NOTES
1. ALL ACCESS PATHS AND STAGING AREAS SHALL BE DISTURBED BY WHEELED VEHICLE AND OR TRACKED EQUIPMENT TRAFFIC. HOWEVER, GRADING SHALL BE CONFINED TO THE APPRO IMATE LIMITS SHOWN ON SHEET 7, GRADING PLAN.
2. DETAIL OF MATERIAL DELIVERY PATH SHALL BE PROVIDED BY CONTRACTOR IF THIS OPTION IS USED. INSTALL TEMPORARY FENCING OR CONTAINMENT BERMS ON BOTH SIDES OF THE MATERIAL DELIVERY PATH TO CONTAIN THE MATERIAL WITHIN THE PATH FOOTPRINT. INSTALL SURFACE PROTECTION, SUCH AS PLYWOOD OR SHEETING, TO AVOID COMPACTION OF SOILS NEAR THE ARCHAEOLOGICAL SITE. PROPOSED FENCING BERMS AND SURFACE PROTECTION MUST BE APPROVED BY CLIENT PRIOR TO INSTALLATION, AND SHALL BE INSTALLED ONLY WHERE THE STEEP GRADE ALLOWS FOR SAFE INSTALLATION.
3. AT THE DIRECTION OF THE OWNER'S REPRESENTATIVE LICENSED ARBORIST, CONTRACTOR SHALL TRIM TREES AS OPPOSED TO REMOVING THEM WHERE POSSIBLE.

1 PLAN VIEW: SITE ACCESS AND STAGING

60 30 0 60 SCALE: 1" = 60'

DATE:

REVISIONS

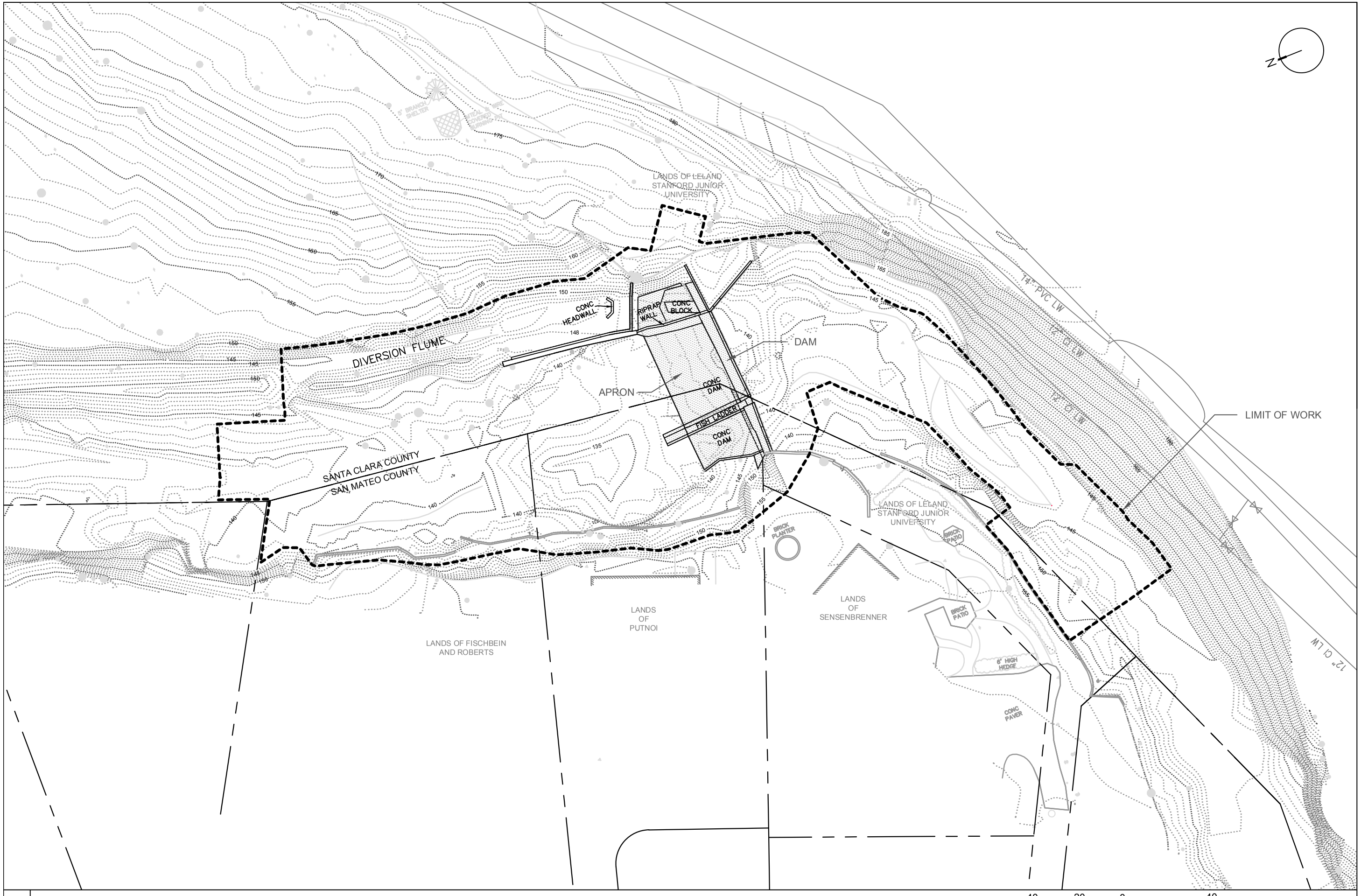
AECOM

LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

SITE ACCESS PLAN

REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN MCNEELY
No. 80567
Exp. 03-31-19
CIVIL
STATE OF CALIFORNIA

DRAWN BY: SM	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018
SHEET: 4	



1 PLAN VIEW: EXISTING TOPOGRAPHY

REVISIONS	DATE:
1	

AECOM

LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

EXISTING SITE CONDITIONS

REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN MCNEELY
No. 80567
Exp. 03-31-19
CIVIL
STATE OF CALIFORNIA

DRAWN BY: SMc	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

SHEET: 5

CONSULT OWNER'S REPRESENTATIVE LICENSED ARBORIST REGARDING POSSIBLE SHORING, TRIMMING, OR REMOVAL OF 60 IN. BAY AND 24 IN BUCKEYE

REMOVE CONCRETE HEADWALL AND DIVERSION PIPE

REMOVE CONCRETE WALLS

REMOVE CONCRETE WALLS

REMOVE CONCRETE DAM AND FISH LADDER SEE NOTE 1

CONCRETE RETAINING WALLS TO REMAIN

PROTECT TREES TO REMAIN IN PLACE TYP.

PROTECT TREES TO REMAIN IN PLACE TYP.

CONCRETE RETAINING WALLS TO REMAIN

REMOVE E LOG AND REUSE ONSITE

LEAVE THIS SECTION OF DAM IN PLACE UNLESS DIRECTED BY OWNER'S REPRESENTATIVE

LIMITS OF WORK

TRIM LARGE BRANCHES OF COTTONWOOD TREES HANGING OVER LEANING TOWARDS HOUSE. COORDINATE WITH OWNER REGARDING TIMING AND SAFETY

REMOVE ALL OTHER VEGETATION WITHIN THIS AREA

REMOVE ALGERIAN IVY AND FRENCH BROOM FROM THE ENTIRE PROJECT AREA AND ADJACENT AREAS WITHIN LIMITS OF WORK REFER TO SPECIFICATIONS SECTIONS 02231 AND 02900

LEGEND

TRUNKS OF EXISTING TREES TO REMAIN

TRUNKS OF EXISTING TREES TO BE TRIMMED BY THE CONTRACTOR UNDER THE SUPERVISION OF THE OWNER'S REPRESENTATIVE LICENSED ARBORIST

TRUNKS OF EXISTING TREES TO BE REMOVED BY THE CONTRACTOR UNDER THE SUPERVISION OF THE OWNER'S REPRESENTATIVE LICENSED ARBORIST

FEATURES TO BE REMOVED

NOTES

1. REMOVE ALL CONCRETE FLUSH WITH BEDROCK TO THE DEEPEST EXTENT OF CONCRETE OR TO 10 FEET BELOW FINISHED GRADE WHICHEVER IS SHALLOWER. REFER TO SHEET 8 FOR DETAIL

1 PLAN VIEW: DEMOLITION

40 20 0 40

SCALE: 1" = 40'

N

REVISIONS	DATE:
1	

AECOM

LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

DEMOLITION PLAN

REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN MONELLY
No. 80567
Exp. 03-31-19
CIVIL
STATE OF CALIFORNIA

DRAWN BY: SMc	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

SHEET: 6

MATERIAL VOLUME (CY)	
CONCRETE DEMOLITION DEBRIS	790
ONSITE EARTHWORK CUT	2,850
ONSITE EARTHWORK FILL	5,600

NOTE: VOLUMES APPROXIMATE. CONTRACTOR TO VERIFY.

GRADE BREAKS, FINISHED GRADE			
STATION	NORTHING	EASTING	ELEVATION
0+00	1978168.4046	6071686.8194	139.5
0+25.0	1978145.7237	6071676.3328	140.5
0+52.0	1978119.5900	6071669.7785	138.5
0+60.4	1978111.2324	6071668.9548	138.5
0+87.4	1978084.3175	6071670.2824	140.5
1+42.2	1978032.0253	6071686.4104	142.7
2+04.8	1977970.2740	6071690.5855	139.2
2+36.1	1977940.6835	6071680.6565	139.2
3+30.1	1977879.9317	6071612.0789	141.6
3+85.1	1977861.9498	6071560.1032	143.7
4+00	1977857.0772	6071546.0191	145.0

TABLE NOTES:
1. HORIZONTAL COORDINATE SYSTEM: NAD83 CA STATE PLANE, ZONE III, US FOOT
2. VERTICAL DATUM: NAVD88, FEET
3. BENCHMARK: BASED ON BKF'S HAPPY HOLLOW DAM TOPOGRAPHIC SURVEY, 10/6/2014. (CONTROL SHOWN ON AMENDED RECORD OF SURVEY, RECORDED FEBRUARY 5, 2004 IN BOOK 767 OF MAPS AT PAGE 51, SANTA CLARA COUNTY RECORDS).

CONSTRUCT VEGETATED ROOTWAD LOG CRIBWALL ALONG RIGHT BANK FROM STA 1+70 TO 2+55. CRIBWALL MAY BE FIELD FIT TO EXTEND TO 2+75 DEPENDING ON SUBSURFACE CONDITION. SEE SHEETS 16-17 FOR DETAIL

UPSTREAM POOL 187.9' LENGTH 4' MIN. DEPTH

CONSTRUCT NEW RIFFLE AND BOULDER GRADE CONTROLS SEE SHEET 13

NEW FLOODPLAIN TERRACE

APPROX. EXTENT OF GRADING

LIMITS OF WORK

DOWNSTREAM POOL 62.4' LENGTH 2' MIN. DEPTH

FORMER DAM AND FISH LADDER

NEW FLOODPLAIN TERRACE TO HAVE 2% GRADE TOWARDS CREEK

TIE IN TO EXISTING CHANNEL DOWNSTREAM OF LARGE TREE STUMP

INSTALL TEMPORARY FACILITIES FOR CREEK DIVERSION AND DETWATERING OF THE SITE WITHIN THE LIMITS OF WORK. MINIMIZE DISTURBANCE TO THE EXISTING VEGETATION AND BED AND BANKS OF THE CREEK.

INSTALL BOULDER GRADE CONTROL AND REBUILD UPSTREAM END OF EXISTING RIFFLE (SEE SHEET 13). TIE GRADE CONTROL STRUCTURE INTO EXISTING CONCRETE WALL AT LEFT BANK.

EXISTING GRADE TYP.

FINISHED GRADE TYP.

INSTALL ROOTWAD LOGS (SEE SHEET 18)

APPROX. EXTENT OF GRADING

LIMITS OF WORK

INSTALL BOULDER GRADE CONTROL AND REBUILD DOWNSTREAM END OF EXISTING RIFFLE (SEE SHEET 13). TIE GRADE CONTROL STRUCTURE INTO EXISTING CONCRETE WALL AT LEFT BANK AND BEDROCK SLOPE AT RIGHT BANK.

INSTALL TEMPORARY FACILITIES FOR CREEK DIVERSION AND DETWATERING OF THE SITE WITHIN THE LIMITS OF WORK. MINIMIZE DISTURBANCE TO THE EXISTING VEGETATION AND BED AND BANKS OF THE CREEK.

LEGEND

TRUNKS OF EXISTING TREES TO BE REMOVED BY THE CONTRACTOR UNDER THE SUPERVISION OF THE OWNER'S REPRESENTATIVE LICENSED ARBORIST

FINISHED GRADE

EXISTING GRADE

1 PLAN VIEW: GRADING PLAN

40 20 0 40

SCALE: 1" = 40'

DATE:

REVISIONS

AECOM

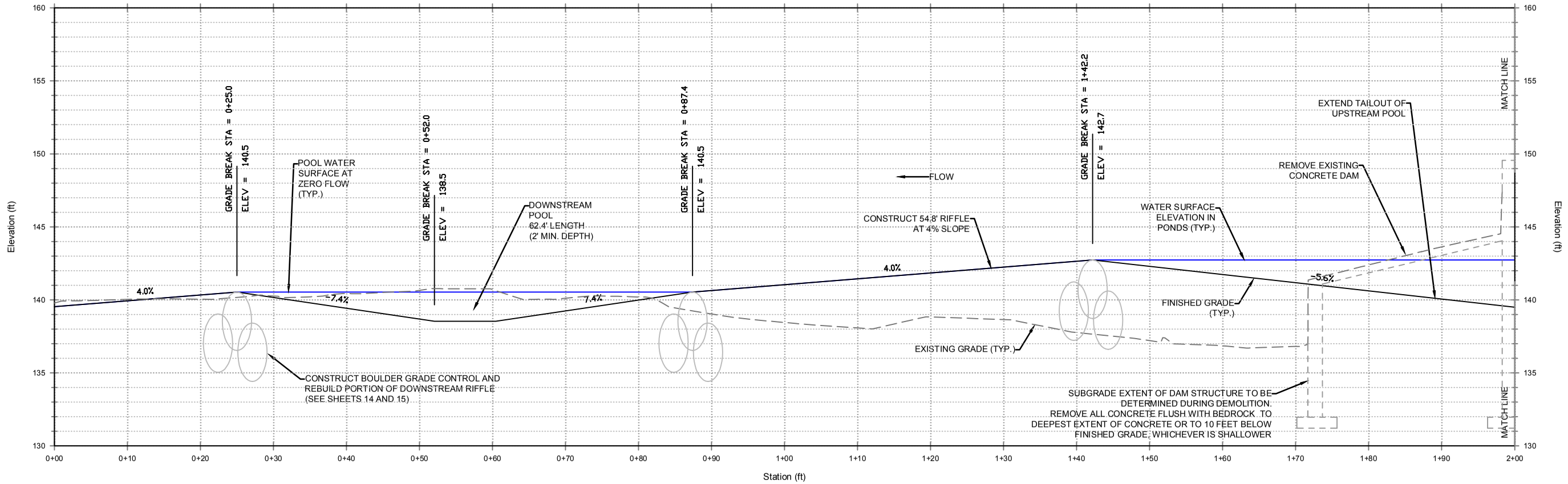
LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

GRADING PLAN

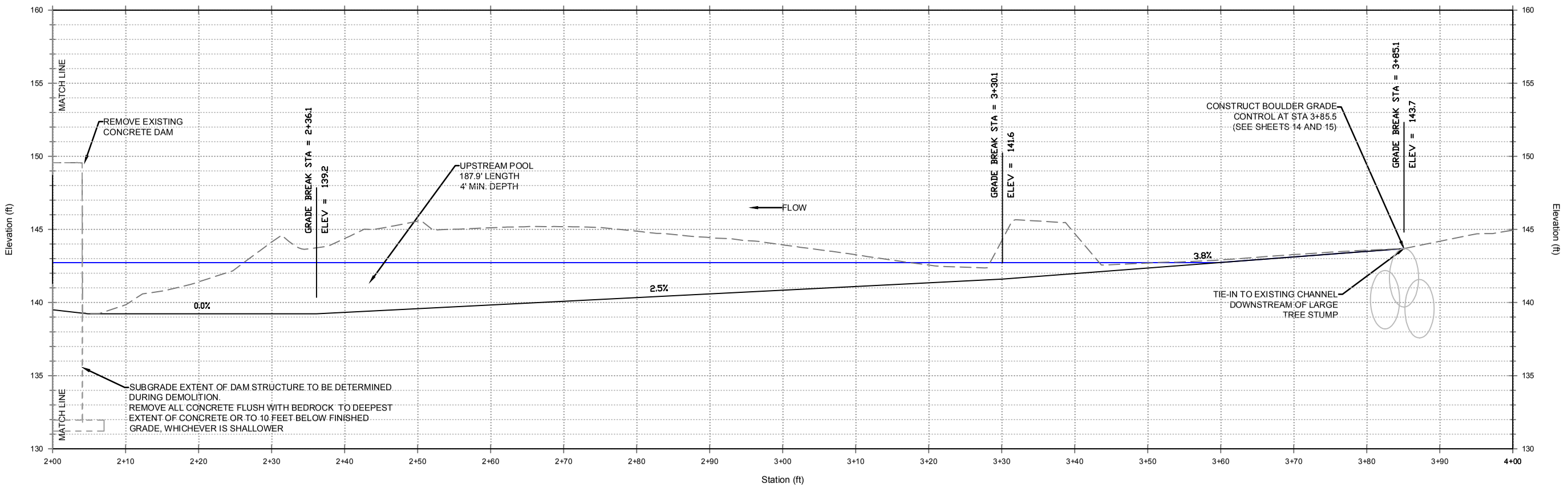
REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN MONSELY
No. 80567
Exp. 03-31-19
CIVIL
STATE OF CALIFORNIA

DRAWN BY: SMc	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

SHEET: 7



1 PROFILE VIEW: DESIGN CENTERLINE STA 0+00 TO 2+00



2 PROFILE VIEW: DESIGN CENTERLINE STA 2+00 TO 4+00

REVISIONS | DATE:

AECOM

LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

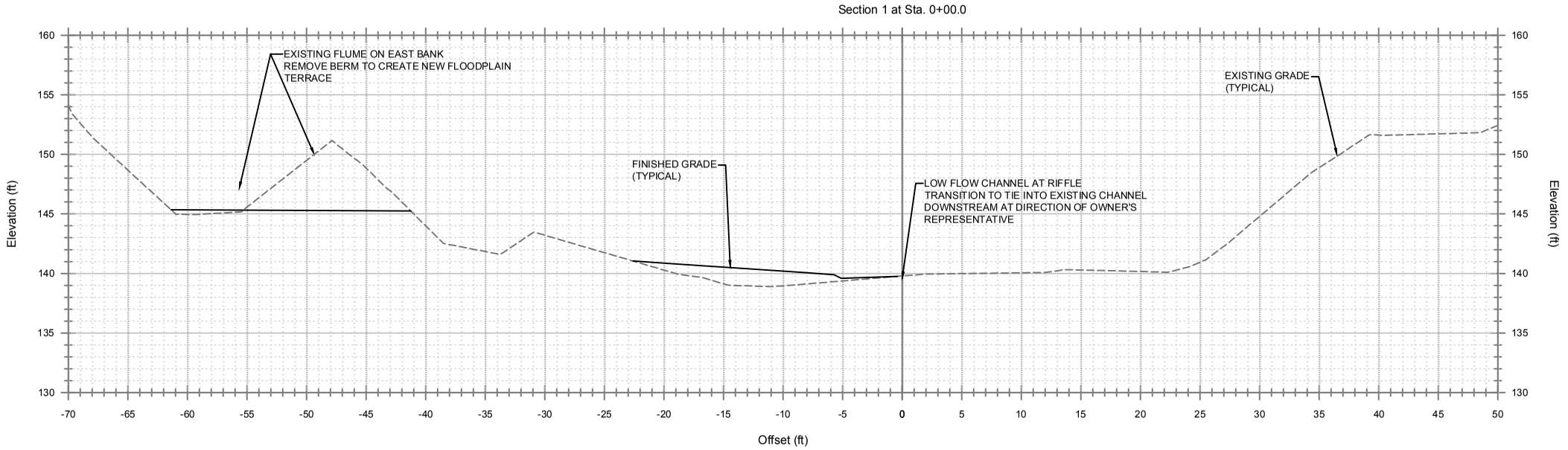
LONGITUDINAL PROFILE

REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN McNEELY
No. 80567
Exp. 03-31-19
CIVIL
STATE OF CALIFORNIA

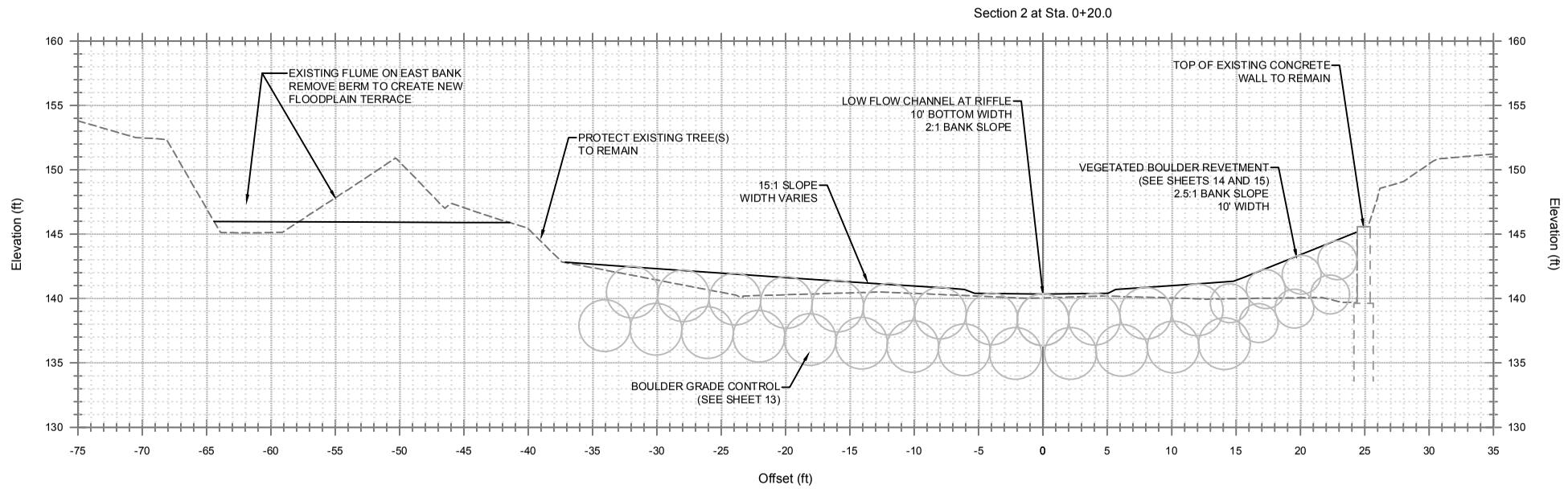
DRAWN BY: SMc	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

SHEET: 8

NOTE: ALL CROSS SECTION VIEWS FACING IN UPSTREAM DIRECTION



1 | CROSS SECTION VIEW: STA 0+00



2 | CROSS SECTION VIEW: STA 0+20

DATE:

REVISIONS

1

AECOM

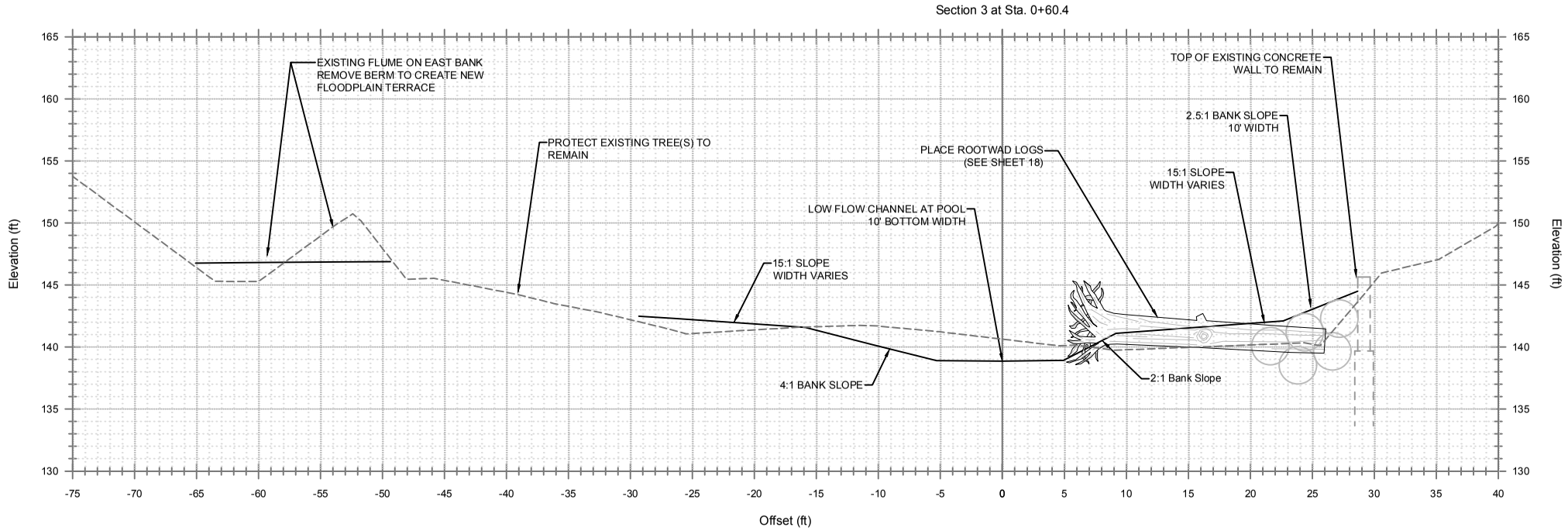
LAGUNITA DIVERSION DAM REMOVAL
AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

CROSS SECTIONS

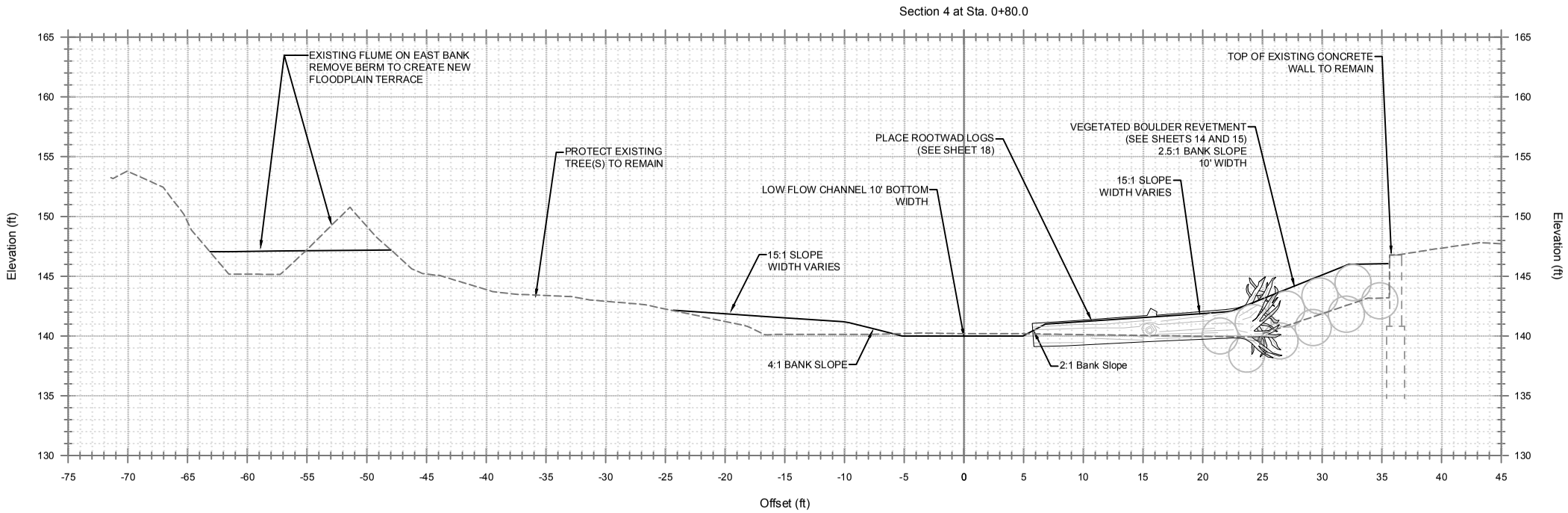
REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN McNEELY
No. 80567
Exp. 03-31-19
CIVIL
STATE OF CALIFORNIA

DRAWN BY: SMc	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

SHEET: 9



3 | CROSS SECTION VIEW: STA 0+65



4 | CROSS SECTION VIEW: STA 0+80

REVISIONS	DATE:
1	

AECOM

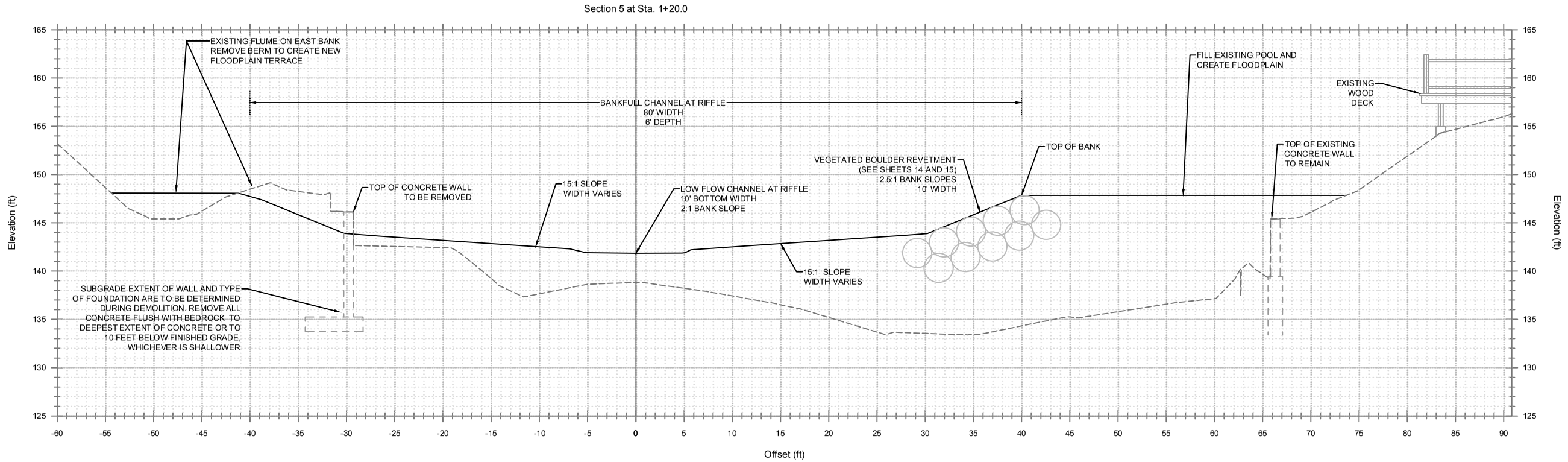
LAGUNITA DIVERSION DAM REMOVAL
AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

CROSS SECTIONS

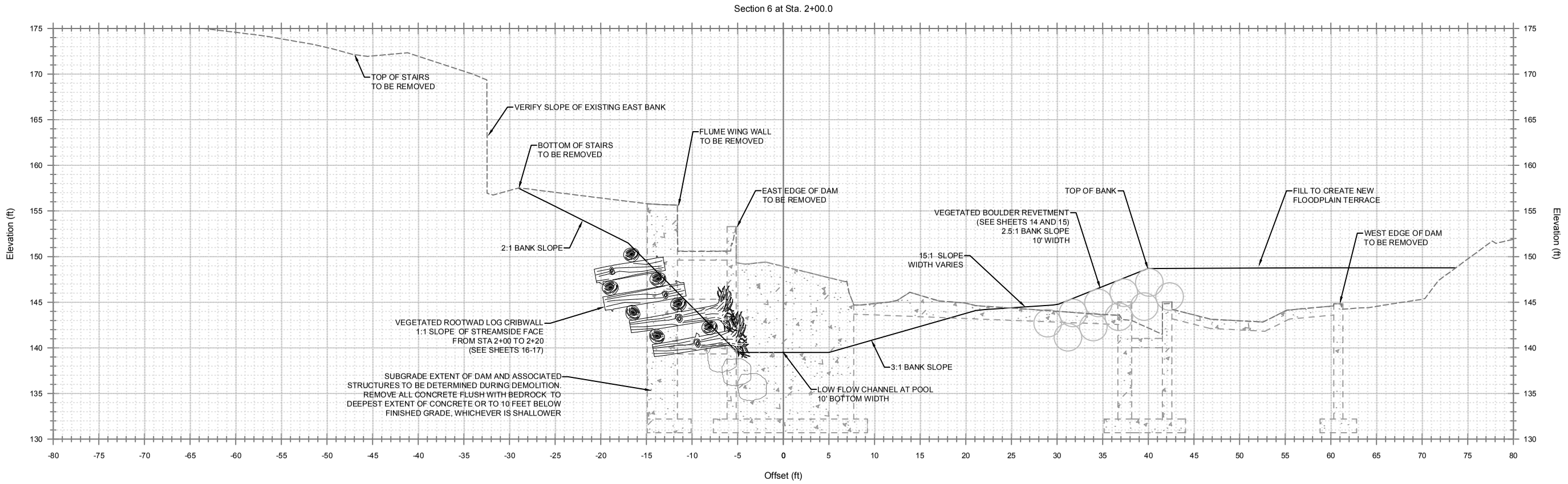
REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN McNEELY
No. 80567
Exp. 03-31-19
CIVIL
STATE OF CALIFORNIA

DRAWN BY: SMc	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

SHEET: 10



5 CROSS SECTION VIEW: STA 1+20



6 CROSS SECTION VIEW: STA 2+00

REVISIONS	DATE:
1	

AECOM

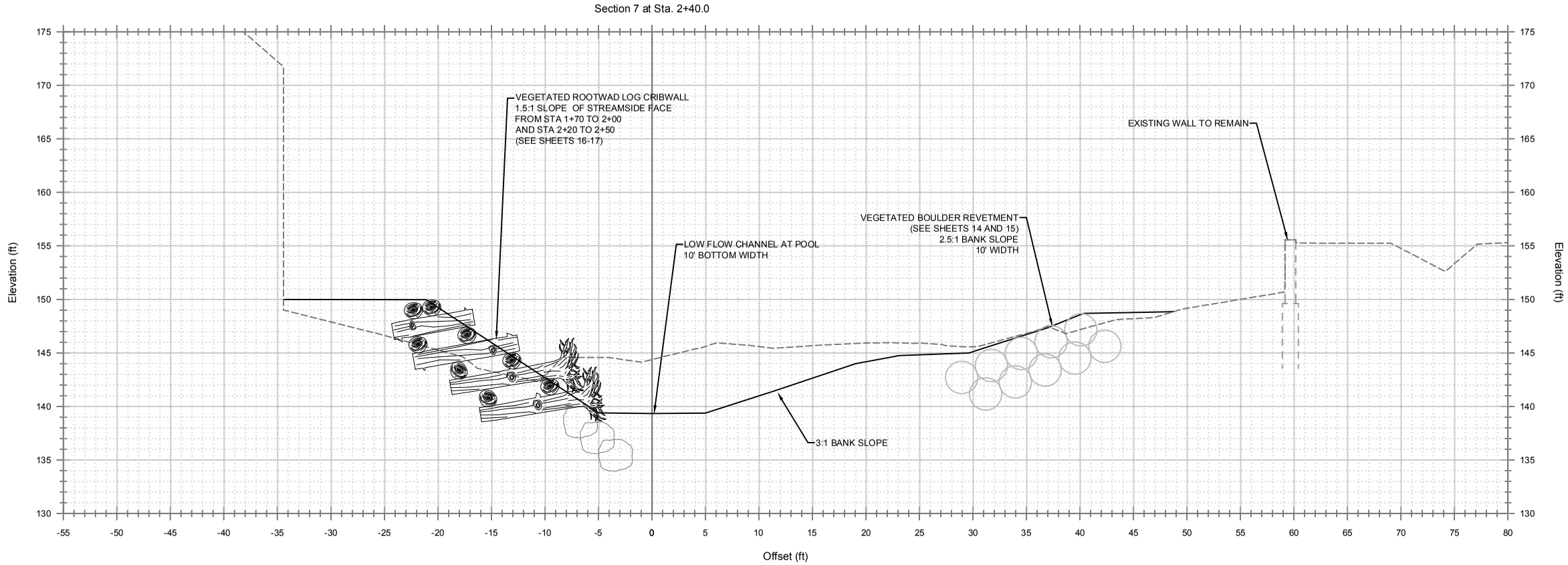
LAGUNITA DIVERSION DAM REMOVAL
AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

CROSS SECTIONS

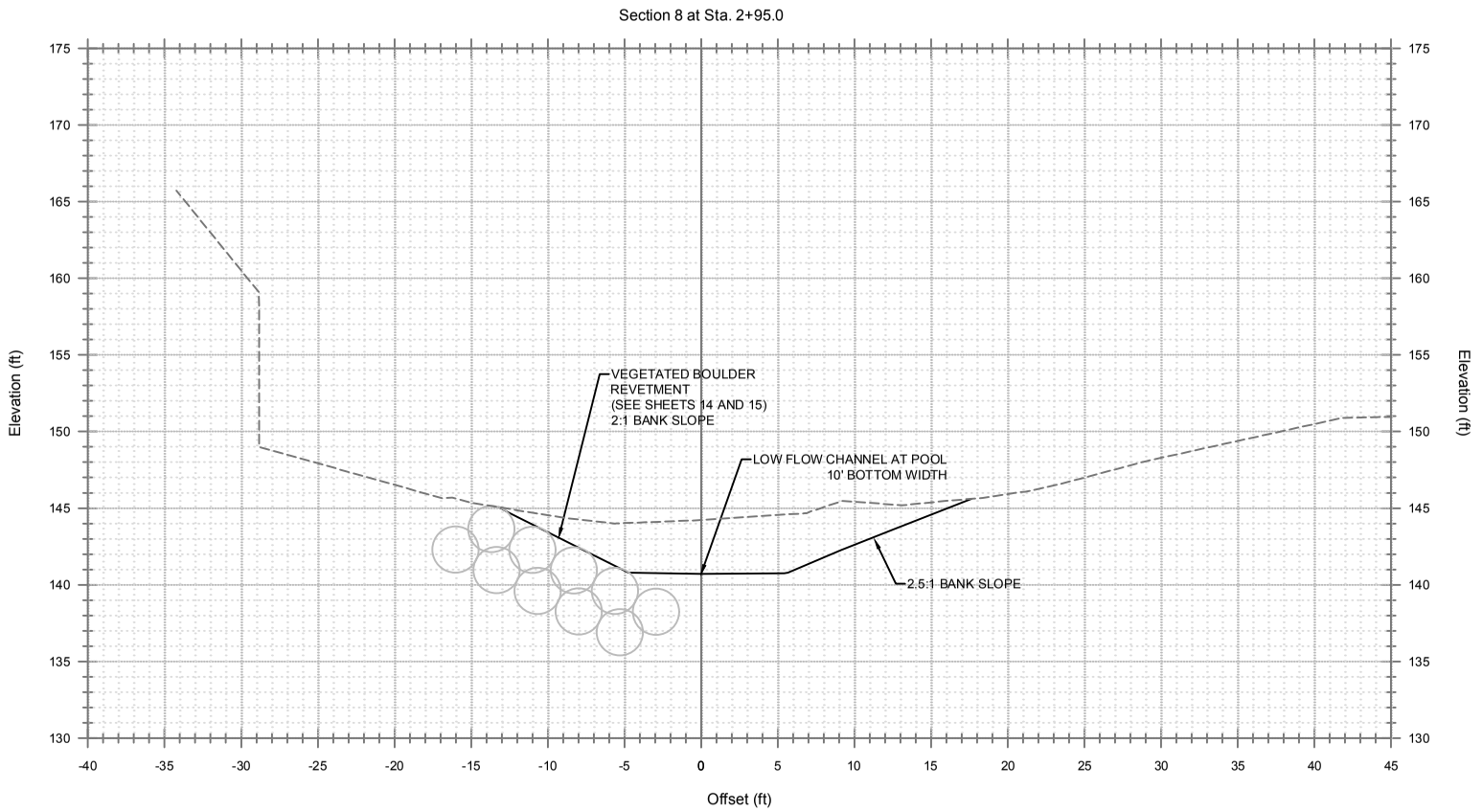
REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN McNEELY
No. 80567
Exp. 03-31-19
CIVIL
STATE OF CALIFORNIA

DRAWN BY: SMc	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

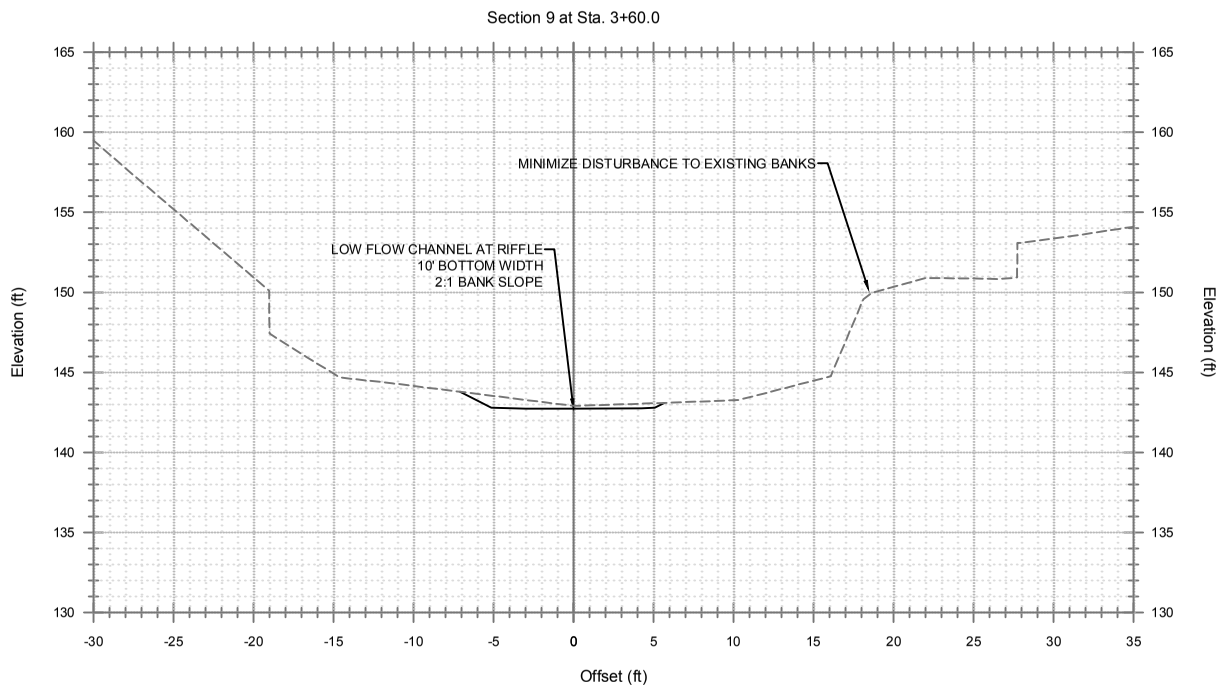
SHEET: 11



7 CROSS SECTION VIEW: STA 2+40



8 CROSS SECTION VIEW: STA 2+95



9 CROSS SECTION VIEW: STA 3+60

REVISIONS	DATE:
1	

AECOM

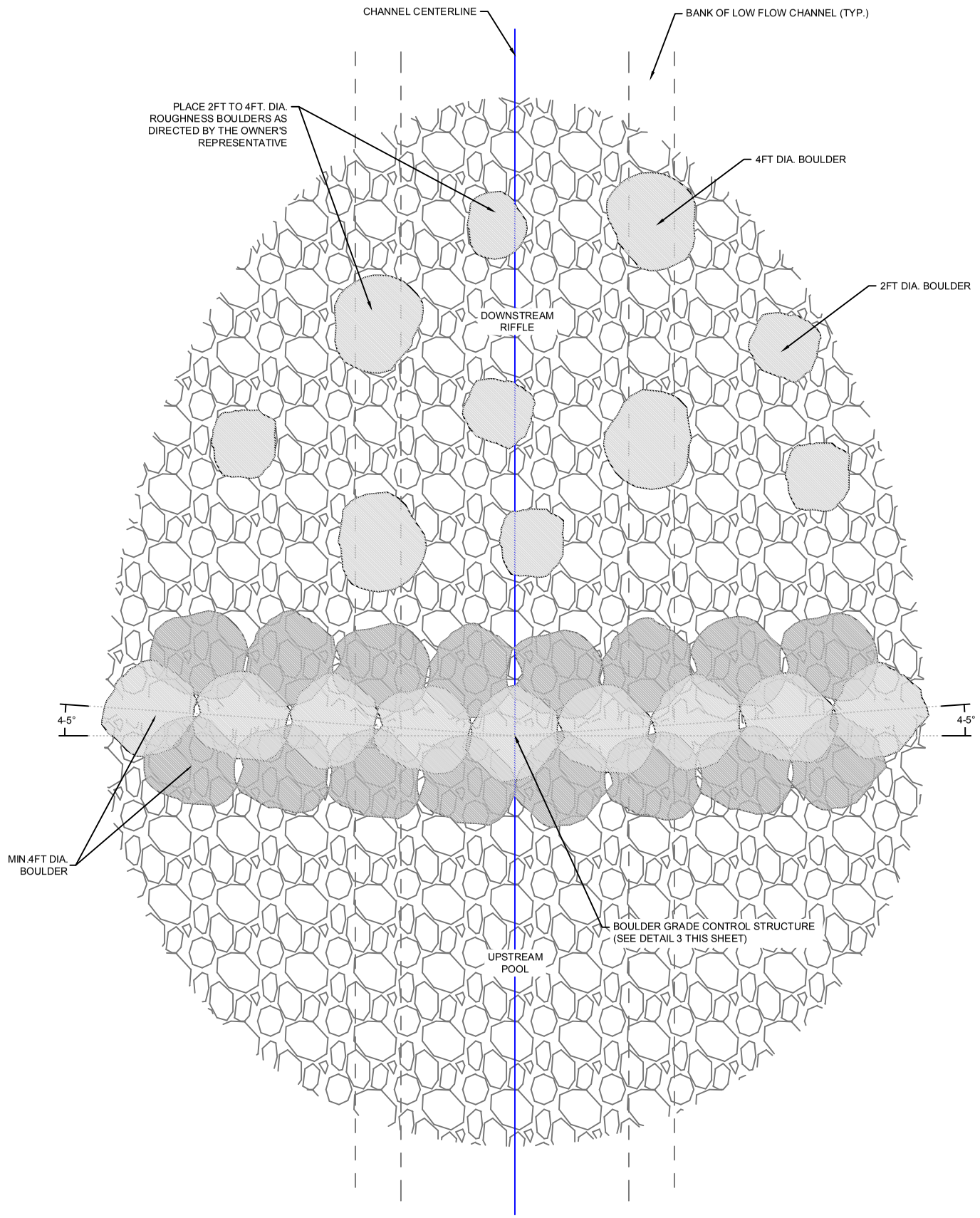
LAGUNITA DIVERSION DAM REMOVAL
AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

CROSS SECTIONS

REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN MCNEELY
No. 80567
Exp. 03-31-19
CIVIL
STATE OF CALIFORNIA

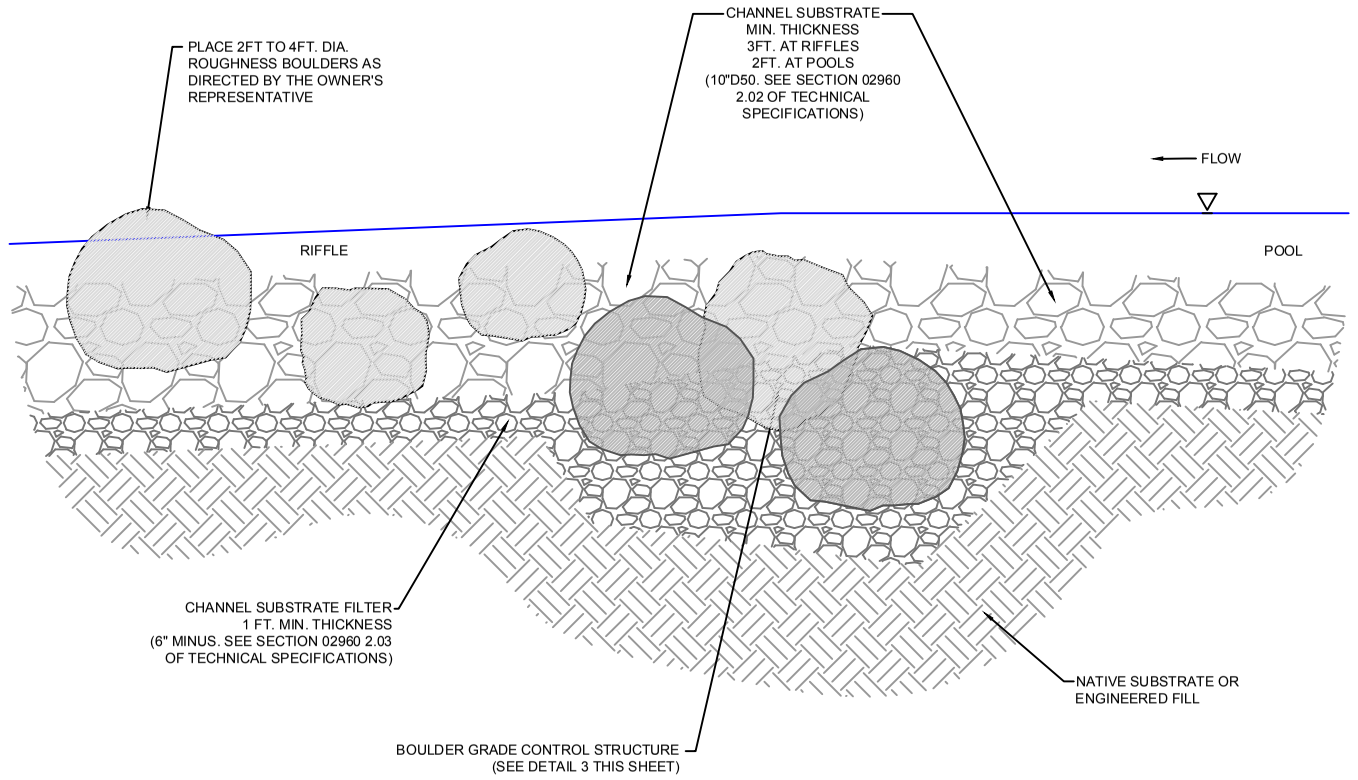
DRAWN BY: SMc	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

SHEET: 12

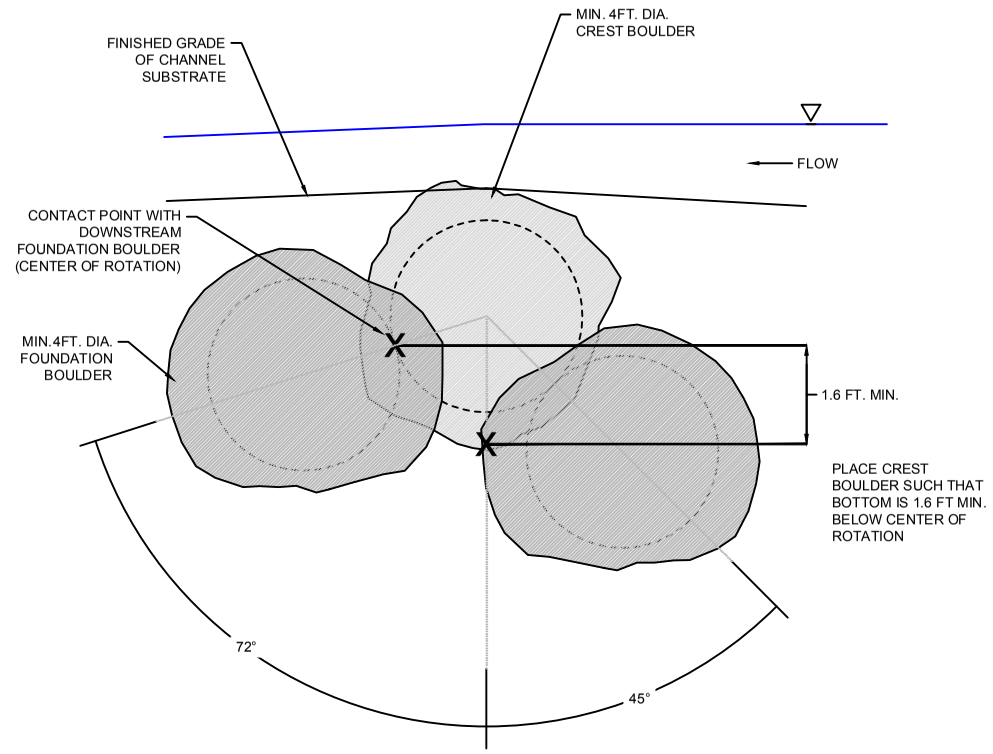


CONSTRUCT BOULDER GRADE CONTROL STRUCTURES TO SPAN THE ENTIRE WIDTH OF THE CHANNEL. TIE DIRECTLY INTO BOULDER TOE OF BANK TREATMENTS, BEDROCK OR EXISTING CONCRETE RETAINING WALL AS INDICATED ON THE GRADING PLAN.

1 PLAN VIEW: BOULDER GRADE CONTROL AND SUBSTRATE PLACEMENT



2 PROFILE VIEW: BOULDER GRADE CONTROL AND SUBSTRATE PLACEMENT



3 PROFILE VIEW: BOULDER GRADE CONTROL STRUCTURE DETAIL

REVISIONS	DATE:
1	

AECOM

LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS
BOULDER GRADE CONTROL AND SUBSTRATE PLACEMENT DETAILS

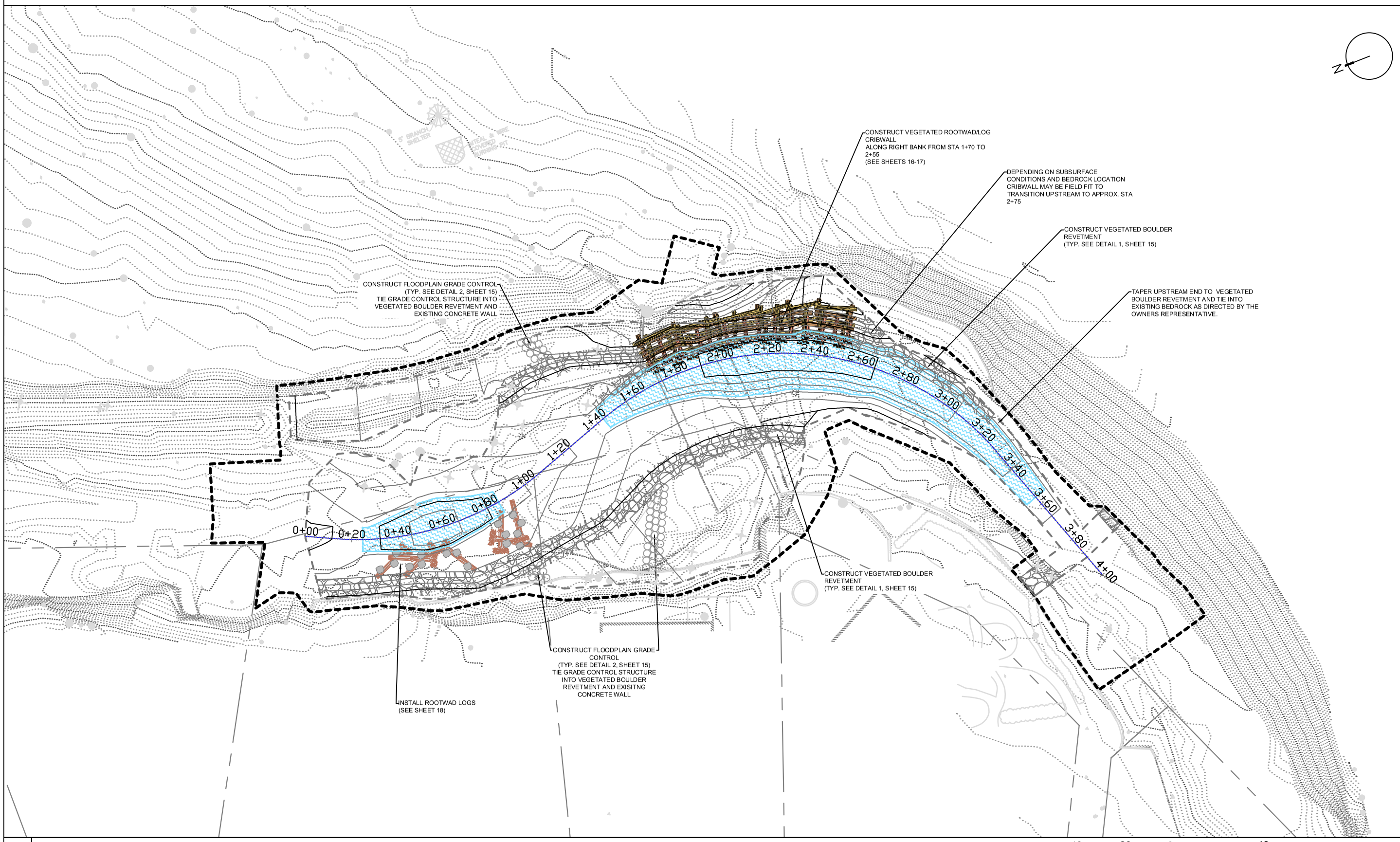
REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN McNEELY
No. 80567
Exp. 03-31-19
CIVIL
STATE OF CALIFORNIA

DRAWN BY: SMc	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

SHEET: 13

LEGEND

- BURIED FOUNDATION BOULDER
- CRIBWALL LOG WITH ROOTWAD
- CRIBWALL LOG
- FINISH INDEX CONTOUR
- FINISH INTERMEDIATE CONTOUR
- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- LIMIT OF GRADING
- LIMIT OF WORK
- FLOODPLAIN BOULDER GRADE CONTROL STRUCTURE
- VEGETATED BOULDER REVETMENT



1 PLAN VIEW: BANK TREATMENT PLAN

40 20 0 40

SCALE: 1" = 40'

REVISIONS	DATE:
1	

AECOM

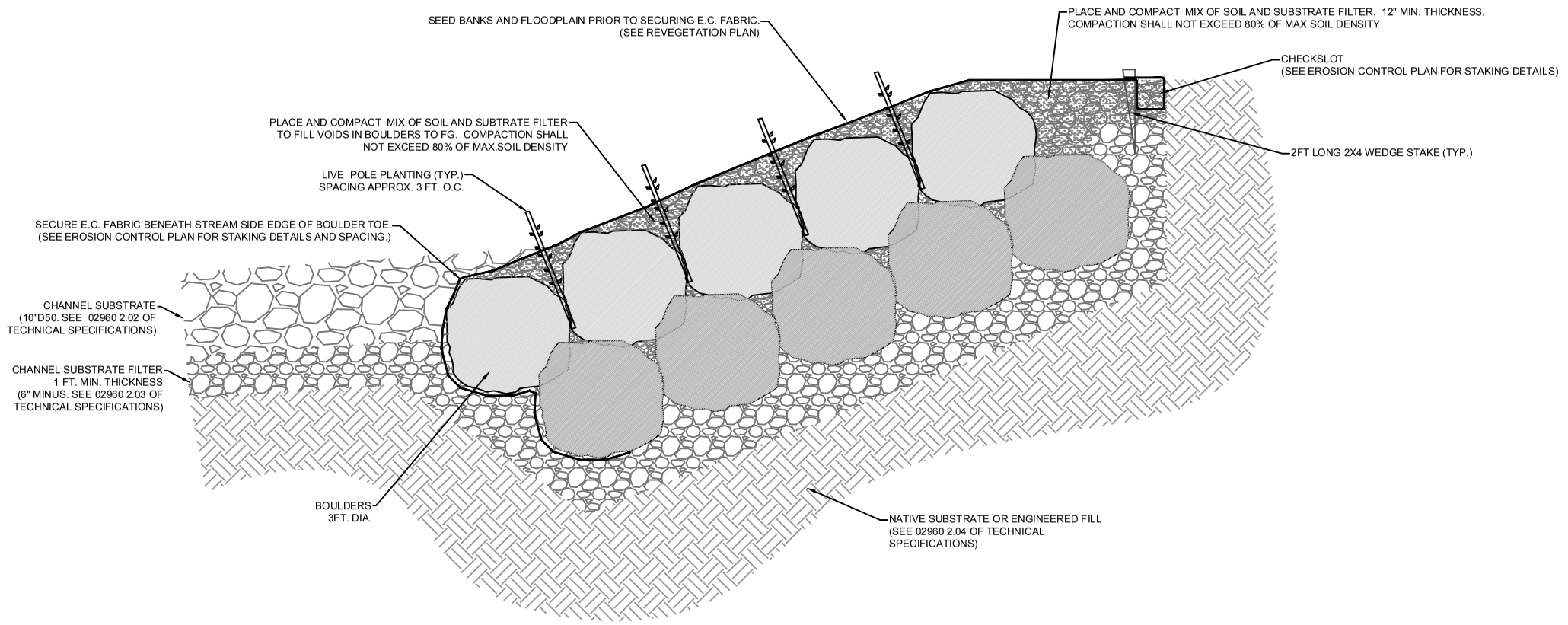
LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

BANK AND FLOODPLAIN TREATMENT PLAN

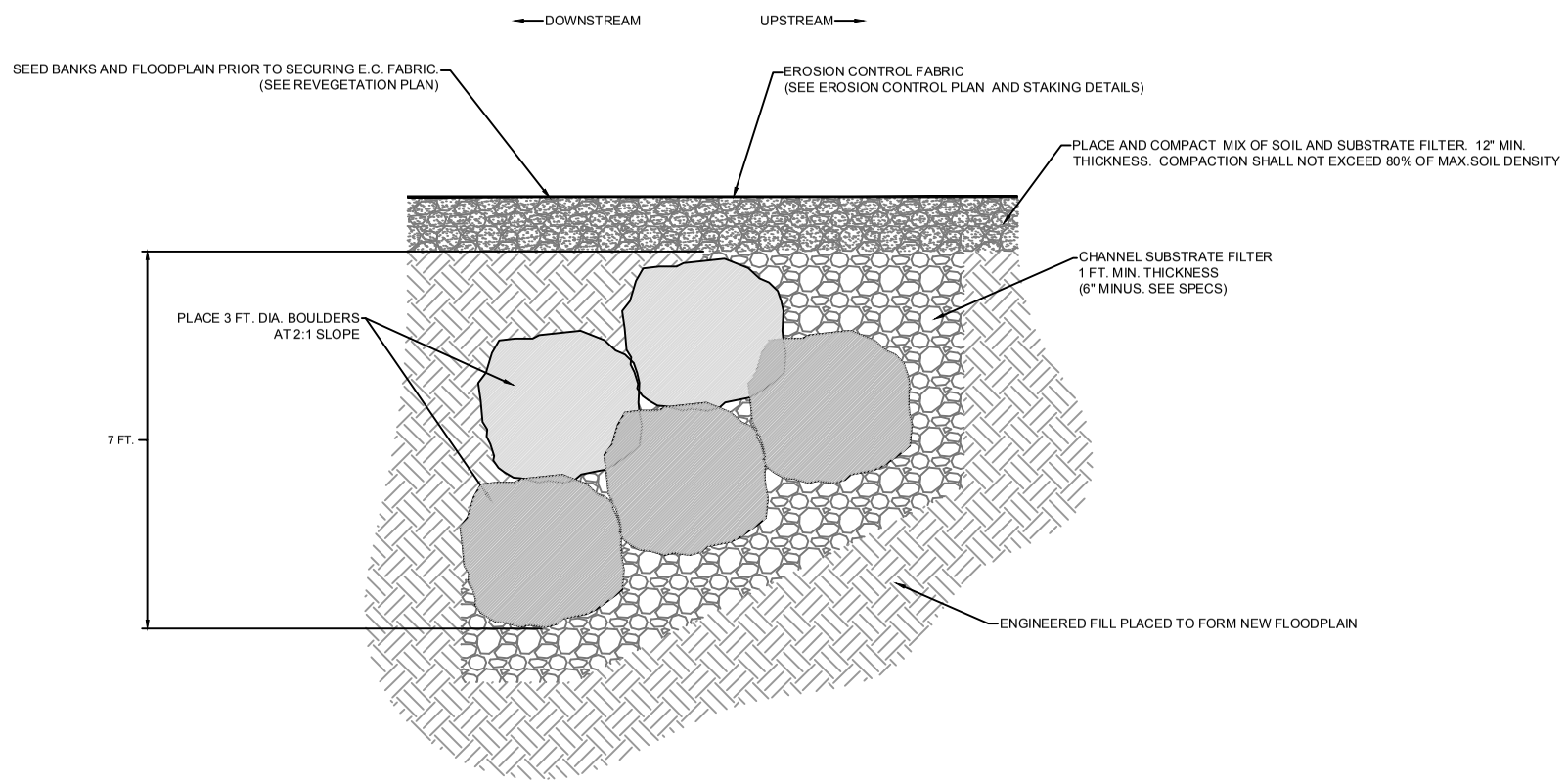
REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN McNELLY
No. 80567
Exp. 03-31-19
CIVIL
STATE OF CALIFORNIA

DRAWN BY: SMc	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

SHEET: 14



1 | CROSS SECTION VIEW: VEGETATED BOULDER REVETMENT DETAILS



2 | CROSS SECTION VIEW: FLOODPLAIN GRADE CONTROL DETAILS

REVISIONS	DATE:
1	

AECOM

LAGUNITA DIVERSION DAM REMOVAL
AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

BANK AND FLOODPLAIN TREATMENT DETAILS

REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN McNEELY
No. 80567
Exp. 03-31-19
CIVIL
STATE OF CALIFORNIA

DRAWN BY: SMc	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

SHEET:
15

LEGEND

BURIED FOUNDATION BOULDER

CRIBWALL LOG WITH ROOTWAD

CRIBWALL LOG

FINISH INDEX CONTOUR

FINISH INTERMEDIATE CONTOUR

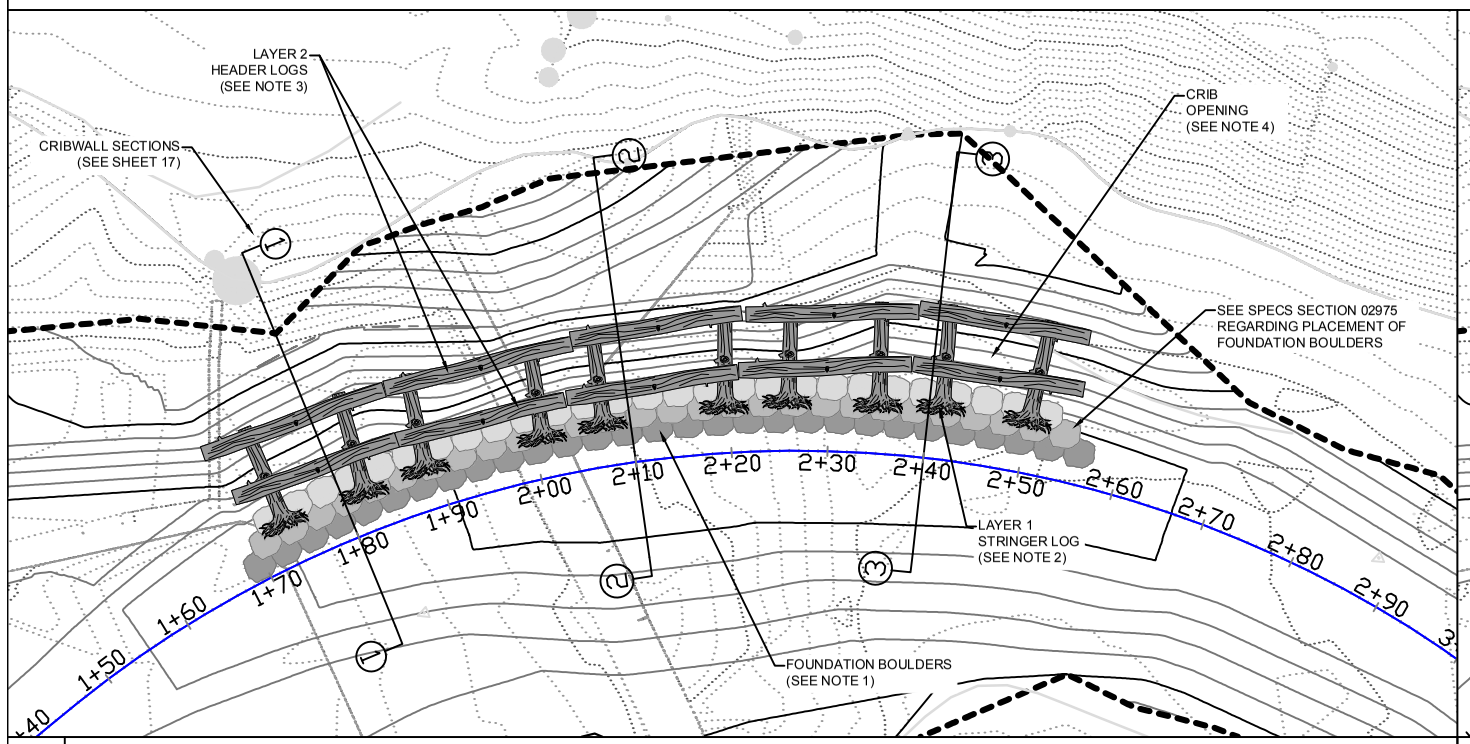
EXISTING INDEX CONTOUR

EXISTING INTERMEDIATE CONTOUR

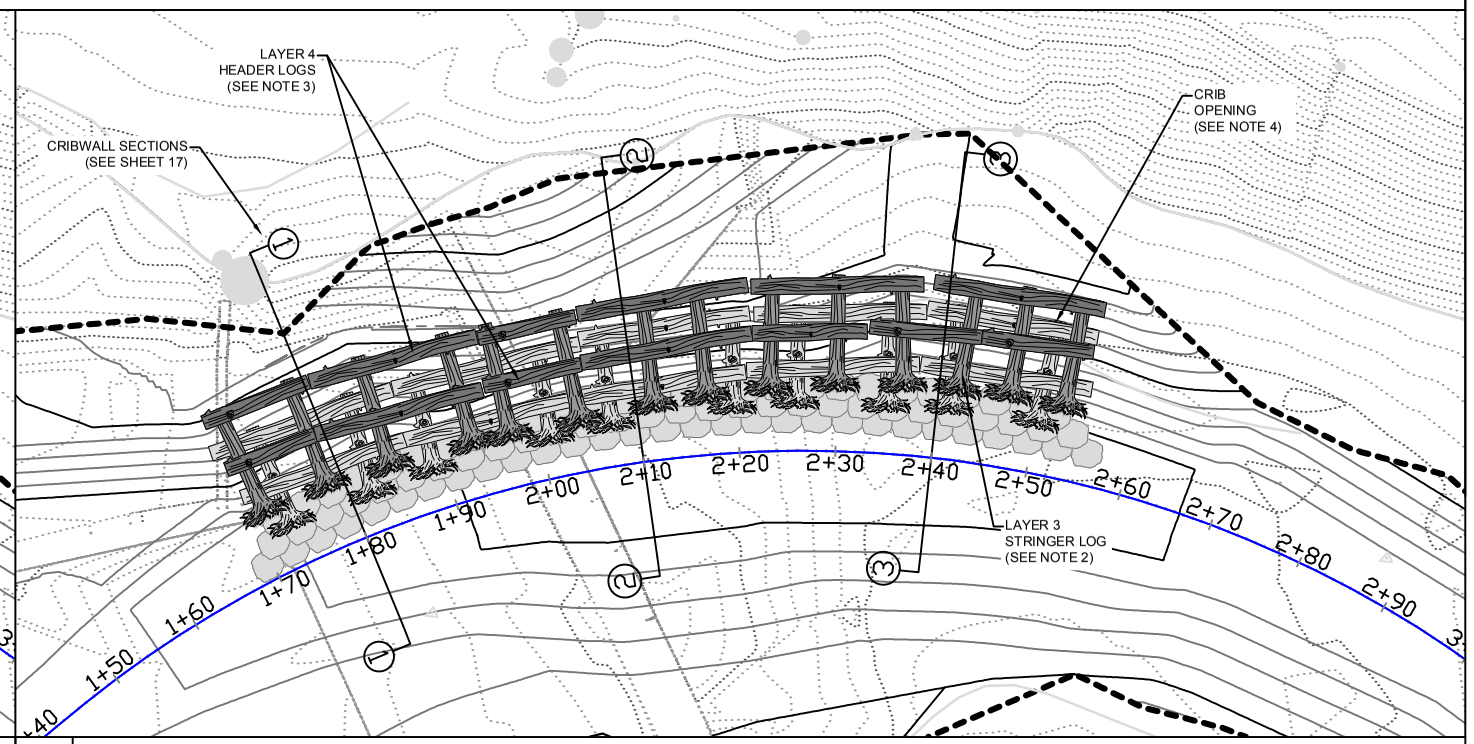
LIMIT OF GRADING

NOTES

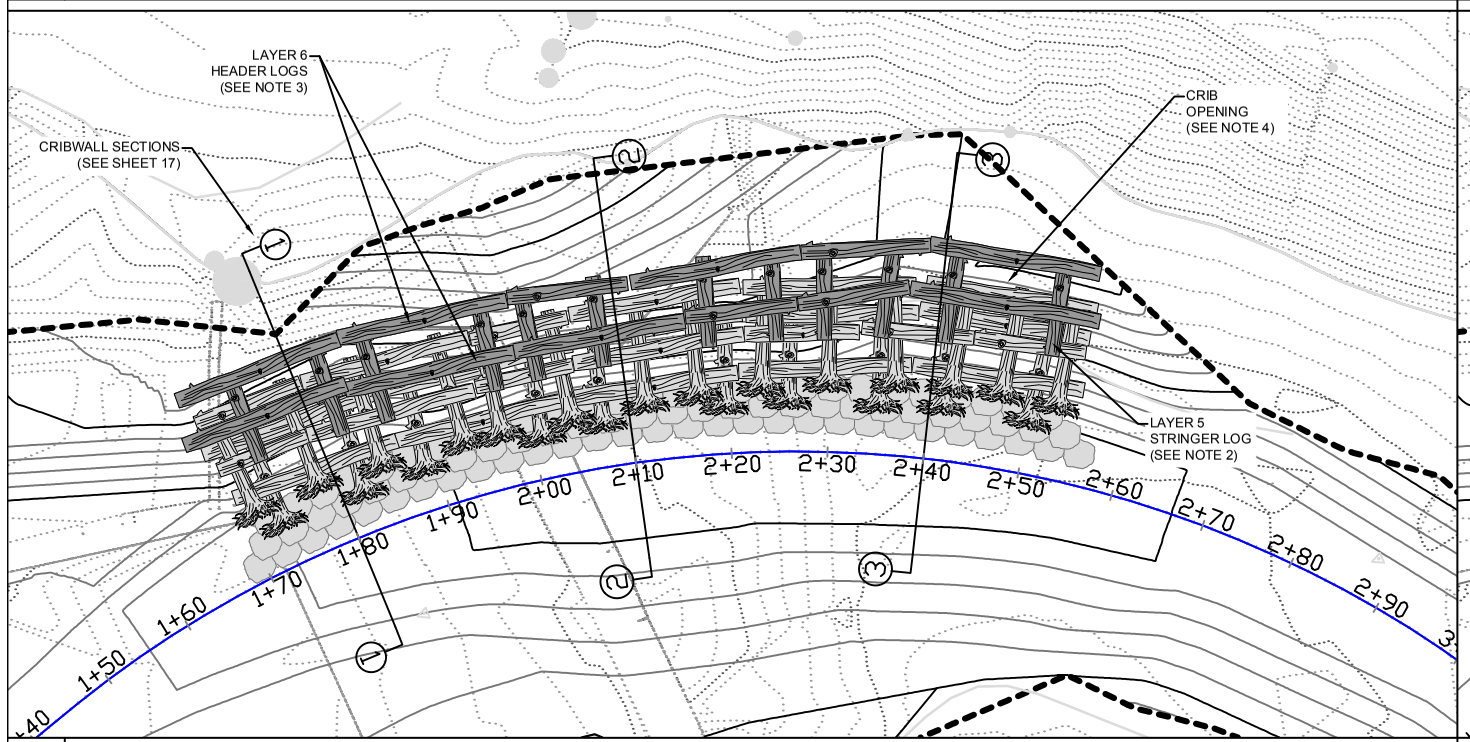
1. SEE VEGETATED CRIBWALL SECTIONS (SHEET 17) FOR EMBEDMENT OF BURIED BOULDER FOUNDATION.
2. ADJUST STRINGER LOG LOCATIONS AND NUMBERS AS NEEDED TO ACCOMMODATE ACTUAL DIMENSIONS OF MATERIAL.
3. CONNECT ALL HEADER LOGS TO STRINGER LOGS AT ALL CROSSING POINTS. (SEE CONNECTION DETAIL, SHEET 17.) ADJUST HEADER LOG LENGTHS AND NUMBERS AS NEEDED TO ACCOMMODATE ACTUAL DIMENSIONS OF MATERIAL.
4. BACKFILL AND COMPACT WITHIN CRIB OPENING PRIOR TO INSTALLING SUBSEQUENT LOG COURSES.



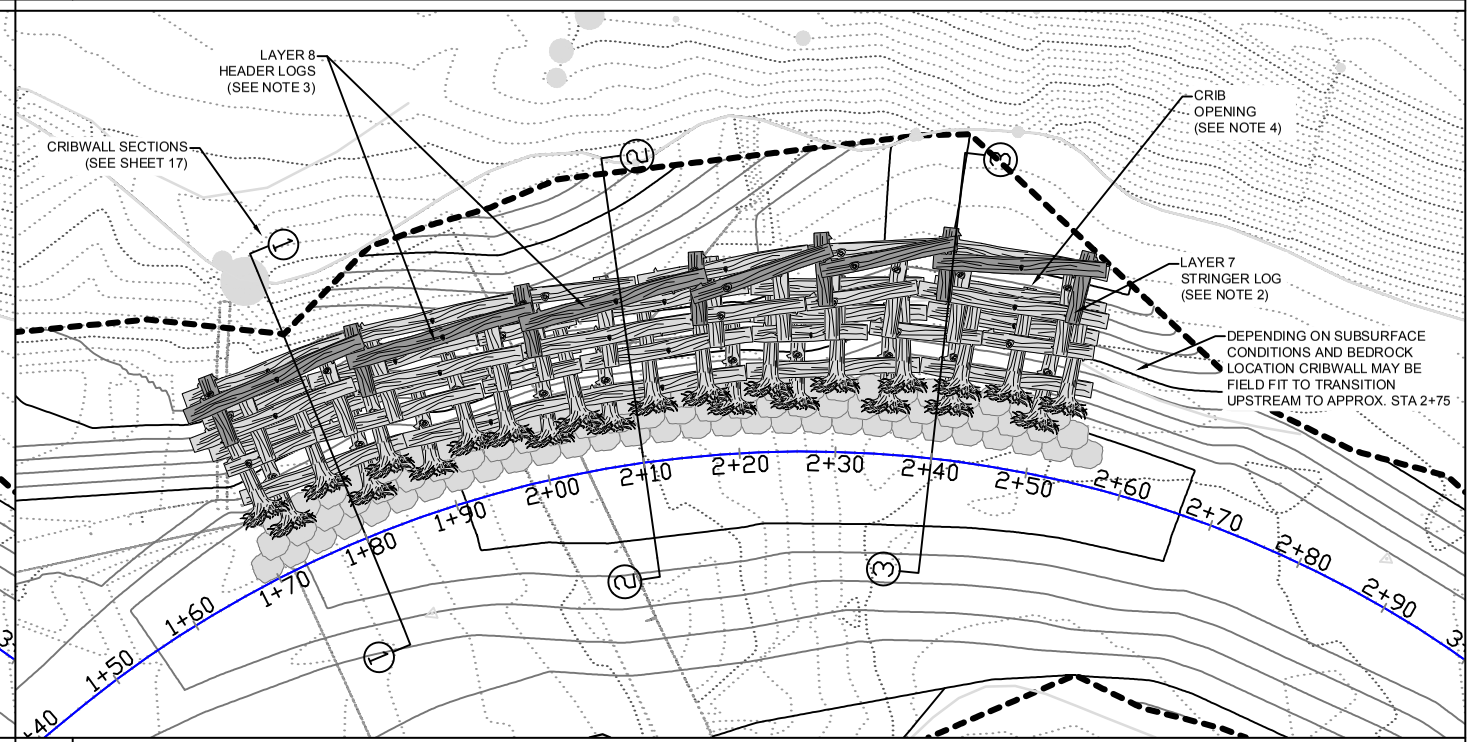
1 VEGETATED CRIBWALL: BOULDER FOUNDATION AND LOG LAYERS 1 & 2 SCALE: 1" = 20'



2 VEGETATED CRIBWALL: LOG LAYERS 3 & 4 SCALE: 1" = 20'



3 VEGETATED CRIBWALL: LOG LAYERS 5 & 6 SCALE: 1" = 20'



4 VEGETATED CRIBWALL: LOG LAYERS 7 & 8 SCALE: 1" = 20'

REVISIONS	DATE:
1	

AECOM

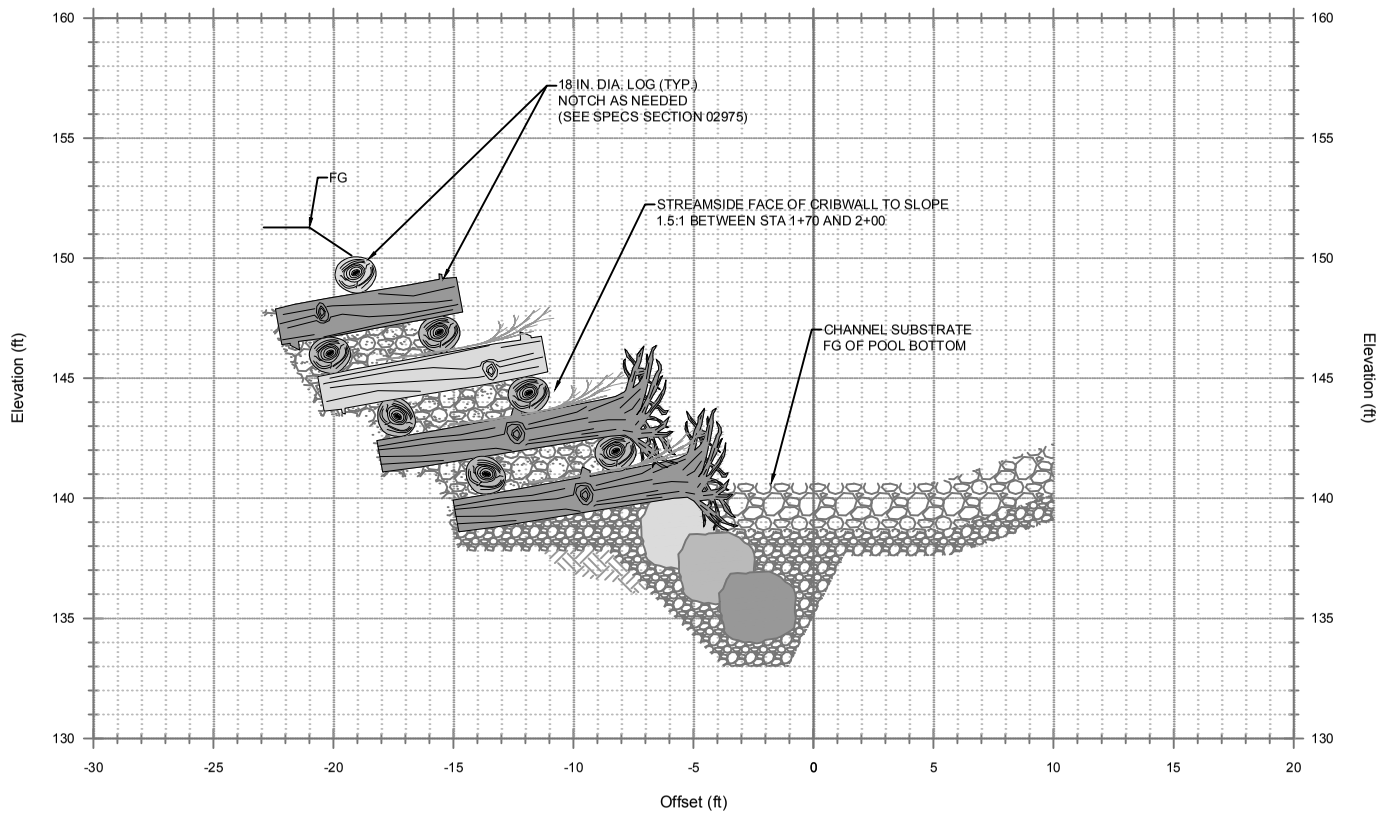
LAGUNITA DIVERSION DAM REMOVAL
AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

VEGETATED CRIBWALL SEQUENCE

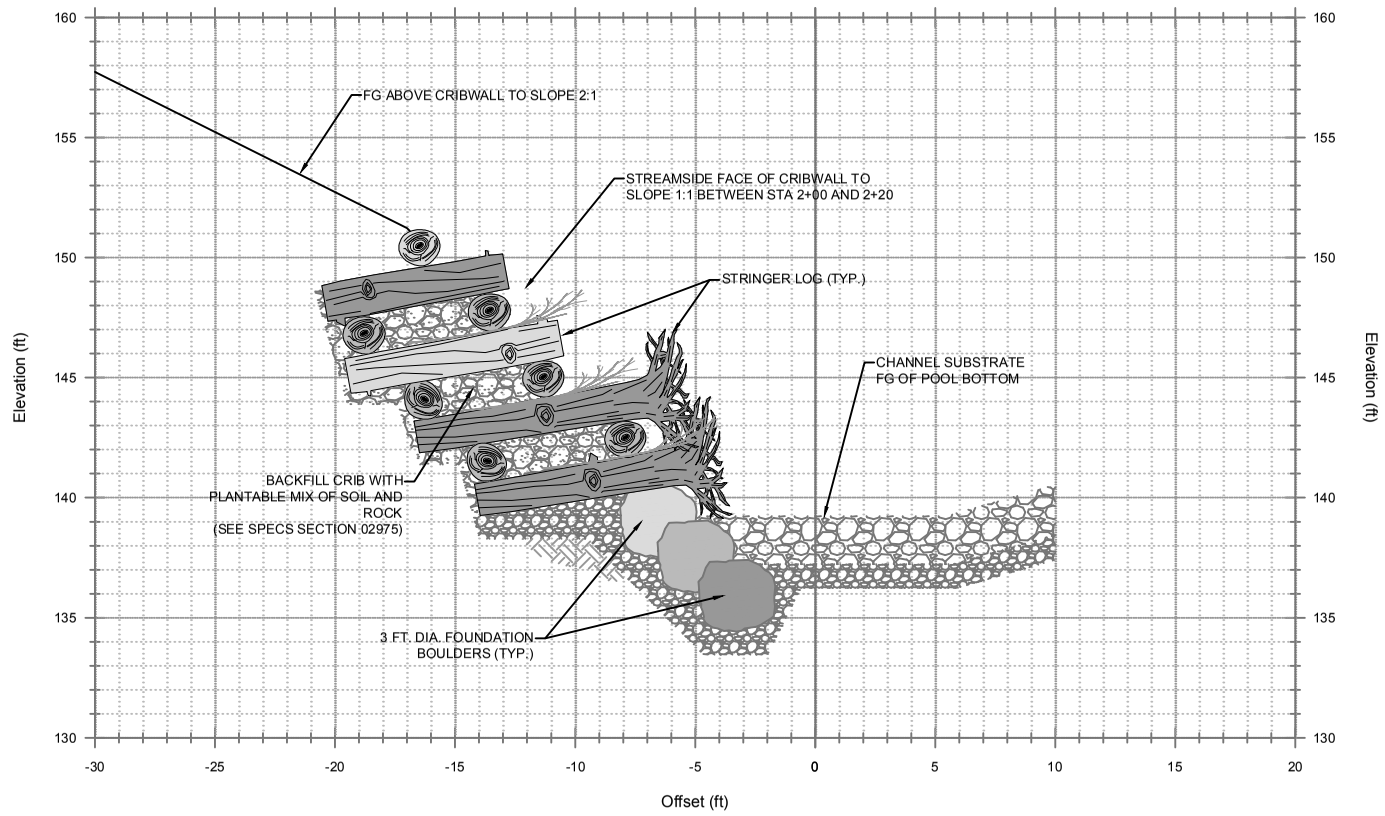
REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN MOWERY
No. 80567
Exp. 03-31-17
CIVIL
STATE OF CALIFORNIA

DRAWN BY: DJ	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

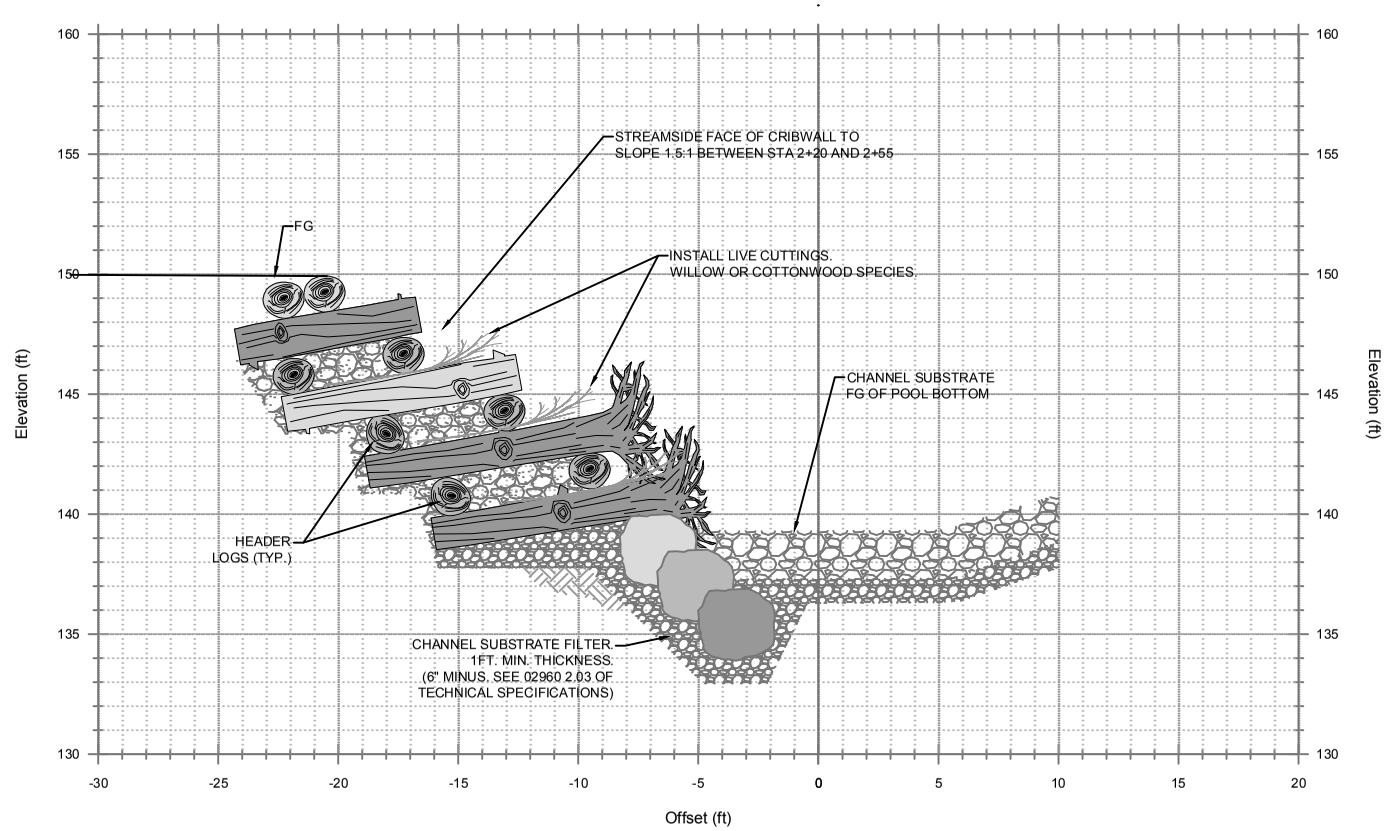
SHEET: 16



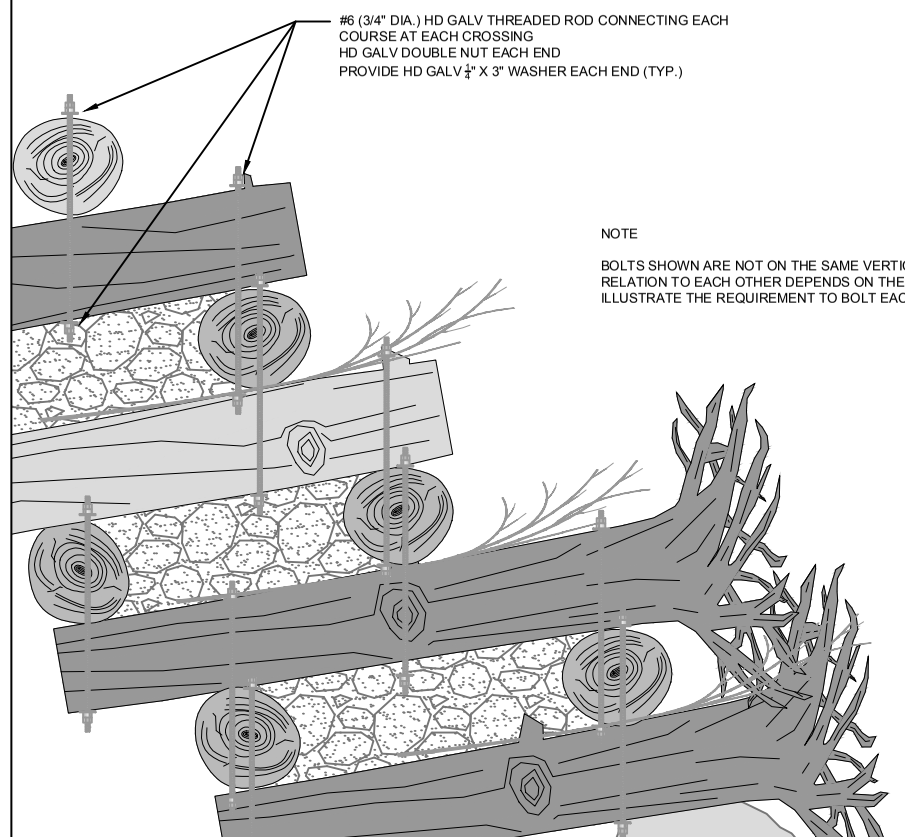
1 CROSS SECTION VIEW: STA 1+80



2 CROSS SECTION VIEW: STA 2+10



3 CROSS SECTION VIEW: STA 2+40



NOTE

BOLTS SHOWN ARE NOT ON THE SAME VERTICAL PLANE. ACTUAL HORIZONTAL AND VERTICAL LOCATION OF BOLTS IN RELATION TO EACH OTHER DEPENDS ON THE EXACT DIMENSIONS OF THE LOGS USED. DRAWING IS MEANT TO ILLUSTRATE THE REQUIREMENT TO BOLT EACH COURSE OF LOGS TO BOTH ADJACENT COURSES AND AT EACH CROSSING.

4 CONNECTION DETAIL

REVISIONS	DATE:
1	

AECOM

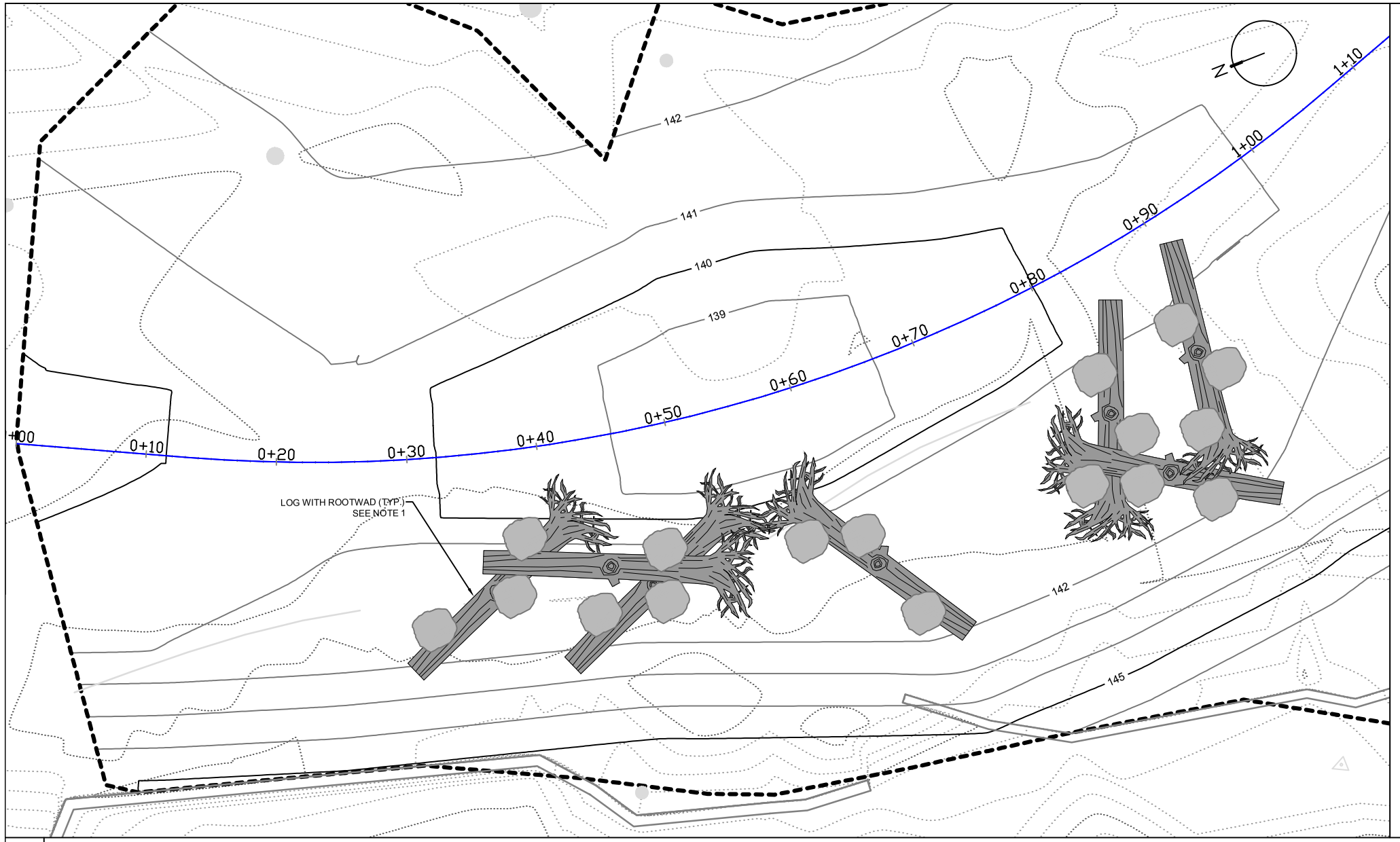
LAGUNITA DIVERSION DAM REMOVAL
AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

VEGETATED CRIBWALL DETAILS

REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN MCKEELY
No. 80567
Exp. 03-31-17
CIVIL
STATE OF CALIFORNIA

DRAWN BY: DJ	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

SHEET: 17



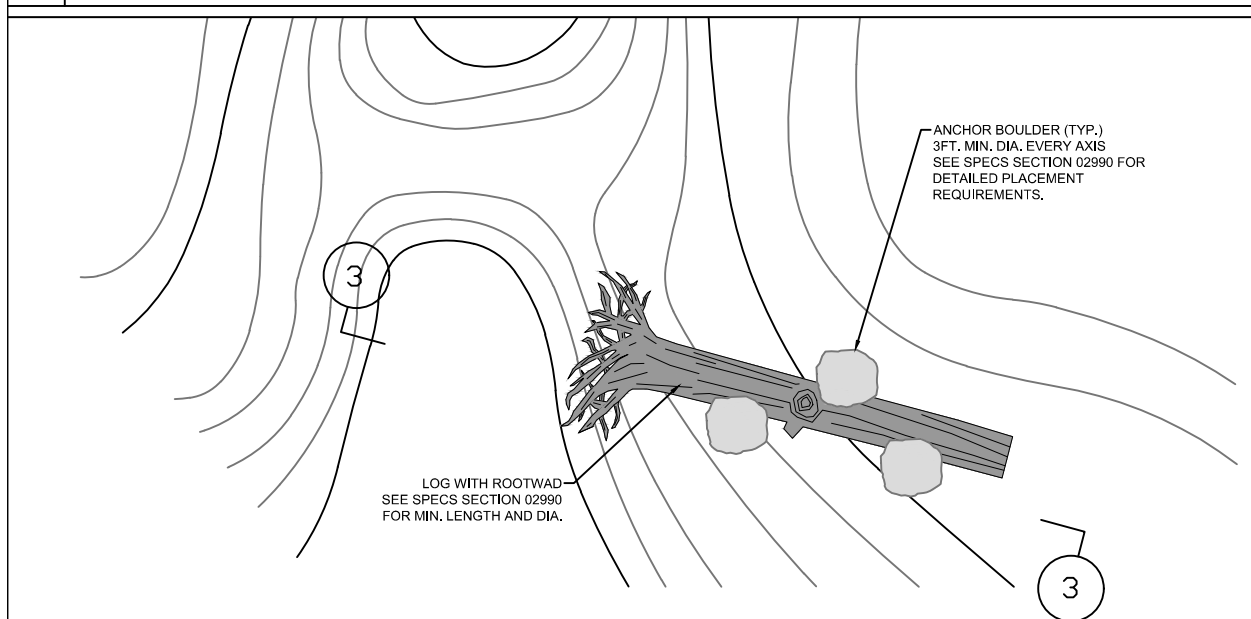
1 LOG PLACEMENT SCALE: 1" = 10'

LEGEND

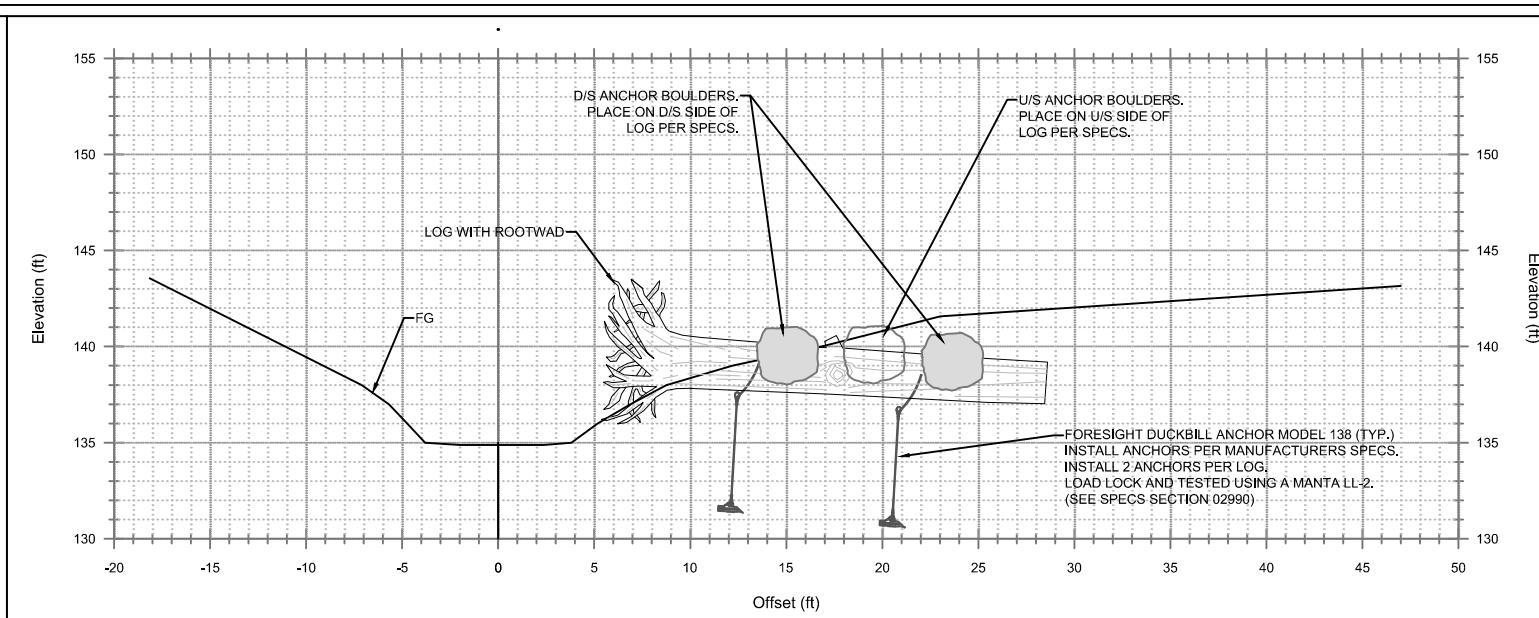
- ANCHOR BOULDER
- LOG WITH ROOTWAD
- FINISH INDEX CONTOUR
- FINISH INTERMEDIATE CONTOUR
- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- LIMIT OF GRADING

NOTES

1. SEE TYPICAL ANCHORING DETAILS ON THIS SHEET FOR BOULDER AND BALLAST AND ANCHOR REQUIREMENTS. REFER TO SPECIFICATION SECTION 02990 FOR THE DETAILS OF THESE REQUIREMENTS.
2. WHERE LOGS CROSS, FASTEN TOGETHER AT JOINT WITH #6 REBAR INSTALLED IN A 5/8" DIAMETER HOLE. MIN EMBEDMENT OF REBAR INTO LOWER LOG IS 3/4 OF THE DIAMETER.
3. INSTALL DUCKBILL ANCHORS PER MANUFACTURERS SPECIFICATIONS. INSTALL 2 ANCHORS PER LOG. EACH ANCHOR SHALL BE LOAD LOCKED AND TESTED USING A MANTA LL-2 ANCHOR LOCKING KIT. TESTING AND REPORTING SHALL BE AS DESCRIBED IN SPECIFICATIONS SECTION 02990.
4. DRILL HOLE THOUGH LOGS FOR CABLING AT A LOCATION ON THE LOG THAT WILL BE BELOW FINISH GRADE WHEN GRADING IS COMPLETE.



2 LOG ANCHORING TYPICAL SCALE: 1" = 10'



3 LOG ANCHORING TYPICAL SCALE: 1" = 10'

REVISIONS | DATE:

AECOM

LAGUNITA DIVERSION DAM REMOVAL
AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

LOG PLACEMENT AND ANCHORING

REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN MCKEELY
No. 80567
Exp. 03-31-17
CIVIL
STATE OF CALIFORNIA

DRAWN BY: DJ	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

SHEET: 18

NOTES

1. DECOMPACT SOIL IN AREAS AS DETERMINED BY OWNER'S REPRESENTATIVE LANDSCAPE ARCHITECT BY RIPPING AND/OR ROTOTILLING, TO A MIN DEPTH OF 12", AND INCORPORATE AMENDMENTS AS SPECIFIED.
2. HYDROSEED IN 4 STEPS AS FOLLOWS: (1) SEED, INOCULANT AND WOOD FIBER; (2) COMPOST & WOOD FIBER (3) STRAW (ON TOP OF EROSION CONTROL FABRIC (ECF) WHERE APPLICABLE) (4) TACKIFIER - SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
3. INSTALL COIR EROSION CONTROL FABRIC (ECF) AND POLE CUTTINGS WITHIN 3 DAYS OF SEEDING TO PREVENT TRAMPLING OF GERMINATING SEED - SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
4. INSTALL WEDGE SHAPED WOOD STAKES (PER DETAIL) INTO PRE-STRETCHED OPENINGS IN COIR ECF. DO NOT CUT EROSION CONTROL FABRIC TO INSTALL STAKES.
5. SPREAD STRAW OVER ENTIRE HYDROSEEDED AREA (BOTH WITH ECF AND WITHOUT) PER SPECIFICATION.
6. NO VEHICLE PARKING, EQUIPMENT OR MATERIAL STORAGE OR CONSTRUCTION ACTIVITY SHALL OCCUR WITHIN THE DRIPLINE AREAS OF EXISTING (E) TREES TO REMAIN. IF THESE ACTIVITIES ARE NECESSARY FOR THE COMPLETION OF WORK, THE CONTRACTOR SHALL PLACE 8'X4'X1½" PLYWOOD OR 6'X6'X¼" STEEL PLATE OVER THE ENTIRE GROUND AREA WITHIN THE TREE DRIPLINE. ANY ACTIVITY WITHIN DRIPLINE AREAS OF EXISTING TREES SHALL BEGIN ONLY UPON OWNER'S REPRESENTATIVE LANDSCAPE ARCHITECT'S APPROVAL.
7. NO ADDITIONAL NATIVE TREES SHALL BE REMOVED UNLESS APPROVED BY OWNER'S REPRESENTATIVE. REMOVE ALL INVASIVE EXOTIC PLANTS SUCH AS HIMALAYAN BLACKBERRY, FRENCH BROOM, ALGERIAN IVY AND OTHERS AS DIRECTED AND AS APPROVED BY OWNER'S REPRESENTATIVE LANDSCAPE ARCHITECT FROM THE PROJECT AREA AND 10'-0" BEYOND, INCLUDE REMOVAL OF THEIR STUMPS OR ROOT SYSTEM TO A MIN. 18 IN. DEPTH AND 5 FT RADIUS.
8. DO NOT PLANT SHRUBS WITHIN 5 FT, OR TREES WITHIN 10 FT OF ADJACENT PROPERTY LINES WITHOUT THE OWNER'S APPROVAL.
9. WHERE FEASIBLE, UTILIZE (E) WILLOWS TO BE REMOVED (WITHIN PROJECT AREA) SMALLER THAN 4 IN. DBH TO PREPARE POLE CUTTINGS.
10. RESTORE AREAS IMPACTED BY ANY CONSTRUCTION ACTIVITIES TO PRE-CONSTRUCTION CONDITION. AS A MINIMUM, SCARIFY COMPACTED SOIL BY CROSS-RIPPING OR APPROVED METHOD TO 12 IN. DEPTH AND RE-SEED WITH NATIVE GRASS SEED MIX AS SPECIFIED IN PLANTING SCHEDULE. CONFIRM RESTORATION APPROACH FOR EACH AREA WITH OWNER'S REPRESENTATIVE LANDSCAPE ARCHITECT BEFORE PROCEEDING.
11. CONFIRM THE LOCATION OF EXISTING UTILITIES BEFORE THE START OF ANY WORK. CONTACT ALL APPROPRIATE UTILITY SERVICES INCLUDING UNDERGROUND SERVICE ALERT (U.S.A.) 1-800-642-2444.
12. IMMEDIATELY AFTER AWARD OF CONTRACT, CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE LANDSCAPE ARCHITECT IN CASE ANY PLANT MATERIALS ARE NOT AVAILABLE. LANDSCAPE ARCHITECT WILL PROVIDE ALTERNATE SELECTIONS.
13. NOTIFY OWNER'S REPRESENTATIVE LANDSCAPE ARCHITECT WITH A 7-DAY NOTICE, TO ACCOMPLISH THE FOLLOWING LANDSCAPE CONSTRUCTION REVIEWS/INSPECTIONS IN CONCERT WITH LANDSCAPE CONTRACTOR:
    A. SOIL PREPARATION, DECOMPACTION, AND FINISH GRADING FOR EACH AREA BEFORE PLANTING.
    B. HYDROSEEDING IMPLEMENTATION - LANDSCAPE ARCHITECT MUST BE PRESENT DURING SEEDING.
    C. EROSION CONTROL FABRIC INSTALLATION - DURING AND AFTER INSTALLATION.
    D. IRRIGATION SYSTEM PRESSURE TEST - MAIN LINE AND LATERALS.
    E. IRRIGATION FUNCTIONAL TEST - TO REVIEW COVERAGE, REMOTE OPERATION, SYSTEM COMPONENTS.
    F. PLANT LAYOUT - PLANTS FLAGGED OUT BEFORE PLANTING PIT EXCAVATION.
    G. PUNCH LIST INSPECTION - TO REVIEW ALL LANDSCAPE AND IRRIGATION ELEMENTS OF THE WORK.
    H. FINAL INSPECTION - TO CONFIRM COMPLETION OF PUNCH LIST ITEMS, AND BEGIN MONITORING.

LEGEND

- TRUNKS OF EXISTING TREES TO REMAIN
- FINISH INDEX CONTOUR
- FINISH INTERMEDIATE CONTOUR
- EXISTING TO REMAIN INDEX CONTOUR
- EXISTING TO REMAIN INTERMEDIATE CONTOUR
- LIMIT OF WORK
- LIMIT OF GRADING
- EDGE OF WATER SURFACE AT LOW FLOW
- BANK SEEDING/PLANTING AREAS (TO 146' CONTOUR)
- FLOODPLAIN TERRACE SEEDING AREA (146' TO 150' CONTOUR)
- UPLAND SEEDING AREAS (150' TO LIMIT OF WORK)
- FOR SHRUB AND TREE SPECIES, SEE PLANTING SCHEDULE ON NEXT PAGE

1 PLAN VIEW: REVEGETATION PLAN

40 20 0 40 SCALE: 1" = 40'

REVISIONS	DATE:
1	

AECOM

LAGUNITA DIVERSION DAM REMOVAL
AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

REVEGETATION PLAN

LICENSED LANDSCAPE ARCHITECT
STEPHEN GEORGE STRNAD, NO. LA 2496
SIGNATURE
12-31-18
EXPIRATION DATE
DATE
STATE OF CALIFORNIA

DRAWN BY: KW	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018
SHEET: 19	

PLANTING SCHEDULE

PLANTING ZONE	PLANT SYMBOL	BOTANICAL NAME	COMMON NAME	PROPAGATION METHOD	AMOUNT PLS–lbs/AC	AMOUNT QTY.	REMARKS	TOTAL ZONE AREA (ACRES)
	SHRUBS / HERBACEOUS PERENNIALS							
ZONE 1- CHANNEL PLANTINGS		CAREX NUDATA	TORRENT SEDGE	L8	NA	282	SUPER CELL L8–1½" DIAM. X 8" LONG	0.11
		JUNCUS EFFUSUS VAR. PACIFICUS	PACIFIC BOG RUSH	L8	NA	148	SUPER CELL L8–1½" DIAM. X 8" LONG	
		SALIX EXIGUA	SANDBAR WILLOW	POLE CUTTING	NA	22		
ZONE 2 - BANK PLANTINGS	HERBS							0.25
		ARTEMISIA DOUGLASIANA	MUGWORT	SEED	5	1.3		
		CAREX PRAEGRACILIS	CLUSTERED FIELD SEDGE	D6	8	2.0		
		CAREX SUBBRACTEATA	SMALL BRACT SEDGE	D6	8	2.0		
		CYPERUS ERAGROSTIS	TALL CYPERUS	SEED	5	1.3		
		DESCHAMPSIA ELONGATA	SLENDER HAIRGRASS	SEED	5	1.3		
		EUTHAMIA OCCIDENTALIS	WESTERN GOLDENROD	SEED	5	1.3		
		HORDEUM BRACHYANTHERUM SPP. BRACHYANTHERUM	MEADOW BARLEY	SEED	10	2.5		
		JUNCUS PATENS	SPREADING RUSH	SEED	5	1.3		
		TRIFOLIUM WORMSKIOLDII	COWS CLOVER	SEED	10	2.5		
	TREES/SHRUBS							
		ACER NEGUNDO	BOXELDER	T4–CONTAINER	NA	2	MITIGATION TREES	
		ALNUS RHOMBIFOLIA	WHITE ALDER	T4–CONTAINER	NA	7		
		CORNUS SERICEA	RED–OSIER DOGWOOD	POLE CUTTING	NA	19		
		SALIX EXIGUA	SANDBAR WILLOW	POLE CUTTING	NA	83		
		SALIX LAEVIGATA	RED WILLOW	POLE CUTTING	NA	1		
		SALIX LASIOLEPIS	ARROYO WILLOW	POLE CUTTING	NA	21		
ZONE 3 - FLOODPLAIN TERRACE PLANTINGS	HERBS							0.23
		ARTEMISIA DOUGLASIANA	MUGWORT	SEED	5	1.2		
		CAREX BARBARAE	SANTA BARBARA SEDGE	SEED	8	1.9		
		DISTICHLIS SPICATA	SALT GRASS	SEED	6	1.4		
		FESTUCA RUBRA 'MOLATE'	RED FESCUE	SEED	7	1.6		
		HORDEUM BRACHYANTHERUM SPP. BRACHYANTHERUM	MEADOW BARLEY	SEED	10	2.3		
		JUNCUS PATENS	SPREADING RUSH	SEED	5	1.2		
		LEYMUS TRITICOIDES	CREEPING WILDRYE	SEED	10	2.3		
		TRIFOLIUM WILLDENOVII	TOMCAT CLOVER	SEED	10	2.3		
	TREES/SHRUBS							
		AESCULUS CALIFORNICA	CALIFORNIA BUCKEYE	SEED	NA	3	PLANT ALONG HIGH EDGES	
		LONICERA INVOLUCRATA	TWINBERRY	TREATED SEED	NA	20		
		POPULUS BALSAMIFERA SSP. TRICHOCARPA	BLACK COTTONWOOD	POLE CUTTING	NA	3		
		SALIX SCOULERIANA	SCOULER'S WILLOW	POLE CUTTING	NA	45		
		SAMBUCUS NIGRA SPP. CAERULEA	BLUE ELDERBERRY	POLE CUTTING	NA	17		
		UMBELLULARIA CALIFORNICA	BAY TREE	SEED	NA	1		
ZONE 4 - UPLAND SEEDING AREA	HERBS							0.09
		ACHILLEA MILLEFOLIUM	COMMON YARROW	SEED	1	0.1		
		BROMUS CARINATUS	CALIFORNIA BROME	SEED	10	0.9		
		ELYMUS GLAUCUS	BLUE WILDRYE	SEED	10	0.9		
		FESTUCA CALIFORNICA	CALIFORNIA FESCUE	SEED	10	0.9		
		HORDEUM BRACHYANTHERUM SSP. C.	CALIFORNIA BARLEY	SEED	10	0.9		
		ACMISPON AMERICANUS VAR. A.	SPANISH CLOVER	SEED	1	0.1		
		MELICA IMPERFECTA	CALIFORNIA MELIC	SEED	2	0.2		
		STIPA (NASSELLA) CERNUA	NODDING NEEDLEGRASS	SEED	10	0.9		
		POA SECUNDA SSP. SECUNDA	ONE–SIDED BLUEGRASS	SEED	5	0.4		
		TRIFOLIUM WILDENOVII	TOMCAT CLOVER	SEED	1	0.1		

NOTES

1. SEED QUANTITIES PROVIDED IN PLANTING LIST ARE IN POUNDS OF PURE LIVE SEED (PLS).
2. INSTALL PLANT MATERIALS IN QUANTITIES AS SHOWN GRAPHICALLY ON DRAWINGS.
3. NO PLANT, CUTTING OR SEED SPECIES OR VARIETY CAN BE SUBSTITUTED, ALTERED OR DELETED FROM THIS PROJECT WITHOUT THE WRITTEN APPROVAL OF THE OWNER'S REPRESENTATIVE.
4. IN ADDITION TO AREAS TO BE SEEDED WHERE INDICATED ON PLANTING PLANS CONTRACTOR SHALL HYDROSEED ANY AREAS DISTURBED BY CONSTRUCTION, VEHICLE OR EQUIPMENT ACCESS, STAGING, MATERIAL STORAGE OR RELATED ACTIVITIES. USE NATIVE EROSION CONTROL MIX AT THE RATE OF 65 LBS OF PLS/ACRE CONSISTING OF 35 LBS BROMUS CARINATUS 'CUCAMONGA BROME', 6 LBS VULPIA MICROSTACHYS 'THREE WEEKS FESCUE', 4 LBS TRIFOLIUM WILDENOVII 'TOMCAT CLOVER', 5 LBS NASSELA CERNUA 'NODDING NEEDLEGRASS', 10 LBS ELYMUS GLAUCUS 'BLUE WILDRYE', 5 LBS HORDEUM BRACHYANTHERUM SPP. CALIFORNICUM 'CALIFORNIA MEADOW BARLEY. SEED MIX AVAILABLE AT PACIFIC COAST SEED. WHERE SOIL IS COMPACTED OVER 80% RELATIVE COMPACTION, AND AS DETERMINED BY OWNER'S REPRESENTATIVE, SOIL SHALL BE RIPPED OR ROTOTILLED TO THE DEPTH OF 6-12", RINGROLLED OR RAKED PARALLEL WITH CONTOUR AND SEED SHALL BE RAKED IN (PARALLEL W/CONTOUR). EXISTING ORGANIC DUFF AND DEBRIS SHALL BE SALVAGED AND DISTRIBUTED EVENLY OVER SEEDED AREAS ON SLOPES BETWEEN 4:1 AND 3:1 TO PROVIDE A MIN.1/2 THICK LAYER. SLOPES BETWEEN 3:1 AND 1.5:1 SHALL BE PROTECTED WITH COIR NETTING (FABRIC) OF 600gm2 (3:1 to 2:1) AND 900gm2 (2:1 to 1.5:1) WEIGHT. COIR FABRIC SHALL BE ANCHORED WITH 24" LONG, WEDGE-SHAPED STAKES CUT FROM 2X4 NPT DF WOOD, STAGGERED AT 3'-0" O.C.
5. 5% OF ALL CONTAINERIZED PLANTS SHALL BE TESTED FOR PHYTOPHTHORA PRESENCE. NO INFECTED PLANTS SHALL BE ALLOWED IN THE PROJECT AREA.
6. ALL PLANTS SHALL BE PEST AND DISEASE FREE AND SHALL SHOW NO SIGNS OF MINERAL DEFICIENCIES.
7. PLANTS SHALL BE IN THRIVING CONDITION BOTH AT THE TIME OF DELIVERY TO THE SITE AND DURING THE FINAL PLANT INSTALLATION ACCEPTANCE INSPECTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY MAINTENANCE BETWEEN PLANT DELIVERY AND INSTALLATION ACCEPTANCE INSPECTION.

DATE:

REVISIONS

1

AECOM

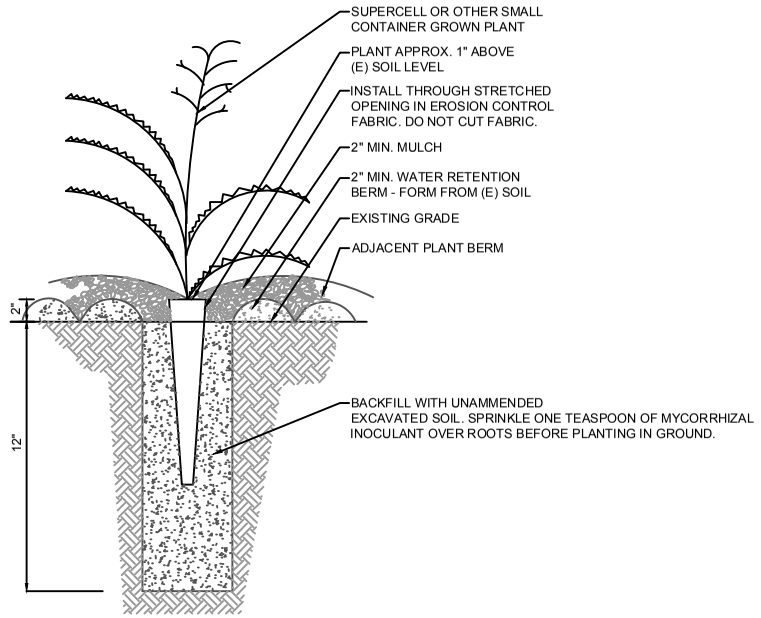
LAGUNITA DIVERSION DAM REMOVAL
AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS
PLANTING SCHEDULE

LICENSED LANDSCAPE ARCHITECT
STEPHEN GEORGE STRNAD, NO. LA 4296
SIGNATURE
EXPIRATION DATE 12-31-18
DATE
STATE OF CALIFORNIA

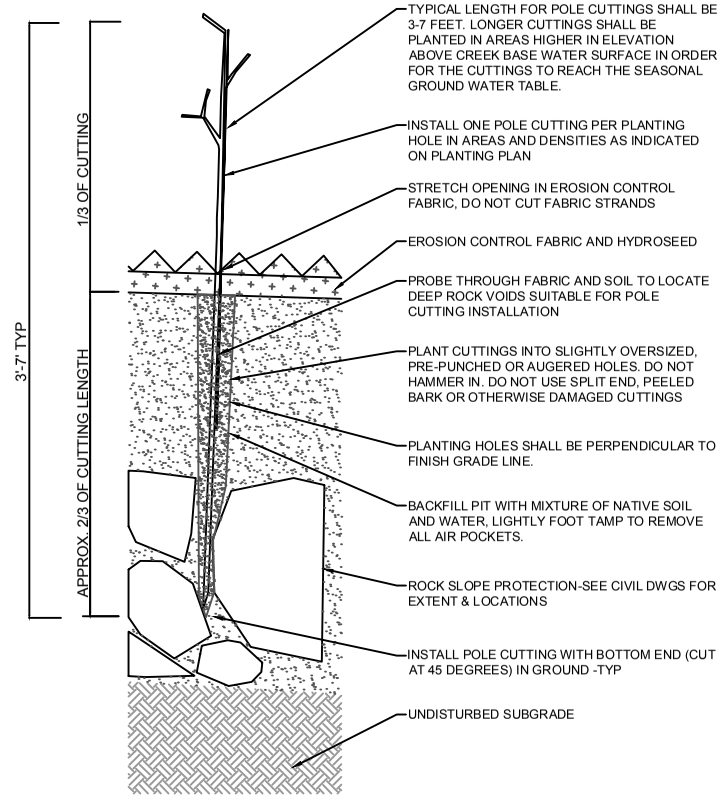
DRAWN BY: CH	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

SHEET: 20

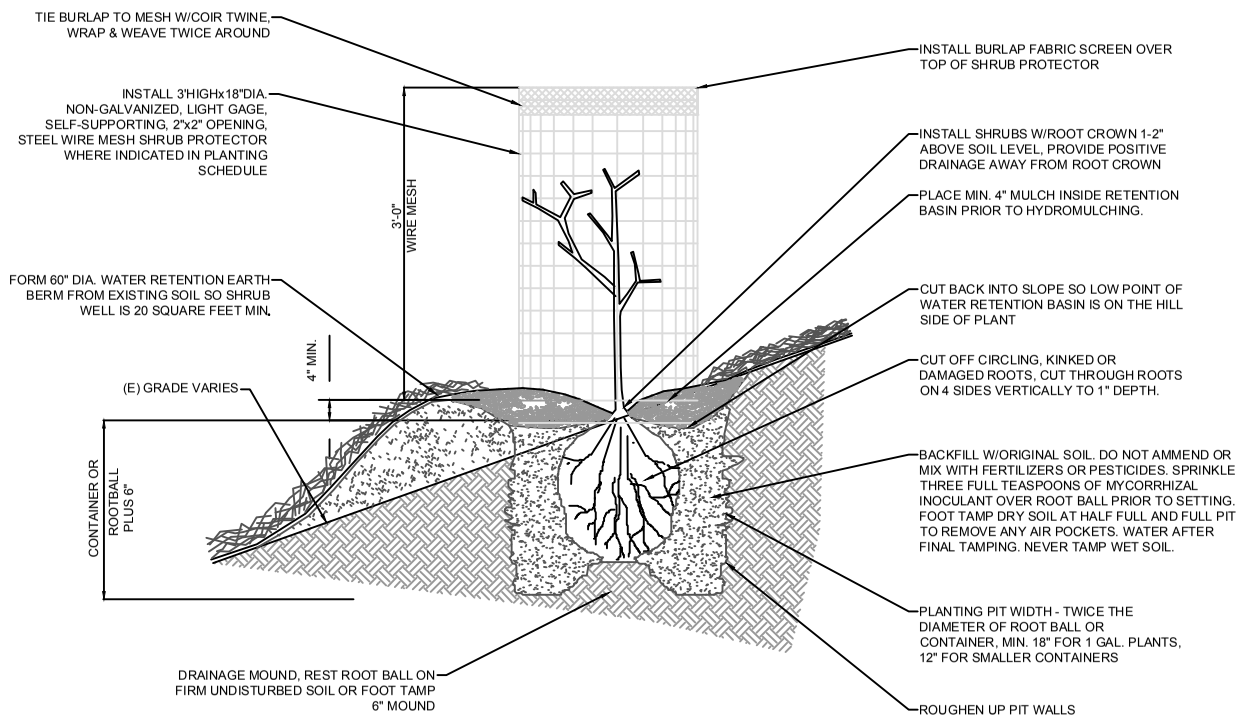
1 PLANTING SCHEDULE



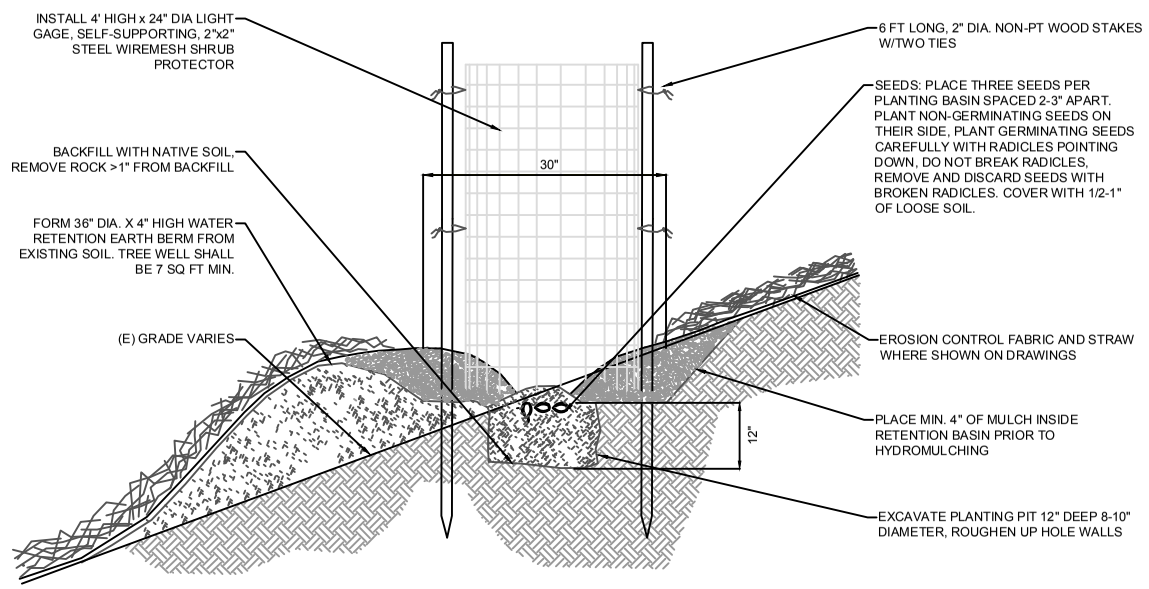
1 TYPICAL SUPER CELL L8 AND D6 HERBACEOUS PERENNIAL PLANTING



2 TYPICAL POLE CUTTING INSTALLATION



3 TYPICAL T4 CONTAINER TREE INSTALLATION



4 TYPICAL SEEDED PLANT INSTALLATION

REVISIONS	DATE:
1	

AECOM

LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS
PLANTING DETAILS

LICENSED LANDSCAPE ARCHITECT
No. 5961
JEFF GEORGE STRNAD, NO. LA
Signature
12-31-18
EXPIRATION DATE
DATE
STATE OF CALIFORNIA

DRAWN BY: KW/JP	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

SHEET: 21

NOTES

1. VERIFY AVAILABILITY OF WATER SOURCE, PROVIDE ALL POWER, WATER, AND EQUIPMENT. SECURE REQUIRED PERMITS, AND PAY ALL FEES AND COSTS NECESSARY TO OPERATE THE IRRIGATION SYSTEM,
2. THE IRRIGATION SYSTEM IS DESIGNED FOR AN AVAILABLE WATER PRESSURE OF 50-90 PSI AND MIN. FLOW RATE OF 20 GPM. AT THE POINT OF CONNECTION. VERIFY WATER PRESSURE AND FLOW RATE PRIOR TO ORDERING MATERIALS OR BEGINNING CONSTRUCTION AND PROMPTLY REPORT ANY DISCREPANCIES TO OWNER'S REPRESENTATIVE LANDSCAPE ARCHITECT.
3. THE IRRIGATION SYSTEM IS SHOWN DIAGRAMMATICALLY FOR CLARITY. LOCATE ALL PIPING, VALVES, BACKFLOW PREVENTION DEVICES, AND OTHER IRRIGATION EQUIPMENT WITHIN RESTORATION AREAS UNLESS NOTED OR DIRECTED OTHERWISE. SHOULD THE CONTRACTOR FAIL TO NOTIFY OWNER'S REPRESENTATIVE LANDSCAPE ARCHITECT OF ANY DISCREPANCIES BETWEEN THE PLANS AND THE FIELD CONDITIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REVISIONS NECESSARY AT NO ADDITIONAL COST TO THE CLIENT.
4. CONTRACTOR SHALL NOT EXCAVATE OR TRENCH WITHIN THE SENSITIVE CULTURAL RESOURCES AREA; THE IRRIGATION SYSTEM SHALL BE INSTALLED ABOVE GROUND WITHIN THE SENSITIVE CULTURAL RESOURCES AREA.
5. PRIOR TO ANY EXCAVATION OR TRENCHING, LOCATE AND VERIFY ALL CABLES, CONDUITS, AND UNDERGROUND UTILITIES. CONTACT AN UNDERGROUND UTILITY LOCATING SERVICE, TO LOCATE AND MARK ALL UTILITIES. TAKE PROPER PRECAUTIONS NOT TO DAMAGE OR DISTURB SUCH UNDERGROUND UTILITIES. NOTIFY THE OWNER'S REPRESENTATIVE LANDSCAPE ARCHITECT IMMEDIATELY IF A CONFLICT EXISTS BETWEEN SUCH OBSTACLES AND THE PROPOSED WORK. PROCEED IN THE SAME MANNER IF ROCK LAYERS OR ANY OTHER CONDITIONS ARE ENCOUNTERED UNDERGROUND.
6. ALL CONTROL VALVES SHALL BE MANIFOLDED AND GROUPED IN LOCKING VALVE BOXES IN GENERAL AREAS SHOWN ON PLANS. VALVES SHALL BE LOCATED AS DETERMINED IN THE FIELD BY OWNER'S REPRESENTATIVE LANDSCAPE ARCHITECT. MANIFOLD PIPE AND BALL VALVE SIZES SHALL BE EQUAL TO OR GREATER THAN THE SIZE OF THE LARGEST REMOTE CONTROL VALVE IN THE MANIFOLD. CONTRACTOR SHALL VERIFY MANIFOLD LOCATIONS WITH LANDSCAPE ARCHITECT BEFORE INSTALLATION.
7. IRRIGATION LINES SHALL BE INSTALLED WITHIN RESTORATION AREAS WHEREVER POSSIBLE AND AT LEAST 12" INTO THE RESTORATION AREA FROM ITS EDGES UNLESS INDICATED OTHERWISE.
8. ALL CONTROL WIRES SHALL BE TAPED TO THE BOTTOM OF IRRIGATION PIPE AT 10'-0" O.C. WITH DUCT TAPE OR SIMILAR DURABLE TAPE.
9. SHOULD THE CONTRACTOR MAKE NOZZLE CHANGES OR ADD HEADS AS A RESULT OF SITE OBSTACLES OR CONSTRUCTION CHANGES, THEN THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALCULATION AND ADJUSTMENTS IN PIPE SIZES. IN NO CASE SHALL IRRIGATION LINE FLOW VELOCITIES EXCEED 5 FEET PER SECOND. SCHEDULE VALVE SEQUENCING DURING IRRIGATION SO THAT THE MAXIMUM FLOW RATE TO COMPLY WITH THIS REQUIREMENT IS NOT EXCEEDED.
10. REFER TO DETAILS AND SPECIFICATIONS FOR FURTHER INFORMATION.
11. ADJUST PRESSURE REGULATORS (ACCU-SYNC) FOR EACH CONTROL VALVE TO COMPENSATE FOR SLOPE PRESSURE INCREASE (4.33 PSI PER 10' OF ELEVATION) TO DELIVER A PRESSURE SUFFICIENT BUT NOT EXCESSIVE TO OPERATE ALL SPRINKLERS.
12. INSTALL HUNTER CHECK VALVES AS NECESSARY TO PREVENT LOW HEAD DRAINAGE.

IRRIGATION PIPE SIZE CHARTS

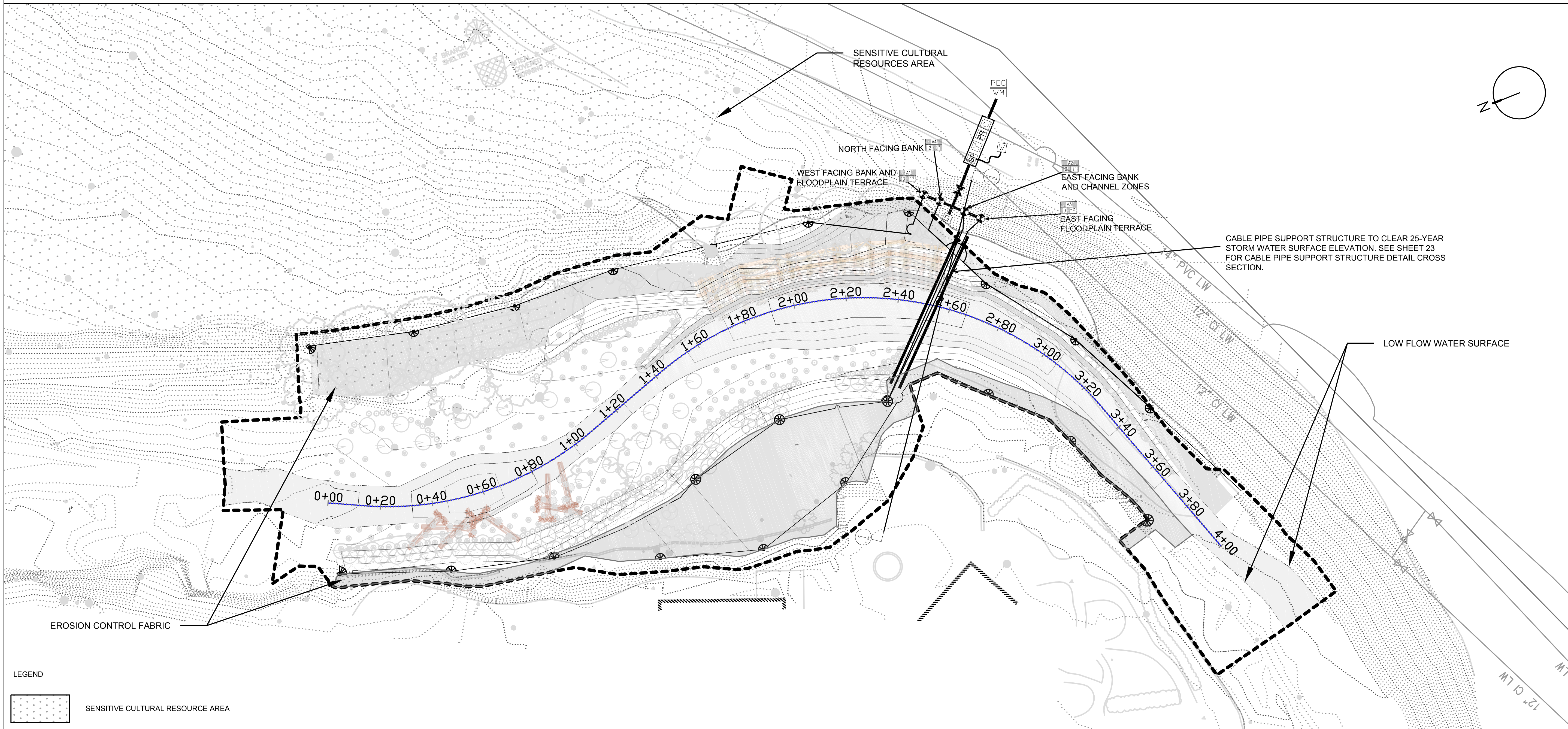
MAX. FLOW (GPM)	12	22	30	50
SCH. 40 PIPE	1"	1.25"	1.5"	2"

MAX. FLOW (GPM)	10	16	26	35
CLASS 200 PIPE	0.75"	1"	1.25"	1.5"

MAINTAIN FRICTION LOSS BELOW 2.5 PSI/100' & PIPE WATER VELOCITY BELOW 5.0 FPS.

IRRIGATION LEGEND

SYMBOL	DESCRIPTION	MANUFACTURER/TYPE
POC WM	POINT OF CONNECTION AND WATER METER WITH ISOLATION VALVES	
BP Y PR C	BACKFLOW PREVETNER, Y-STRAINER, PRESSURE REDUCER AND AUTOMATIC CONTROLLER IN PROTECTIVE CAGE	
W	WEATHER STATION - RAIN SWITCH	
	MANUAL GATE VALVE	
	REMOTE IRRIGATION CONTROL VALVE	HUNTER PGV - 1" VALVE
	REMOTE VALVE INFORMATION TAG WITH VALVE NUMBER, FLOW RATE, AND SZE	
Q	QUICK COUPLING VALVE	
	PVC MAINLINE	
	PVC LATERAL	
	90 DEG. TRIPOD MOUNTED IRRIGATION ROTOR HEAD	HUNTER INDUSTRIES ROTOR I-25, 40' - 71' RADIUS, 40-100 PSI, 0.25 GPM
	180 DEG. TRIPOD MOUNTED IRRIGATION ROTOR HEAD	HUNTER INDUSTRIES ROTOR I-25, 40' - 71' RADIUS, 40-100 PSI, 0.51 GPM
	360 DEG. TRIPOD MOUNTED IRRIGATION ROTOR-TRIPOD BRACE MOUNTED	HUNTER INDUSTRIES ROTOR I-25, 40' - 71' RADIUS, 40-100 PSI, 1.02 GPM



LEGEND

SENSITIVE CULTURAL RESOURCE AREA

1 PLAN VIEW: IRRIGATION PLAN

40 20 0 40 SCALE: 1" = 40'

REVISIONS | DATE:

AECOM

LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT

100% DESIGN DRAWINGS

IRRIGATION PLAN

LICENSED LANDSCAPE ARCHITECT GEORGE STRNAD NO. LA 4296 12-31-18 STATE OF CALIFORNIA

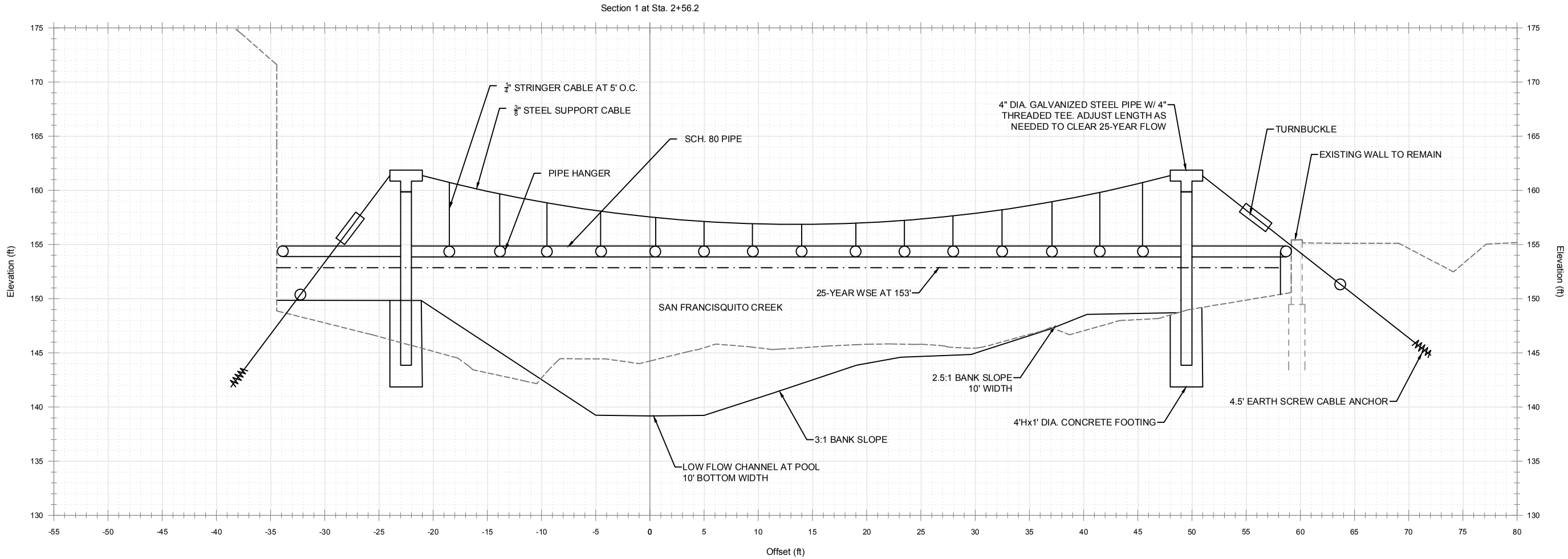
DRAWN BY: CH | PROJECT NO.: 60392030

CHECKED BY: SMC | DATE: 02-02-2018

SHEET: 22

NOTE

1. PAINT ALL ABOVE GROUND COMPONENTS DARK GREEN TO MATCH SURROUNDINGS



1	CABLE PIPE SUPPORT STRUCTURE DETAILS

REVISIONS	DATE:
1	

AECOM

LAGUNITA DIVERSION DAM REMOVAL
AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

CABLE PIPE SUPPORT STRUCTURE DETAILS

LICENSED LANDSCAPE ARCHITECT
JOHN GEORGE STRNAD, NO. 6236
SIGNATURE
12-31-18
EXPIRATION DATE
DATE
STATE OF CALIFORNIA

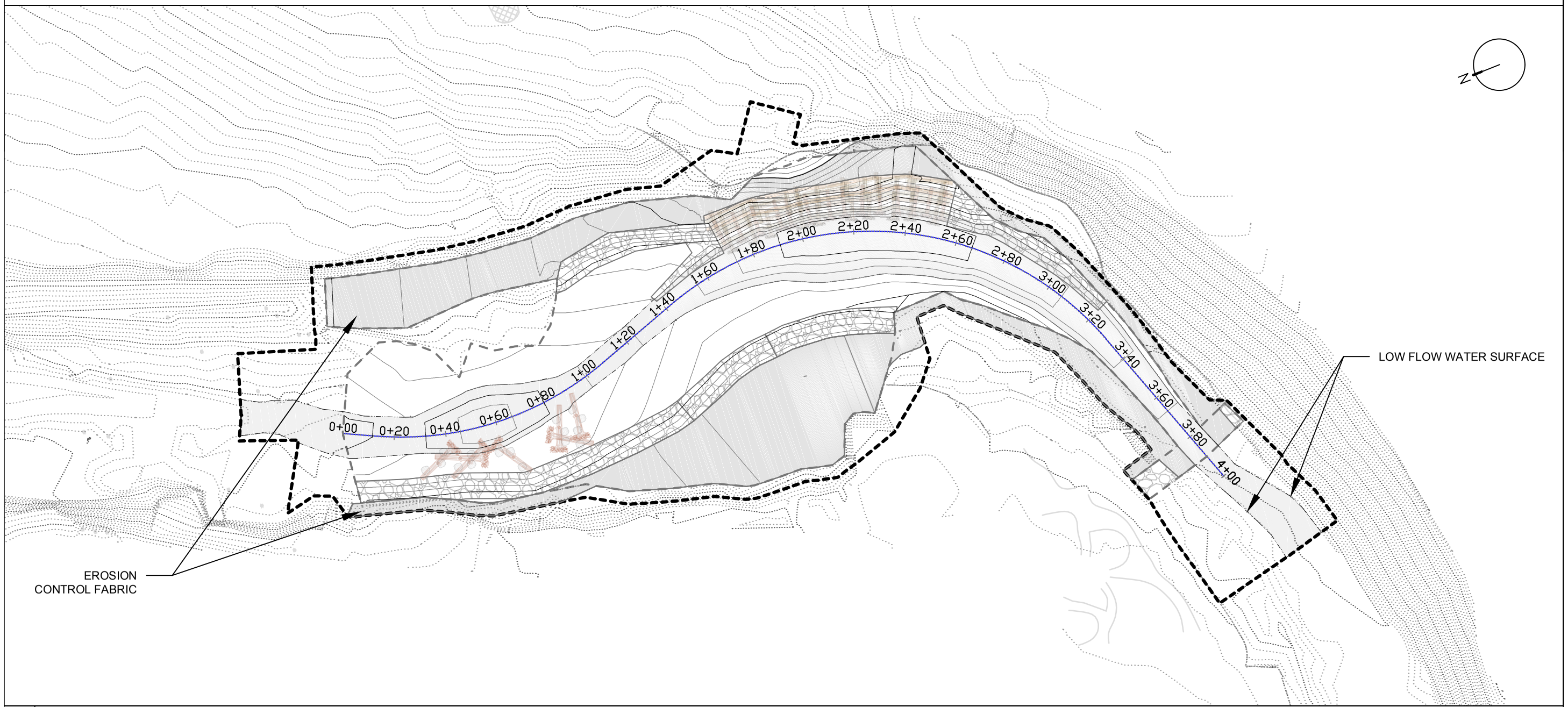
DRAWN BY: KW	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018
SHEET: 23	

NOTES:

1. APPLY EROSION CONTROL FABRIC (ECF) IN AREAS SHOWN IN THIS DRAWING.
2. INSTALLATION DETAILS AND TYPICAL LONGITUDINAL AND CROSS SECTIONS ARE SHOWN ON SHEETS 25, 26 AND 27.
3. PROVIDE ECF AS SPECIFIED IN SPECIFICATION SECTION 02935.
4. INSTALLATION
   A. INSTALLATION OF EROSION CONTROL FABRIC AND COIR LOGS SHALL BE COMPLETED WITHIN 120 HOURS (5 CALENDAR DAYS) AFTER COMPLETION OF SEEDING.
   B. INSTALL FABRIC AND COIR LOGS ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS AND AS SHOWN ON THE DRAWINGS.
   C. BEGIN AT THE DOWNHILL END OF THE INSTALLATION AREA AND WORK UPHILL. BURY AND STAKE THE EDGES OF THE FABRIC IN KEY TRENCHES AS SHOWN ON DRAWINGS. FOLD FABRIC THREE TIMES IN THE TRENCH, ANCHOR WITH WOOD STAKES. BACKFILL KEY TRENCH WITH NATIVE SOIL AND COMPACT. LAY FABRIC ON SLOPES WITHOUT EXCESSIVE STRETCHING SO THAT THE FABRIC CONFORMS TIGHTLY TO THE SOIL ON THE SLOPE. THERE SHALL BE NO VOIDS BETWEEN THE INSTALLED FABRIC AND THE UNDERLYING SOIL. OVERLAP EACH END OF THE UPHILL EROSION CONTROL FABRIC RUN OVER THE LOWER, UPHILL EROSION CONTROL FABRIC RUN AS SHOWN ON THE DRAWINGS. ATTACH EROSION CONTROL FABRIC WITH WOOD STAKES IN A STAGGERED PATTERN AS SHOWN ON THE DRAWINGS. DO NOT CUT OPENINGS IN EROSION FABRIC TO INSTALL STAKES. STAKES SHALL BE HAMMERED INTO THE GROUND THROUGH PRE-STRETCHED OPENINGS IN THE FABRIC. WOOD STAKES SHALL BE FIRMLY ANCHORED IN THE EXISTING SOIL. STAKES SHALL EXTEND ABOVE EROSION CONTROL FABRIC AND SHALL BE INSTALLED FIRMLY IN THE ROCK SLOPE PROTECTION SO THEY CANNOT BE MOVED OR PULLED OUT BY HAND.

LEGEND

- FINISH INDEX CONTOUR
- FINISH INTERMEDIATE CONTOUR
- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- LIMIT OF WORK
- LIMIT OF GRADING
- EDGE OF WATER SURFACE AT LOW FLOW
- BURIED FOUNDATION BOULDER
- CRIBWALL LOG WITH ROOTWAD
- CRIBWALL LOG
- EROSION CONTROL FABRIC
- VEGETATED BOULDER REVETMENT



1 EROSION CONTROL FABRIC PLAN

40 20 0 40 SCALE: 1" = 40'

DATE:

REVISIONS

1

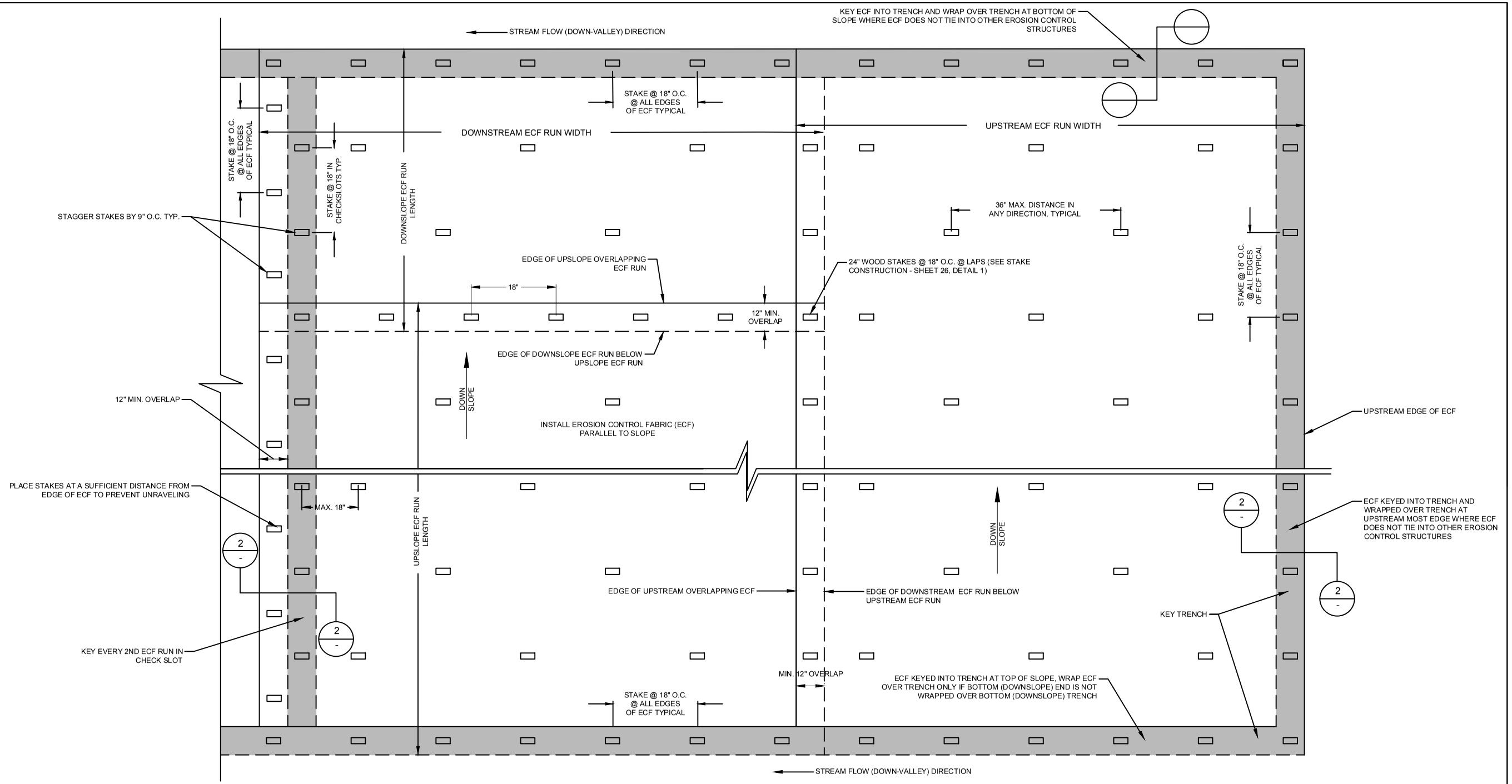
AECOM

LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS
EROSION CONTROL PLAN

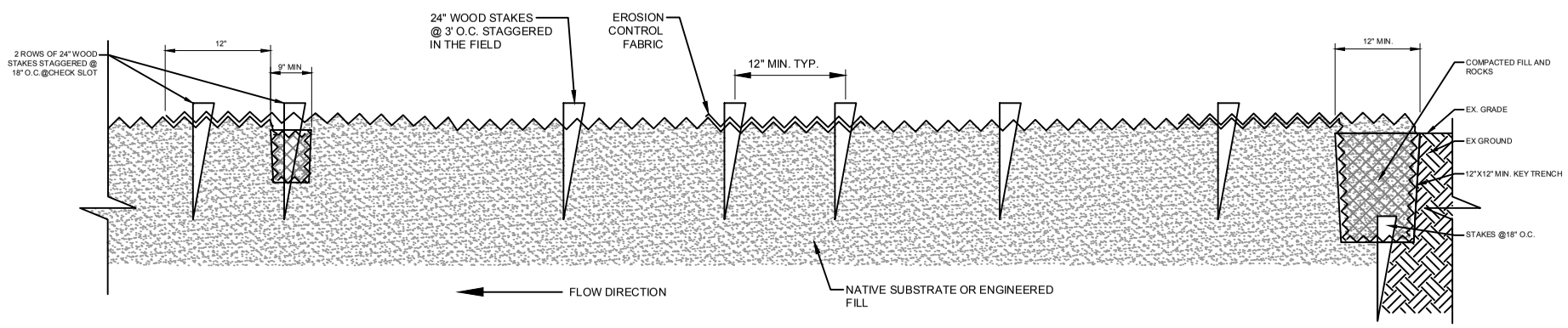
LICENSED LANDSCAPE ARCHITECT
STIRI GEORGE STRNAD, NO. 5496
SIGNATURE
12-31-18
Expiration Date
DATE
STATE OF CALIFORNIA

DRAWN BY: KW	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

SHEET: 24



1 EROSION CONTROL FABRIC TYPICAL INSTALLATION PLAN



2 EROSION CONTROL FABRIC TYPICAL INSTALLATION SECTION

REVISIONS	DATE:
1	

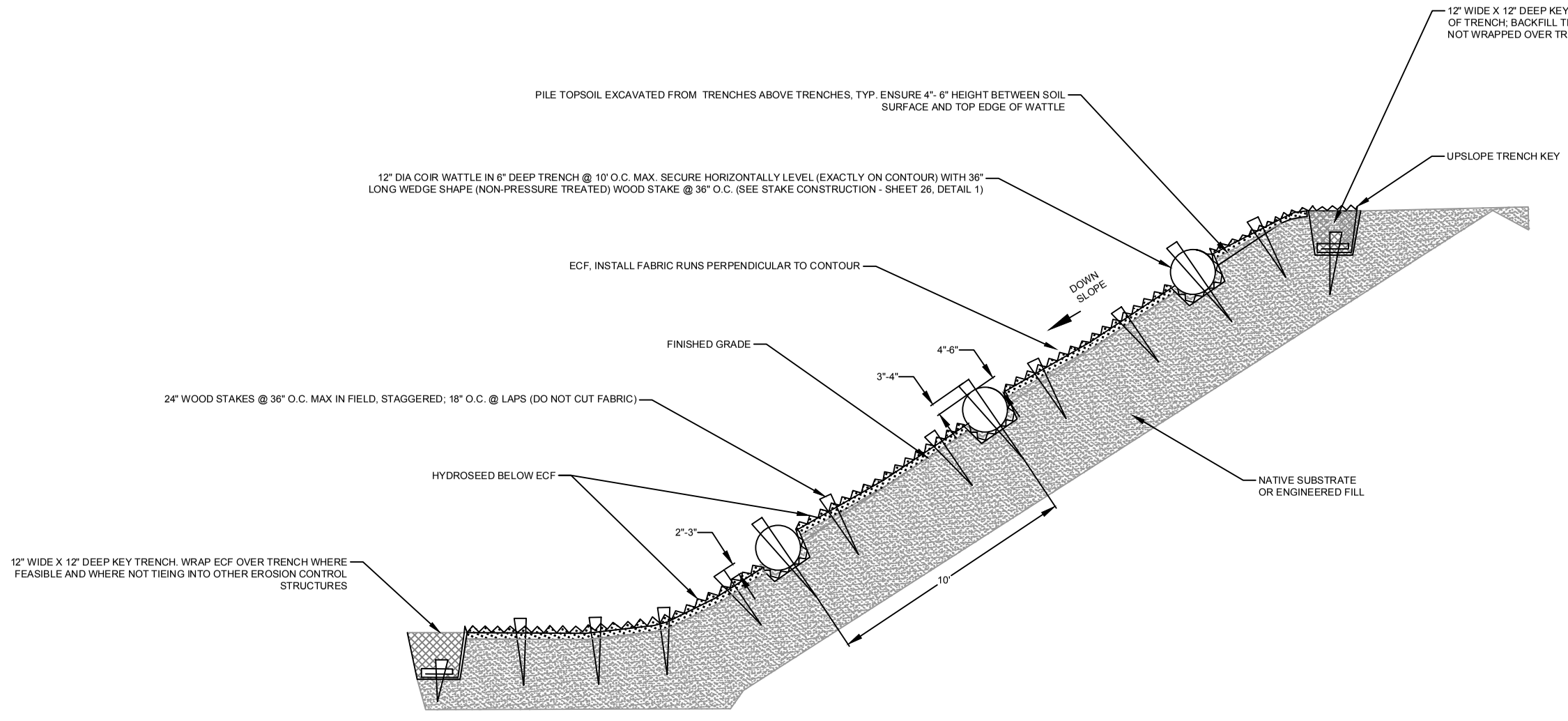
AECOM

LAGUNITA DIVERSION DAM REMOVAL
AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

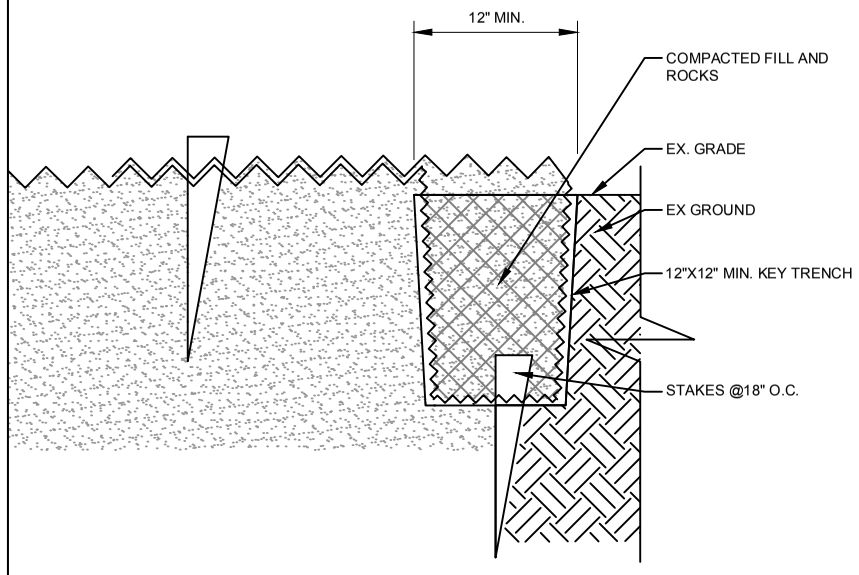
EROSION CONTROL DETAILS

LICENSED LANDSCAPE ARCHITECT
No. 6432
STEPHEN GEORGE STRNAD
SIGNATURE
12-31-18
EXPIRATION DATE
DATE
STATE OF CALIFORNIA

DRAWN BY: KW	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018
SHEET: 25	

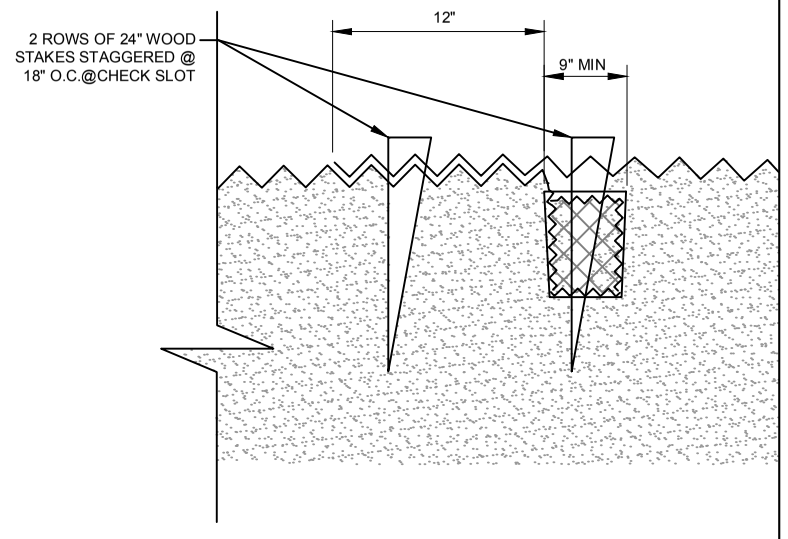


1 EROSION CONTROL FABRIC FOR SLOPES STEEPER THAN 3H:1V -TYPICAL SECTION PERPENDICULAR TO STREAM FLOW DIRECTION



2

3 ECF UPSLOPE END TRENCH KEY DETAIL



4 ECF CHECK SLOT DETAIL

DATE:

REVISIONS

AECOM

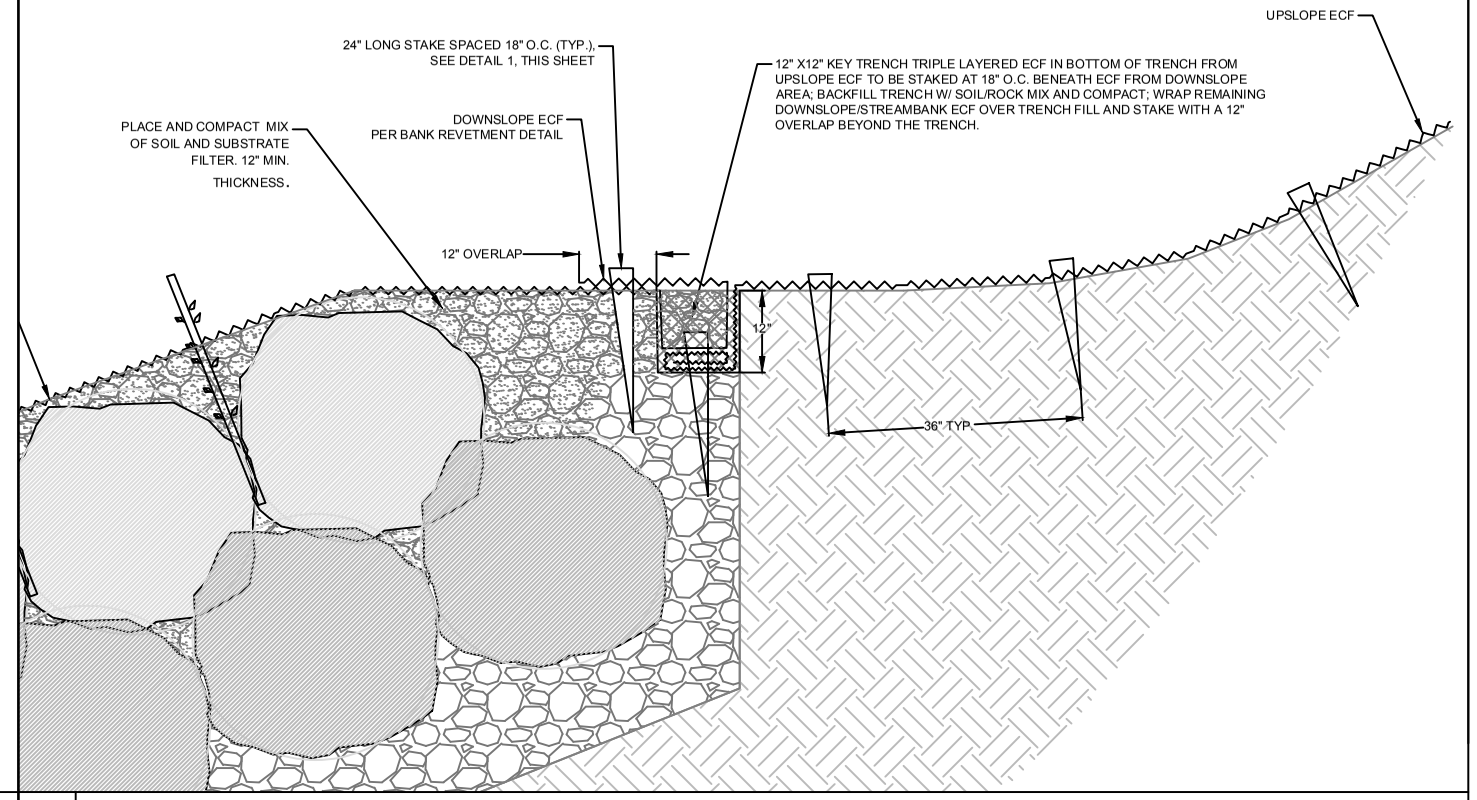
LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

EROSION CONTROL DETAILS

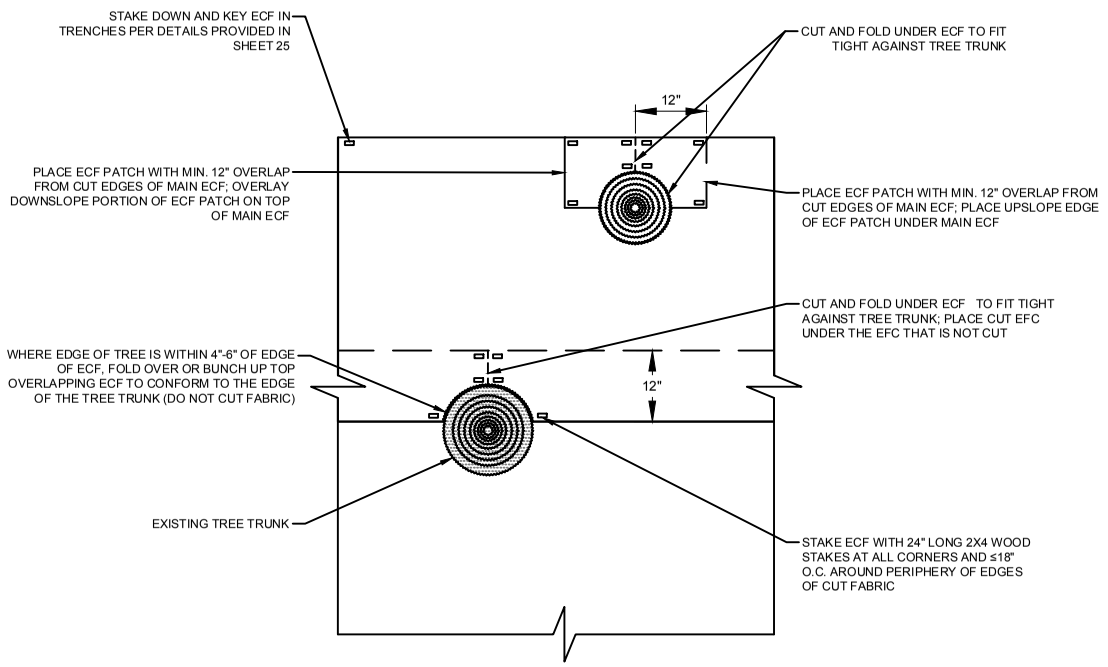
LICENSED LANDSCAPE ARCHITECT
GEORGE STRNAD, NO. 4748
SIGNATURE
12-31-18
EXPIRATION DATE
DATE
STATE OF CALIFORNIA

DRAWN BY: KW/JP	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

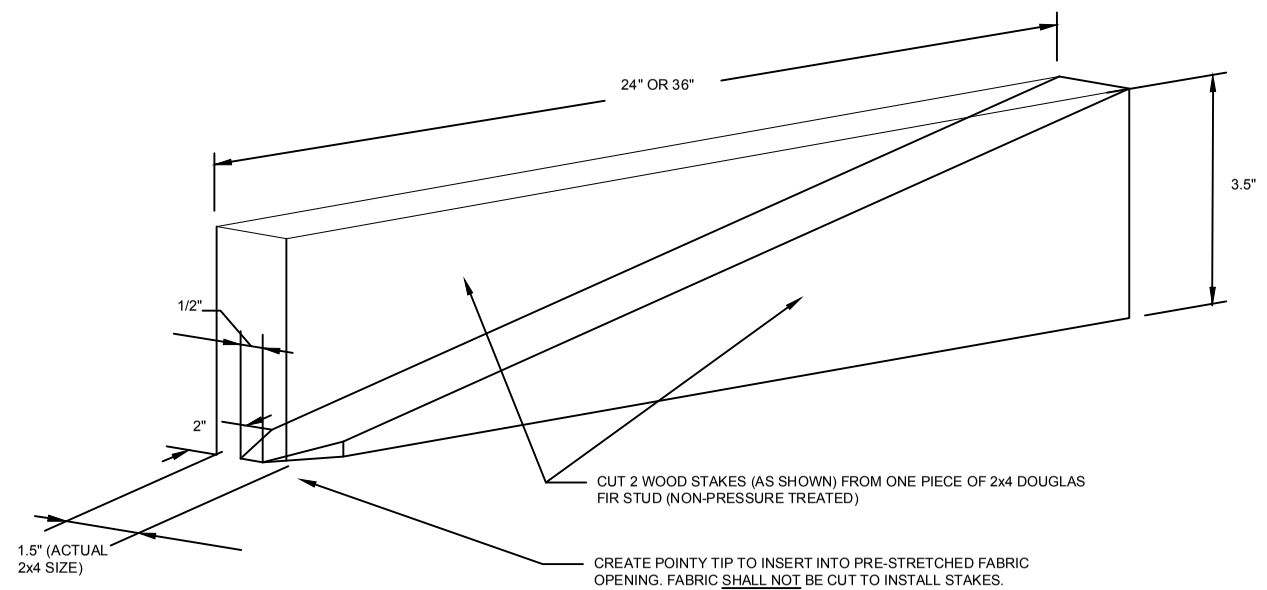
SHEET: 26



1 TYPICAL ECF CONNECTION TO REVETMENTS AND CRIB WALL



2 EROSION CONTROL FABRIC PLACEMENT AROUND EXISTING TREES



3 TYPICAL WOOD STAKE DETAIL

REVISIONS	DATE:
1	

AECOM

LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT
100% DESIGN DRAWINGS

EROSION CONTROL DETAILS

LICENSED LANDSCAPE ARCHITECT
JEFFREY GEORGE STRNAD, NO. 6042
SIGNATURE
12-31-18
EXPIRATION DATE
DATE
STATE OF CALIFORNIA

DRAWN BY: KW/JP	PROJECT NO.: 60392030
CHECKED BY: SMC	DATE: 02-02-2018

SHEET: 27

COUNTY OF SANTA CLARA
General Construction Specifications

GENERAL CONDITIONS

1. ALL CONSTRUCTION WORK SHALL BE PERFORMED IN ACCORDANCE WITH ~~THE SOILS AND/OR GEOTECHNICAL REPORT PREPARED BY ________________ AND DATED________ THIS REPORT IS SUPPLEMENTED BY:~~ 1) THESE PLANS AND SPECIFICATIONS, 2) THE COUNTY OF SANTA CLARA STANDARD DETAILS. 3) THE COUNTY OF SANTA CLARA STANDARD SPECS, 4) STATE OF CALIFORNIA STANDARD DETAILS, 5) STATE OF CALIFORNIA STANDARD SPECIFICATIONS. IN THE EVENT OF CONFLICT THE FORMER SHALL TAKE PRECEDENCE OVER THE LATTER. THE PERFORMANCE AND COMPLETION OF ALL WORK MUST BE TO THE SATISFACTION OF THE COUNTY.
2. DEVELOPER IS RESPONSIBLE FOR INSTALLATION OF THE IMPROVEMENTS SHOWN ON THESE PLANS AND HE OR HIS SUCCESSOR ~~PROPERTY OWNERS~~ ARE RESPONSIBLE FOR THEIR CONTINUED MAINTENANCE.
3. DEVELOPER SHALL BE RESPONSIBLE FOR CORRECTION OF ANY ERRORS OR OMISSIONS IN THESE PLANS. THE COUNTY SHALL BE AUTHORIZED TO REQUIRE DISCONTINUANCE OF ANY WORK AND SUCH CORRECTION AND MODIFICATION OF PLANS AS MAY BE NECESSARY TO COMPLY WITH COUNTY STANDARDS OR CONDITIONS OF DEVELOPMENT APPROVAL.
4. DEVELOPER SHALL OBTAIN ENCROACHMENT PERMITS FROM THE SANTA CLARA VALLEY WATER DISTRICT AND CALIFORNIA DEPARTMENT OF TRANSPORTATION WHERE NEEDED. COPIES OF THESE PERMITS SHALL BE KEPT AT THE JOB SITE FOR REVIEW BY THE COUNTY'S INSPECTOR.
5. DEVELOPER SHALL REMOVE OR TRIM ALL TREES TO PROVIDE AN UNOBSTRUCTED FIFTEEN (15) FOOT VERTICAL CLEARANCE FOR ROADWAY AREA.
6. THIS PLAN AUTHORIZES THE REMOVAL OF ONLY THOSE TREES WITH TRUNK DIAMETERS GREATER THAN 12 INCHES MEASURED 4.5 FEET ABOVE THE GROUND THAT ARE SHOWN TO BE REMOVED UNLESS AN AMENDED PLAN IS APPROVED OR A SEPARATE TREE REMOVAL PERMIT IS OBTAINED FROM THE PLANNING OFFICE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT REMOVAL OF ADDITIONAL TREES HAS BEEN PERMITTED.
7. ~~DEVELOPER~~ CONTRACTOR SHALL PROVIDE ADEQUATE DUST CONTROL AS REQUIRED BY THE COUNTY INSPECTOR.
8. ALL PERSONS MUST COMPLY WITH SECTION 4442 OF THE PUBLIC RESOURCES CODE AND SECTION 13005 OF THE HEALTH AND SAFETY CODE RELATING TO THE USE OF SPARK ARRESTERS.
9. UPON DISCOVERING OR UNEARTHING ANY BURIAL SITE AS EVIDENCED BY HUMAN SKELETAL REMAINS OR ARTIFACTS, THE PERSON MAKING SUCH DISCOVERY SHALL IMMEDIATELY NOTIFY THE COUNTY CORONER AT (4008) 454-2520 AND LAND DEVELOPMENT ENGINEERING OFFICE AT (408) 299-5730. NO FURTHER DISTURBANCE OF THE SITE MAY BE MADE EXCEPT AS AUTHORIZED BY THE LAND DEVELOPMENT OFFICE IN ACCORD WITH PROVISIONS OF THIS ORDINANCE (COUNTY ORDINANCE CODE SECTION B6-18).
10. THESE PLANS ARE FOR THE WORK DESCRIBED IN THE SCOPE OF WORK ONLY. ~~A SEPARATE PERMIT WILL BE REQUIRED FOR THE SEPTIC LINE CONSTRUCTION.~~
11. ANY DEVIATION FROM THESE APPROVED PLANS SHALL BE RE-APPROVED IN WRITING BY THE COUNTY ENGINEER PRIOR TO CONSTRUCTION.

CONSTRUCTION STAKING

1. THE ~~DEVELOPER'S ENGINEER~~ CONTRACTOR IS RESPONSIBLE FOR THE INITIAL PLACEMENT AND REPLACEMENT OF CONSTRUCTION GRADE STAKES. ~~THE STAKES ARE TO BE ADEQUATELY IDENTIFIED, LOCATED, STABILIZED, ETC. FOR THE CONVENIENCE OF CONTRACTORS. LATERAL OFFSET OF STAKES SET FOR CURBS AND GUTTERS SHALL NOT EXCEED 2 1/2 FEET FROM BACK OF CURB.~~
2. ANY PROPERTY LINE STAKES OR ROAD MONUMENTS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED BY DEVELOPER'S ~~ENGINEER AND~~ LICENSED LAND SURVEYOR.
3. ~~PROPERTY LINE STAKING MUST BE PERFORMED BY THE PROJECT ENGINEER OR LAND SURVEYOR TO ESTABLISH OR RE-ESTABLISH THE PROJECT BOUNDARY AND SHALL BE INSPECTED BY THE COUNTY INSPECTOR PRIOR TO THE BEGINNING OF THE WORK.~~
4. PROPER CONSTRUCTION STAKES SHALL BE SET IN THE FIELD BY THE ~~PROJECT ENGINEER OR LAND SURVEYOR~~ CONTRACTOR AND MAY BE VERIFIED BY THE COUNTY INSPECTOR PRIOR TO THE COMMENCEMENT OF GRADING.

CONSTRUCTION INSPECTION

1. CONTRACTOR SHALL NOTIFY PERMIT INSPECTION UNIT, SANTA CLARA COUNTY PRIOR TO COMMENCING WORK AND FOR FINAL INSPECTION OF WORK AND SITE.
2. THE COUNTY REQUIRES A MINIMUM OF 24 HOURS ADVANCE NOTICE FOR GENERAL INSPECTION, 48 HOURS FOR ASPHALT CONCRETE INSPECTION.
3. INSPECTION BY SANTA CLARA COUNTY SHALL BE LIMITED TO INSPECTION OF MATERIALS AND PROCESSES OF CONSTRUCTION TO OBSERVE THEIR COMPLIANCE WITH PLANS & SPECIFICATIONS BUT DOES NOT INCLUDE RESPONSIBILITY FOR THE SUPERINTENDENT OF CONSTRUCTION, SITE CONDITIONS, EQUIPMENT OR PERSONNEL. CONTRACTOR SHALL NOTIFY THE COUNTY LAND DEVELOPMENT INSPECTOR AT PHONE (408) 299-6868 AT LEAST 24 HOURS PRIOR TO COMMENCING WORK AND FOR FINAL INSPECTION OF WORK AND SITE.
4. DEVELOPER AND/OR HIS AUTHORIZED REPRESENTATIVE MUST SUBMIT WRITTEN REQUEST FOR FINAL INSPECTION AND ACCEPTANCE. SAID REQUEST SHALL BE DIRECTED TO THE INSPECTION OFFICE NOTED ON THE PERMIT FORM.
5. ~~THE CONTRACTOR SHALL PROVIDE TO THE COUNTY CONSTRUCTION INSPECTOR WITH PAD ELEVATION AND LOCATION CERTIFICATES, PREPARED BY THE PROJECT ENGINEER OR LAND SURVEYOR, PRIOR TO COMMENCEMENT OF THE BUILDING FOUNDATION.~~

SITE PREPARATION (CLEARING AND GRUBBING)

1. EXISTING TREES AUTHORIZED FOR REMOVAL, ROOTS, AND FOREIGN MATERIAL IN AREAS TO BE IMPROVED WILL BE REMOVED TO AN AUTHORIZED DISPOSAL SITE AS FOLLOWS:
   ~~A) TO A MINIMUM DEPTH OF TWO FEET BELOW THE FINISHED GRADE OF PROPOSED ROADWAYS (EITHER PRIVATE OR TO BE DEDICATED TO PUBLIC USE)~~
   B) FROM AREAS AFFECTED BY THE PROPOSED GRADING EXCEPT WHERE NOTED ON THE PLANS.
2. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER TO MOVE OR RELOCATE UTILITY POLES AND OTHER OBSTRUCTIONS IN THE WAY OF CONSTRUCTION.

UTILITY LOCATION, TRENCHING & BACKFILL

1. CONTRACTOR SHALL NOTIFY USA (UNDERGROUND SERVICE ALERT) AT 1-800-277-2600 A MINIMUM OF 24 HOURS BEFORE BEGINNING UNDERGROUND WORK FOR VERIFICATION OF THE LOCATION OF UNDERGROUND UTILITIES.
2. ACCURATE VERIFICATION AS TO SIZE, LOCATION, AND DEPTH OF EXISTING UNDERGROUND CONDUITS OR FACILITIES SHALL BE THE INDIVIDUAL CONTRACTORS RESPONSIBILITY. PLAN LOCATIONS ARE APPROXIMATE AND FOR GENERAL INFORMATION ONLY.
3. ANY AND ALL UNDERGROUND INSTALLATIONS SHALL BE IN PLACE AND THE TRENCH BACKFILLED AND COMPACTED BEFORE PLACING AGGREGATE BASE MATERIAL OR SURFACE STRUCTURES. SURFACING MAY BE DONE IF THE UTILITY COMPANY CONCERNED INDICATES BY LETTER THAT IT WILL BORE. UNLESS SPECIFICALLY AUTHORIZED BY THE COUNTY, GAS AND WATER MAINS SHALL BE INSTALLED OUTSIDE THE PAVED AREAS.
4. TRENCH BACKFILL IN EXISTING PAVEMENT AREAS SHALL BE SAND MATERIAL IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE STATE SPECIFICATIONS. THE STRUCTURAL SECTION FOR TRENCH REPLACEMENT SHALL CONSIST OF NOT LESS THAN 12 INCHES OF APPROVED AGGREGATE BASE MATERIAL COMPACTED TO A RELATIVE COMPACTION OF AT LEAST 95% AND 4 INCHES OF HOT ASPHALT CONCRETE PLACED IN TWO LIFTS. TRENCH RESTORATION FOR HIGHER TYPE PAVEMENTS SHALL BE MADE IN KIND OR AS DIRECTED BY THE COUNTY.
5. TRENCH BACKFILL IN NEW CONSTRUCTION AREAS SHALL BE SAND MATERIAL COMPACTED TO A RELATIVE COMPACTION OF AT LEAST 90%. THE REQUIREMENT FOR SELECT MATERIAL MAY BE WAIVED BY COUNTY IF THE NATIVE SOIL IS SUITABLE FOR USE AS TRENCH BACKFILL BUT THE COMPACTION REQUIREMENTS WILL NOT BE THEREBY WAIVED.
6. BACKFILL AND TRENCH RESTORATION REQUIREMENTS SHALL APPLY AS MINIMUM STANDARDS TO ALL UNDERGROUND FACILITIES INSTALLED BY OTHER FIRMS OR PUBLIC AGENCIES.

RETAINING WALLS

1. REINFORCED CONCRETE AND CONCRETE MASONRY UNIT RETAINING WALLS SHALL HAVE FOUNDATION AND REINFORCEMENT INSPECTED BY THE COUNTY ENGINEERING INSPECTOR AND ENGINEER OF RECORD PRIOR TO POURING THE FOUNDATION AND FORMING THE WALL.
2. SEGMENTAL BLOCK RETAINING WALLS SHALL HAVE FOUNDATION AND REINFORCEMENT INSPECTED BY THE COUNTY ENGINEERING INSPECTOR.

REVISED 10/27/2015

GRADING

1. EXCAVATED MATERIAL SHALL BE PLACED IN THE FILL AREAS DESIGNATED OR SHALL BE HAULED AWAY FROM THE SITE TO A COUNTY APPROVED DISPOSAL SITE. WHERE FILL MATERIAL IS TO BE PLACED ON NATURAL GROUND, IS SHALL BE STRIPPED OF ALL VEGETATION. TO ACHIEVE A PROPER BOND WITH THE FILL MATERIAL, THE SURFACE OF THE GROUND SHALL BE SCARIFIED TO DEPTH OF 6" BEFORE FILL IS PLACED. ~~WHERE NATURAL GROUND IS STEEPER THAN 5:1, IT SHALL BE BENCHED AND THE FILL KEYED IN TO ACHIEVE STABILITY.~~ WHERE NEW FILL IS TO BE PLACED ON EXISTING FILL THE EXISTING FILL SHALL BE REMOVED UNTIL MATERIAL COMPACTED TO 90% RELATIVE COMPACTION IS EXPOSED. THEN THE NEW FILL MATERIAL SHALL BE PLACED AS PER THESE CONSTRUCTION NOTES. FILL MATERIAL SHALL BE PLACED IN UNIFORM LIFTS ~~NOT EXCEEDING 6" IN UNCOMPACTED THICKNESS.~~ BEFORE COMPACTION BEGINS, THE FILL SHALL BE BROUGHT TO A WATER CONTENT THAT WILL PERMIT PROPER COMPACTION BY EITHER 1) AERATING THE FILL IF IT IS TOO WET OR 2) MOISTENING THE FILL WITH WATER IF IT IS TOO DRY. EACH LIFT SHALL BE THOROUGHLY MIXED BEFORE COMPACTION TO ENSURE A UNIFORM DISTRIBUTION OF MOISTURE.
2. EXCESS CUT MATERIAL SHALL NOT BE SPREAD OR STOCKPILED ON THE SITE.
3. ~~SURPLUS EARTH FILL MATERIAL SHALL BE PLACED IN A SINGLE (8" MAX) THICK LAYER COMPACTED TO WITHSTAND WEATHERING IN THE AREA(S) DELINEATED ON THE PLAN.~~
4. NO ORGANIC MATERIAL SHALL BE PLACED IN ANY FILL. ~~NO TREES SHALL BE REMOVED OUTSIDE OF CUT, FILL OR ROADWAY AREAS.~~
5. ~~THE UPPER 6" OF SUBGRADE BELOW DRIVEWAY ACCESS ROAD OR PARKING AREA SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY.~~
6. MAXIMUM CUT SLOPE SHALL BE 2 HORIZONTAL TO 1 VERTICAL. ~~MAXIMUM FILL SLOPE SHALL BE 2 HORIZONTAL TO 1 VERTICAL.~~

LOCATION	CUT (C.Y.)	FILL (C.Y.)	VERT. DEPTH
RESIDENCE			
ACCESSORY STRUCTURE			
POOL/HARDSCAPE			
LANDSCAPE			
DRIVEWAY			
OFF SITE IMPROVEMENTS			
TOTAL			

~~NOTE: FILL VOLUMES INCLUDE 10% SHRINKAGE.~~
~~EXCESS MATERIAL SHALL BE OFF HAULED TO A COUNTY APPROVED DUMP SITE.~~

7. NOTIFY ~~SOILS~~ PROJECT ENGINEER TWO (2) DAYS PRIOR TO COMMENCEMENT OF ANY GRADING WORK TO COORDINATE THE WORK IN THE FIELD.
8. ALL MATERIALS FOR FILL SHOULD BE APPROVED BY THE ~~SOILS~~ PROJECT ENGINEER BEFORE IT IS BROUGHT TO THE SITE.
9. THE UPPER 6" OF THE SUBGRADE SOIL SHALL BE SCARIFIED, MOISTURE CONDITIONED AND COMPACTED TO A MINIMUM RELATIVE COMPACTION OF 95%
10. ALL AGGREGATE BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM ~~95~~ 90% RELATIVE COMPACTION.
11. ~~THE GEOTECHNICAL PLAN REVIEW LETTER MUST BE REVIEWED AND APPROVED BY THE COUNTY GEOLOGIST PRIOR TO FINAL APPROVAL BY THE COUNTY ENGINEER FOR BUILDING OCCUPANCY.~~
12. ~~THE PROJECT GEOTECHNICAL ENGINEER SHALL PERFORM COMPACTION TESTING AND PRESENT THE RESULTS TO THE COUNTY ENGINEERING INSPECTOR PRIOR TO THE CONSTRUCTION OF ANY PAVED AREA.~~
13. GRADING WORK BETWEEN OCTOBER 15TH AND APRIL 15TH IS AT THE DISCRETION OF THE SANTA CLARA COUNTY GRADING OFFICIAL.
14. TOTAL DISTURBED AREA FOR THE PROJECT 3.5 ACRES.
15. WDID NO.______________________.
16. THE INSPECTOR MAY VERIFY THAT A VALID NOTICE OF INTENT (NOI) HAS BEEN ISSUED BY THE STATE AND THAT A CURRENT AND UP TO DATE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IS AVAILABLE ON SITE.

TREE PROTECTION

1. FOR ALL TREES TO BE RETAINED WITH A CANOPY IN THE DEVELOPMENT AREA OR INTERFACES WITH THE LIMITS OF GRADING FOR ALL PROPOSED DEVELOPMENT ON SITE, THE TREES SHALL BE PROTECTED BY THE PLACEMENT OF RIGID TREE PROTECTIVE FENCING, CONSISTENT WITH THE COUNTY INTEGRATED LANDSCAPE GUIDELINES, AND INCLUDE THE FOLLOWING:
   A. FENCING SHOULD BE PLACED ALONG THE OUTSIDE EDGE OF THE DRIPLINE OF THE TREE OR GROVE OF TREES.
   B. THE FENCING SHALL BE MAINTAINED THROUGHOUT THE SITE CONSTRUCTION PERIOD AND SHALL BE INSPECTED PERIODICALLY FOR DAMAGE AND PROPER FUNCTION.
   C. FENCING SHALL BE REPAIRED, AS NECESSARY, TO PROVIDE A PHYSICAL BARRIER FROM CONSTRUCTION ACTIVITIES.
   D. SIGNAGE STATING, "WARNING- THIS FENCING SHALL NOT BE REMOVED WITHOUT PERMISSION FROM THE SANTA CLARA COUNTY PLANNING OFFICE (408) 299-5770. COUNTY OF SANTA CLARA TREE PROTECTION MEASURES MAY BE FOUND AT http://www.sccplanning.gov." SHALL BE PLACED ON THE TREE PROTECTIVE FENCING UNTIL FINAL OCCUPANCY.
2. PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITY, TREE PROTECTIVE FENCING SHALL BE SECURELY IN PLACED AND INSPECTED BY THE LAND DEVELOPMENT ENGINEERING INSPECTOR.
3. SEE EXISTING TREE PROTECTION DETAILS FOR MORE INFORMATION.

ACCESS ROADS AND DRIVEWAYS

1. DRIVEWAY LOCATIONS SHALL BE AS SHOWN ON THE IMPROVEMENT PLANS WITH CENTERLINE STATIONING. THE MINIMUM CONCRETE THICKNESS SHALL BE 6 INCHES THROUGHOUT (WITH A MAXIMUM APPROACH SLOPE OF 1 1/4 INCHES PER FOOT).
2. ALL DRIVEWAY OR COMMON ACCESS ROAD SECTIONS IN EXCESS OF 15 LONGITUDINAL SLOPE MUST BE PAVED WITH A MINIMUM 2-INCH ASPHALT LIFT OR FULL DEPTH CONCRETE LIFT PRIOR TO ANY COMBUSTIBLE FRAMING.
3. THE OWNER AND PRIME CONTRACTOR ARE RESPONSIBLE FOR MAINTAINING PROJECT SITE ACCESS AND NEIGHBORHOOD ACCESS FOR EMERGENCY VEHICLES AND LOCAL RESIDENTS.
4. ROADWAYS DESIGNATED AS NOT COUNTY MAINTAINED ROADS AS SHOWN ON THE PLAN WILL NOT BE ELIGIBLE FOR COUNTY MAINTENANCE UNTIL THE ROADWAYS ARE IMPROVED (AT NO COST TO THE COUNTY) TO THE PUBLIC MAINTENANCE ROAD STANDARDS APPROVED BY THE BOARD OF SUPERVISORS AND IN EFFECT AT SUCH TIME THAT THE ROADWAYS ARE CONSIDERED FOR ACCEPTANCE INTO THE COUNTY'S ROAD SYSTEM.
5. ALL WORK IN THE COUNTY ROAD RIGHT-OF-WAY REQUIRES AN ENCROACHMENT PERMIT FROM THE ROADS AND AIRPORTS DEPARTMENT. EACH INDIVIDUAL ACTIVITY REQUIRES A SEPARATE PERMIT - I.E. CABLE, ELECTRICAL, GAS, SEWER, WATER, RETAINING WALLS, DRIVEWAY APPROACHES, FENCES, LANDSCAPING, TREE REMOVAL, STORM DRAINAGE IMPROVEMENTS, ETC..

STREET LIGHTING

1. PACIFIC GAS & ELECTRIC ~~ELECTROLIER SERVICE FEE~~ SHALL BE PAID BY THE DEVELOPER AND/OR HIS AUTHORIZED REPRESENTATIVE.

SANITARY SEWER

1. THE SANITARY SEWER AND WATER UTILITIES SHOWN ON THESE PLANS ARE NOT PART OF THIS GRADING PERMIT AND ARE SHOWN FOR REFERENCE ONLY.
2. ALL MATERIALS AND METHODS OF CONSTRUCTION OF SANITARY SEWERS SHALL CONFORM TO THE SPECIFICATIONS OF THE JURISDICTION INVOLVED. INSPECTION OF SANITARY SEWER WORK SHALL BE DONE BY SAID JURISDICTION.

PORTLAND CEMENT CONCRETE

1. CONCRETE USED FOR STRUCTURAL PURPOSES SHALL BE CLASS "A" (6 SACK PER CUBIC YARD) AS SPECIFIED IN THE STATE STANDARD SPECIFICATIONS. CONCRETE PLACED MUST DEVELOP A MINIMUM STRENGTH FACTOR OF 2800 PSI IN A SEVEN-DAY PERIOD. THE CONCRETE MIX DESIGN SHALL BE UNDER THE CONTINUAL CONTROL OF THE COUNTY INSPECTOR.

AIR QUALITY, LANDSCAPING AND EROSION CONTROL

1. WATER ALL ACTIVE CONSTRUCTION AREAS AT LEAST TWICE DAILY.
2. COVER ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS OR REQUIRE ALL TRUCKS TO MAINTAIN AT LEAST TWO FEET OF FREEBOARD.
3. PAVE, APPLY WATER THREE TIMES DAILY, OR APPLY (NON-TOXIC) SOIL STABILIZERS ON ALL UNPAVED ACCESS ROADS, PARKING AREAS AND STAGING AREAS AT CONSTRUCTION SITES.
4. SWEEP DAILY (WITH WATER SWEEPERS) ALL PAVED ACCESS ROADS, PARKING AREAS AND STAGING AREAS AT CONSTRUCTION SITES. THE USE OF DRY POWDER SWEEPING IS PROHIBITED.
5. SWEEP STREETS DAILY (WITH WATER SWEEPERS) IF VISIBLE SOIL MATERIAL IS CARRIED ONTO ADJACENT PUBLIC STREETS. THE USE OF DRY POWDER SWEEPING IS PROHIBITED.
6. ALL CONSTRUCTION VEHICLES, EQUIPMENT AND DELIVERY TRUCKS SHALL HAVE A MAXIMUM IDLING TIME OF 5 MINUTES (AS REQUIRED BY THE CALIFORNIA AIRBORNE TOXIC CONTROL MEASURE TITLE 13, SECTION 2485 OF CALIFORNIA CODE OF REGULATIONS (CCR)). ENGINES SHALL BE SHUT OFF IF CONSTRUCTION REQUIRES LONGER IDLING TIME UNLESS NECESSARY FOR PROPER OPERATION OF THE VEHICLE.
7. ALL VEHICLE SPEEDS ON UNPAVED ROADS SHALL BE LIMITED TO 15 MILES PER HOUR.
8. ALL CONSTRUCTION EQUIPMENT SHALL BE MAINTAINED AND PROPERLY TUNED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. ALL EQUIPMENT SHALL BE CHECKED BY A CERTIFIED MECHANIC AND DETERMINED TO BE RUNNING IN PROPER CONDITION PRIOR TO OPERATION.
9. POST A SIGN THAT IS AT LEAST 32 SQUARE FEET MINIMUM 2 INCHES LETTER HEIGHT VISIBLE NEAR THE ENTRANCE OF CONSTRUCTION SITE THAT IDENTIFIES THE FOLLOWING REQUIREMENTS. OBTAIN ENCROACHMENT PERMIT FOR SIGN FROM ROADS DEPARTMENT OR OTHER APPLICABLE AGENCY IF REQUIRED.
   A. 15 MILES PER HOUR (MPH) SPEED LIMIT
   B. 5 MINUTES MAXIMUM IDLING TIME OF VEHICLES
   C. TELEPHONE NUMBER TO CONTACT THE BAY AREA AIR QUALITY MANAGEMENT DISTRICT REGARDING DUST COMPLAINTS. NOTE PHONE NUMBER OF THE BAY AREA AIR QUALITY MANAGEMENT DISTRICT AIR POLLUTION COMPLAIN HOTLINE OF 1-800-334-6367.
10. ALL FILL SLOPES SHALL BE ~~COMPACTED AND~~ LEFT IN A ~~SMOOTH AND FIRM~~ CONDITION CAPABLE OF WITHSTANDING WEATHERING.
11. ALL EXPOSED DISTURBED AREAS SHALL BE SEEDED ~~WITH BROME SEED SPREAD AT THE RATE OF 5 LB. PER 1000 SQUARE FEET (OR APPROVED EQUAL).~~ SEEDING AND WATERING SHALL BE MAINTAINED AS REQUIRED TO ENSURE GROWTH.
12. ALL DITCHES SHALL BE LINED PER COUNTY STANDARD SD8.
13. ALL STORM DRAINAGE STRUCTURES SHALL BE INSTALLED WITH EFFECTIVE ENTRANCE & OUTFALL EROSION CONTROLS ~~E.G. SACKED CONCRETE RIP-RAP~~. ENERGY DISSIPATERS SHALL BE INSTALLED AT ALL DITCH OUTFALLS. WHERE OUTFALLS ARE NOT INTO AN EXISTING CREEK OR WATER COURSE, RUNOFF SHALL BE RELEASED TO SHEET FLOW.
14. PRIOR TO GRADING COMPLETION AND RELEASE OF THE BOND, ALL GRADED AREAS SHALL BE RESEEDED IN CONFORMANCE WITH THE COUNTY GRADING ORDINANCE TO MINIMIZE THE VISUAL IMPACTS OF THE GRADE SLOPES AND REDUCE THE POTENTIAL FOR EROSION OF THE SUBJECT SITE.
15. PERMANENT LANDSCAPING SHOWN ON THE ATTACHED LANDSCAPE PLAN MUST BE INSTALLED AND FIELD APPROVED BY THE COUNTY PLANNING OFFICE PRIOR TO FINAL APPROVAL BY THE COUNTY ENGINEER, AND FINAL OCCUPANCY RELEASE BY THE BUILDING INSPECTION OFFICE.
16. THE OWNER SHALL PREPARE AND PRESENT A WINTERIZATION REPORT TO THE COUNTY INSPECTOR FOR REVIEW PRIOR TO OCTOBER 15TH OF EVERY YEAR.
17. THE OWNER, CONTRACTOR, AND ANY PERSON PERFORMING CONSTRUCTION ACTIVITIES SHALL INSTALL AND MAINTAIN CONSTRUCTION BEST MANAGEMENT PRACTICES (BMPS) ON THE PROJECT SITE AND WITHIN THE SANTA CLARA COUNTY ROAD RIGHT-OF-WAY THROUGHOUT THE DURATION OF THE CONSTRUCTION AND UNTIL THE ESTABLISHMENT OF PERMANENT STABILIZATION AND SEDIMENT CONTROL TO PREVENT THE DISCHARGE OF POLLUTANTS INCLUDING SEDIMENT, CONSTRUCTION MATERIALS, EXCAVATED MATERIALS, AND WASTE INTO THE SANTA CLARA COUNTY RIGHT-OF-WAY, STORM SEWER WATERWAYS, ROADWAY INFRASTRUCTURE. BMPS SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING;
   A. PREVENTION OF POLLUTANTS IN STORM WATER DISCHARGES FROM THE CONSTRUCTION SITE AND THE CONTRACTOR'S MATERIAL AND EQUIPMENT LAYDOWN / STAGING AREAS.
   B. PREVENTION OF TRACKING OF MUD, DIRT, AND CONSTRUCTION MATERIALS ONTO THE PUBLIC ROAD RIGHT-OF-WAY.
   C. PREVENTION OF DISCHARGE OF WATER RUN-OFF DURING DRY AND WET WEATHER CONDITIONS ONTO THE PUBLIC ROAD RIGHT-OF-WAY.
18. THE OWNER, CONTRACTOR, AND ANY PERSON PERFORMING CONSTRUCTION ACTIVITIES SHALL ENSURE THAT ALL TEMPORARY CONSTRUCTION FACILITIES, INCLUDING BUT NOT LIMITED TO CONSTRUCTION MATERIALS, DELIVERIES, HAZARDOUS AND NON-HAZARDOUS MATERIAL STORAGE, EQUIPMENT, TOOLS, PORTABLE TOILETS, CONCRETE WASHOUT, GARBAGE CONTAINERS, LAYDOWN YARDS, SECONDARY CONTAINMENT AREAS, ETC. ARE LOCATED OUTSIDE THE SANTA CLARA COUNTY ROAD RIGHT-OF-WAY.
19. EROSION CONTROL PLAN IS A GUIDE AND SHALL BE AMENDED AS NECESSARY TO PREVENT EROSION AND ILLICIT DISCHARGES ON A YEAR AROUND BASIS, DEPENDING ON THE SEASON, WEATHER, AND FIELD CONDITIONS. EROSION CONTROL MEASURES IN ADDITION TO THOSE NOTED IN THE PERMITTED PLANS MAY BE NECESSARY. FAILURE TO INSTALL SITE SITE AND SITUATIONALY APPROPRIATE EROSION CONTROL MEASURES MAY RESULT IN VIOLATIONS, FINES, AND A STOPPAGE OF WORK.

STORM DRAINAGE AND STORMWATER MANAGEMENT

1. DEVELOPER IS RESPONSIBLE FOR ALL NECESSARY DRAINAGE FACILITIES WHETHER SHOWN ON THE PLANS OR NOT AND HE OR HIS SUCCESSOR PROPERTY OWNERS ARE RESPONSIBLE FOR THE ADEQUACY AND CONTINUED MAINTENANCE OF THESE FACILITIES IN A MANNER WHICH WILL PRECLUDE ANY HAZARD TO LIFE, HEALTH, OR DAMAGE TO ADJOINING PROPERTY, CONSISTENT WITH NPDES PERMIT CAS612008 / ORDER NO. R2-2009-0047 AND NPDES PERMIT CAS000004/ ORDER NO. 2013-0001-DWQ.
2. ~~DROP INLETS SHALL BE COUNTY STANDARD TYPE 5 UNLESS OTHERWISE NOTED ON THE PLANS. THE DEVELOPER'S ENGINEER SHALL BE RESPONSIBLE FOR THE PROPER LOCATION OF DROP INLETS. WHERE STREET PROFILE GRADE EXCEEDS 6% DROP INLETS SHALL BE SET AT 500 ANGLE CURB LINE TO ACCEPT WATER OR AS SHOWN ON THE PLANS.~~
3. WHERE CULVERTS ARE INSTALLED THE DEVELOPER SHALL BE RESPONSIBLE FOR GRADING THE OUTLET DITCH TO DRAIN TO AN EXISTING SWALE OR TO AN OPEN AREA FOR SHEET FLOW.
4. ~~UPON INSTALLATION OF DRIVEWAY CONNECTIONS, PROPERTY OWNERS SHALL PROVIDE FOR THE UNINTERRUPTED FLOW OF WATER IN ROADSIDE DITCHES.~~
5. THE COUNTY SHALL INSPECT ANY UNDERGROUND DRAINAGE IMPROVEMENTS AND STORMWATER MANAGEMENT FEATURES PRIOR TO BACKFILL.

~~AS-BUILT PLANS STATEMENT~~

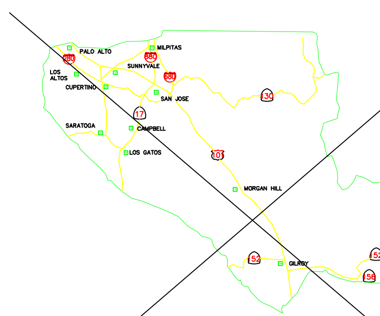
~~THIS IS A TRUE COPY OF THE AS-BUILT PLANS. THERE (___ WERE) (___ WERE NOT) MINOR FIELD CHANGES - MARKED WITH THE SYMBOL (^). THERE (___WERE) (___ WERE NOT) PLAN REVISIONS INDICATING SIGNIFICANT CHANGES REVIEWED BY THE COUNTY ENGINEER AND MARKED WITH THE SYMBOL △.~~

~~DATE~~ ______ ~~SIGNATURE~~ ______

~~NOTE: THIS STATEMENT IS TO BE SIGNED BY THE PERSON AUTHORIZED BY THE COUNTY ENGINEER TO PERFORM THE INSPECTION WORK. A REPRODUCIBLE COPYOF THE AS-BUILT PLANS MUST BE FURNISHED TO THE COUNTY ENGINEER AFTERCONSTRUCTION.~~

GEOTECHNICAL ENGINEER OBSERVATION

1. A CONSTRUCTION OBSERVATION LETTER FROM THE RESPONSIBLE ~~GEOTECHNICAL ENGINEER AND~~ ENGINEERING GEOLOGIST DETAILING CONSTRUCTION OBSERVATIONS AND CERTIFYING THAT THE WORK WAS DONE IN ACCORDANCE WITH THE RECOMMENDATIONS IN THE GEOTECHNICAL AND GEOLOGIC REPORTS SHALL BE SUBMITTED PRIOR TO THE GRADING COMPLETION AND RELEASE OF THE BOND.



SEE SHEET 1
COUNTY LOCATION MAP

SEE SHEET 1
VICINITY MAP

LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT LANDS OF STANFORD UNIVERSITY

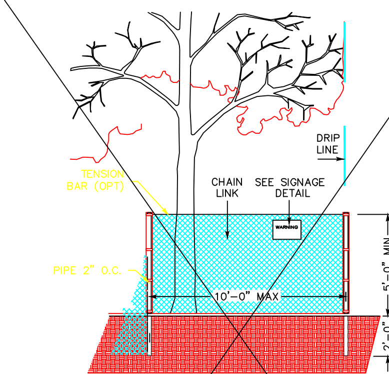
SCOPE OF WORK

1. THE DEVELOPER IS RESPONSIBLE FOR THE INSTALLATION OF THE WORK PROPOSED ON THE EROSION CONTROL PLAN. THE ENGINEER OF RECORD IS RESPONSIBLE FOR THE DESIGN OF THE EROSION CONTROL PLANS AND ANY MODIFICATIONS OF THE EROSION COTROL PLANS TO PREVENT ILLICIT DISCHARGES FROM THE SITE DURING CONSTRUCTION.

SCOPE OF WORK INCLUDES:
1. DEMOLITION OF DAM AND ASSOCIATED STRUCTURES
2. RESTORATION OF 480 lf OF SAN FRANCISQUITO CREEK

SURVEY MONUMENT PRESERVATION

1. THE LANDOWNER / CONTRACTOR MUST PROTECT AND ENSURE THE PERPETUATION OF SURVEY MONUMENTS AFFECTED BY CONSTRUCTION ACTIVITIES.
2. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL LOCATE, STAKE, AND FLAG OR OTHERWISE IDENTIFY WITH PAINT OR OTHER MARKINGS ALL PERMANENT SURVEY MONUMENTS OF RECORD AND ANY UNRECORDED MONUMENTS THAT ARE DISCOVERED THAT ARE WITHIN 50 FEET OF THE CONSTRUCTION ACTIVITY.
3. THE LANDOWNER, CONTRACTOR AND/OR ANY PERSON PERFORMING CONSTRUCTION ACTIVITIES THAT WILL OR MAY DISTURB AN EXISTING MONUMENT, CORNER STAKE, OR ANY OTHER PERMANENT SURVEYED MONUMENT SHALL CAUSE TO HAVE A LICENSED LAND SURVEYOR OR CIVIL ENGINEER, AUTHORIZED TO PRACTICE SURVEYING, ENSURE THAT A CORNER RECORD AND/OR RECORD OF SURVEY ARE FILED WITH THE COUNTY SURVEYOR'S OFFICE PRIOR TO DISTURBING SAID MONUMENTS AND RESET PERMANENT MONUMENT(S) IN THE SURFACE OF THE NEW CONSTRUCTION OR SET A WITNESS MONUMENT(S) TO PERPETUATE THE LOCATION IF ANY PERMANENT MONUMENT COULD BE DESTROYED, DAMAGED, COVERED, DISTURBED, OR OTHERWISE OBLITERATED. THE LICENSED LAND SURVEYOR OR CIVIL ENGINEER SHALL FILE A CORNER RECORD OR RECORD OF SURVEY WITH COUNTY SURVEYOR PRIOR TO FINAL ACCEPTANCE OF THE PROJECT BY THE LAND DEVELOPMENT ENGINEERING INSPECTOR.



EXISTING TREE PROTECTION DETAILS

1. PRIOR TO THE COMMENCEMENT OF ANY GRADING, TREE PROTECTIVE FENCING SHALL BE IN PLACE IN ACCORDANCE WITH THE TREE PRESERVATION PLAN AND INSPECTED BY A CERTIFIED ARBORIST. THE ARBORIST SHALL MONITOR CONSTRUCTION ACTIVITY TO ENSURE THAT THE TREE PROTECTION MEASURES ARE IMPLEMENTED AND ADHERED TO DURING CONSTRUCTION. THIS CONDITION SHALL BE INCORPORATED INTO THE GRADING PLANS.
2. FENCE SHALL BE MINIMUM 5 FEET TALL CONSTRUCTED OF STURDY MATERIAL (CHAIN-LINK OR EQUIVALENT STRENGTH/ DURABILITY).
3. FENCE SHALL BE SUPPORTED BY VERTICAL POSTS DRIVEN 2 FEET (MIN) INTO THE GROUND AND SPACED NOT MORE THAN 10 FEET APART.
4. TREE FENCING SHALL BE MAINTAINED THROUGHOUT THE SITE DURING THE CONSTRUCTION PERIOD, INSPECTED PERIODICALLY FOR DAMAGE AND PROPER FUNCTION, REPAIRED AS NECESSARY TO PROVIDE A PHYSICAL BARRIER FROM CONSTRUCTION ACTIVITIES, AND REMAIN IN PLACE UNTIL THE FINAL INSPECTION.
5. A SIGN THAT INCLUDES THE WORDS, "WARNING: THIS FENCE SHALL NOT BE REMOVED WITHOUT THE EXPRESSED PERMISSION OF THE SANTA CLARA COUNTY PLANNING OFFICE," SHALL BE SECURELY ATTACHED TO THE FENCE IN A VISUALLY PROMINENT LOCATION.

LEGEND

DESCRIPTION	PROPSED	EXISTING

PROVIDE LEGEND OF SYMBOLS USED ON THE PLAN.

COUNTY OF SANTA CLARA DEPT. OF ROADS AND AIRPORTS
ISSUED BY: __________ DATE: __________
ENCROACHMENT PERMIT NO. __________

NO WORK SHALL BE DONE IN THE COUNTY'S RIGHT-OF-WAY WITHUOT AN ENCROACHEMENT PERMIT, INCLUDING THE STAGING OF CONSTRUCTION MATERIAL AND THE PLACEMENT OF PORTABLE TOILETS.

COUNTY OF SANTA CLARA
LAND DEVELOPMENT ENGINEERING & SURVEYING
GRADING / DRAINAGE PERMIT NO. __________
ISSUED BY: __________ DATE: __________

ENGINEER'S STATEMENT

I HEREBY STATE THAT THESE PLANS ARE IN COMPLIANCE WITH ADOPTED COUNTY STANDARDS, THE APPROVED TENTATIVE MAP (OR PLAN) AND CONDITIONS OF APPROVAL PERTAINING THERETO DATED FILE(S) NO. __________

DATE __________ SIGNATURE __________ R.C.E. NO. __________ EXPIRATION DATE __________

REGISTERED PROFESSIONAL ENGINEER
STEVEN ALLEN MCNEELY
No. 80567
Exp. 03-31-19
CIVIL
STATE OF CALIFORNIA

COUNTY ENGINEER'S NOTE

ISSUANCE OF A PERMIT AUTHORIZING CONSTRUCTION DOES NOT RELEASE THE DEVELOPER, PERMITTEE OF ENGINEER FROM RESPONSIBILITY FOR THE CORRECTION OF ERRORS OR OMISSIONS CONTAINED IN THE PLANS. IF, DURING THE COURSE OF CONSTRUCTION, THE PUBLIC INTEREST REQUIRES A MODIFICATION OF (OR DEPARTURE FROM) THE SPECIFICATIONS OF THE PLANS, THE COUNTY SHALL HAVE THE AUTHORITY TO REQUIRE THE SUSPENSION OF WORK, AND THE NECESSARY MODIFICATION OR DEPARTURE AND TO SPECIFY THE MANNER IN WHICH THE SAME IS TO BE MADE.

DATE __________ __________

R.C.E. NO. __________ EXPIRATION DATE __________

LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT

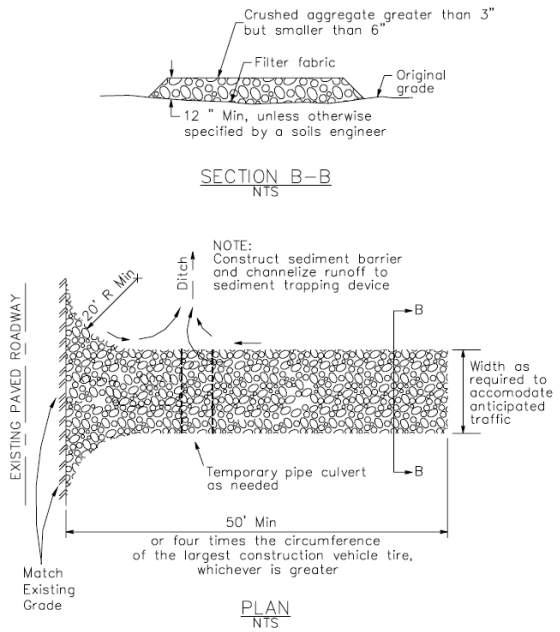
ENGINEER'S NAME: STEVEN ALLEN MCNEELY
AECOM
ADDRESS: 300 LAKESIDE DRIVE, SUITE 400
OAKLAND, CA 94612
PHONE NO. 510-893-3600
FAX NO. __________

Revision 1	Date	APN 142-12-009	Sheet 28
Revision 2	Date	Co. File	
Revision 3	Date		

APPLICANT: ROAD: COUNTY FILE NO.:

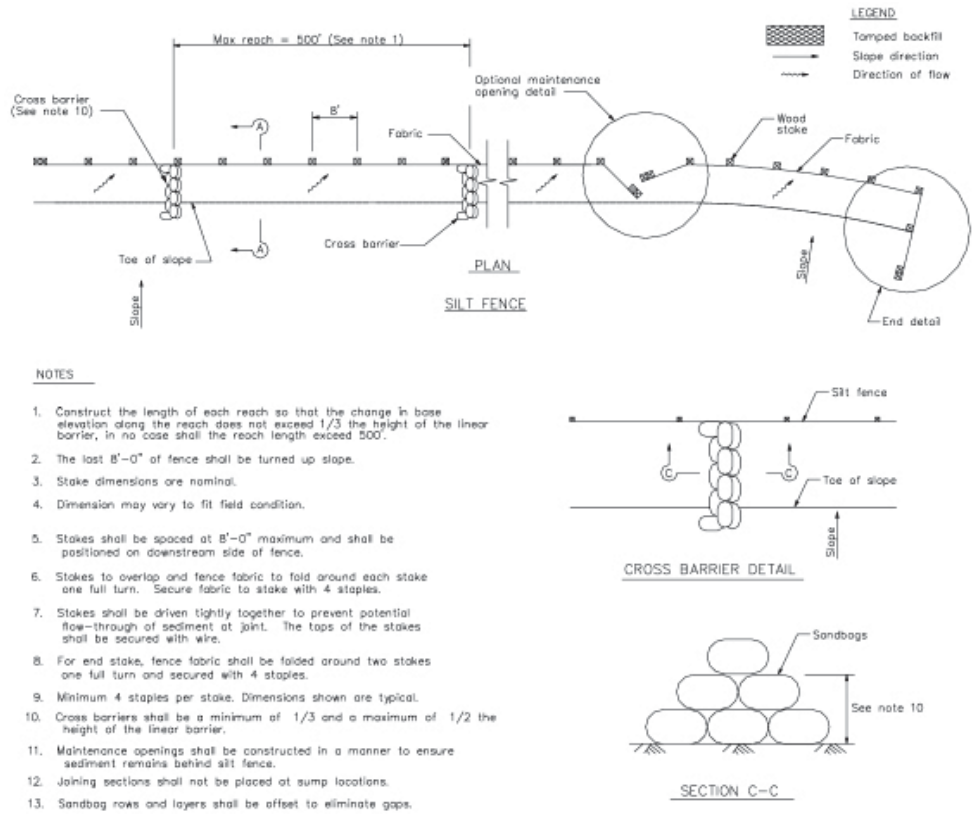
3 Stabilized Construction Entrance/Exit

CASQA Detail TC-1



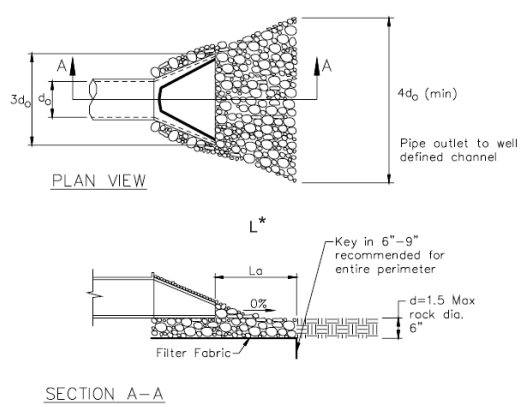
1 Silt Fence

CASQA Detail SE-1



4 Velocity Dissipation Devices

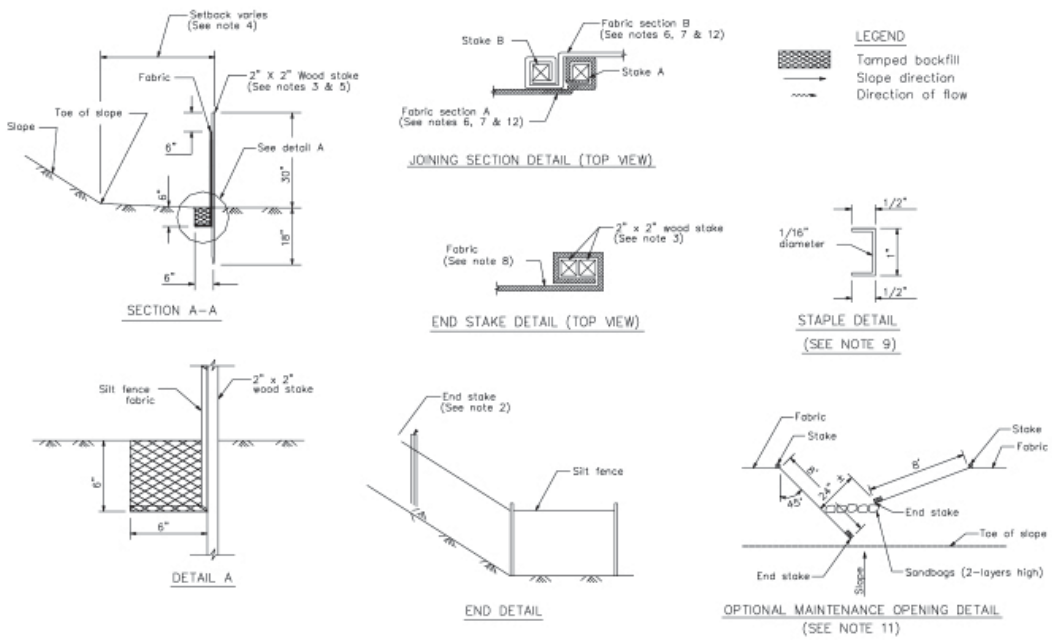
CASQA Detail EC-10



* Length per ABAG Design Standards

2 Silt Fence

CASQA Detail SE-1



Source for Graphics: California Stormwater BMP Handbook, California Stormwater Quality Association, January 2003.
Available from www.cabmphandbooks.com.

STANDARD BEST MANAGEMENT PRACTICE NOTES

1. Solid and Demolition Waste Management: Provide designated waste collection areas and containers on site away from streets, gutters, storm drains, and waterways, and arrange for regular disposal. Waste containers must be watertight and covered at all times except when waste is deposited. Refer to Erosion & Sediment Control Field Manual, 4th Edition (page C3) or latest.
2. Hazardous Waste Management: Provide proper handling and disposal of hazardous wastes by a licensed hazardous waste material hauler. Hazardous wastes shall be stored and properly labeled in sealed containers constructed of suitable materials. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-5 to C-6) or latest.
3. Spill Prevention and Control: Provide proper storage areas for liquid and solid materials, including chemicals and hazardous substances, away from streets, gutters, storm drains, and waterways. Spill control materials must be kept on site where readily accessible. Spills must be cleaned up immediately and contaminated soil disposed properly. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-7 to C-8, C-13 to C-14) or latest.
4. Vehicle and Construction Equipment Service and Storage: An area shall be designated for the maintenance, where on-site maintenance is required, and storage of equipment that is protected from stormwater run-on and runoff. Measures shall be provided to capture any waste oils, lubricants, or other potential pollutants and these wastes shall be properly disposed of off site. Fueling and major maintenance/repair, and washing shall be conducted off-site whenever feasible. Refer to Erosion & Sediment Control Field Manual, 4th Edition (page C9) or latest.
5. Material Delivery, Handling and Storage: In general, materials should not be stockpiled on site. Where temporary stockpiles are necessary and approved by the County, they shall be covered with secured plastic sheeting or tarp and located in designated areas near construction entrances and away from drainage paths and waterways. Barriers shall be provided around storage areas where materials are potentially in contact with runoff. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-11 to C-12) or latest.
6. Handling and Disposal of Concrete and Cement: When concrete trucks and equipment are washed on-site, concrete wastewater shall be contained in designated containers or in a temporary lined and watertight pit where wasted concrete can harden for later removal. If possible have concrete contractor remove concrete wash water from site. In no case shall fresh concrete be washed into the road right-of-way. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-15 to C-16) or latest.
7. Pavement Construction Management: Prevent or reduce the discharge of pollutants from paving operations, using measures to prevent run-on and runoff pollution and properly disposing of wastes. Avoid paving in the wet season and reschedule paving when rain is in the forecast. Residue from saw-cutting shall be vacuumed for proper disposal. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-17 to C-18) or latest.
8. Contaminated Soil and Water Management: Inspections to identify contaminated soils should occur prior to construction and at regular intervals during construction. Remediating contaminated soil should occur promptly after identification and be specific to the contaminant identified, which may include hazardous waste removal. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-19 to C-20) or latest.
9. Sanitary/Septic Water Management: Temporary sanitary facilities should be located away from drainage paths, waterways, and traffic areas. Only licensed sanitary and septic waste haulers should be used. Secondary containment should be provided for all sanitary facilities. Refer to Erosion & Sediment Control Field Manual, 4th Edition (page C-21) or latest.
10. Inspection & Maintenance: Areas of material and equipment storage sites and temporary sanitary facilities must be inspected weekly. Problem areas shall be identified and appropriate additional and/or alternative control measures implemented immediately, within 24 hours of the problem being identified.

STANDARD EROSION CONTROL NOTES

1. Sediment Control Management:

   Tracking Prevention & Clean Up: Activities shall be organized and measures taken as needed to prevent or minimize tracking of soil onto the public street system. A gravel or proprietary device construction entrance/exit is required for all sites. Clean up of tracked material shall be provided by means of a street sweeper prior to an approaching rain event, or at least once at the end of each workday that material is tracked, or, more frequently as determined by the County Inspector. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages B-31 to B-33) or latest.

   Storm Drain Inlet and Catch Basin Inlet Protection: All inlets within the vicinity of the project and within the project limits shall be protected with gravel bags placed around inlets or other inlet protection. At locations where exposed soils are present, staked fiber roles or staked silt fences can be used. Inlet filters are not allowed due to clogging and subsequent flooding. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages B-49 to B-51) or latest.

   Storm Water Runoff: No storm water runoff shall be allowed to drain in to the existing and/or proposed underground storm drain system or other above ground watercourses until appropriate erosion control measures are fully installed.

   Dust Control: The contractor shall provide dust control in graded areas as required by providing wet suppression or chemical stabilization of exposed soils, providing for rapid clean up of sediments deposited on paved roads, furnishing construction road entrances and vehicle wash down areas, and limiting the amount of areas disturbed by clearing and earth moving operations by scheduling these activities in phases.

   Stockpiling: Excavated soils shall not be placed in streets or on paved areas. Borrow and temporary stockpiles shall be protected with appropriate erosion control measures(tarps, straw bales, silt fences, ect.) to ensure silt does not leave the site or enter the storm drain system or neighboring watercourse.
2. Erosion Control: During the rainy season, all disturbed areas must include an effective combination of erosion and sediment control. It is required that temporary erosion control measures are applied to all disturbed soil areas prior to a rain event. During the non-rainy season, erosion control measures must be applied sufficient to control wind erosion at the site.
3. Inspection & Maintenance: Disturbed areas of the Project's site, locations where vehicles enter or exit the site, and all erosion and sediment controls that are identified as part of the Erosion Control Plans must be inspected by the Contractor before, during, and after storm events, and at least weekly during seasonal wet periods. Problem areas shall be identified and appropriate additional and/ or alternative control measures implemented immediately, within 24 hours of the problem being identified.
4. Project Completion: Prior to project completion and signoff by the County Inspector, all disturbed areas shall be reseeded, planted, or landscaped to minimize the potential for erosion on the subject site.
5. It shall be the Owner's/Contractor's responsibility to maintain control of the entire construction operation and to keep the entire site in compliance with the erosion control plan.
6. Erosion and sediment control best management practices shall be operable year round or until vegetation is fully established on landscaped surfaces.

Project Information

STANFORD LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT

SHEET 29

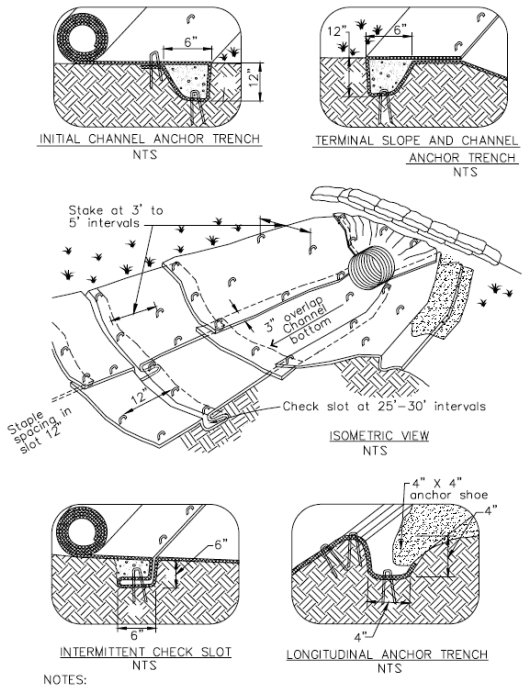
NOTE: This sheet provided for general information purposes only. All erosion control and stormwater pollution prevention work shall be performed in accordance with the project specific information provided in the project Detailed Design Drawings and Specifications and the project Stormwater Pollution Prevention Plan.

Best Management Practices and Erosion Control Details Sheet 1
County of Santa Clara

BMP-1

7 Geotextiles and Mats

CASQA Detail EC-7

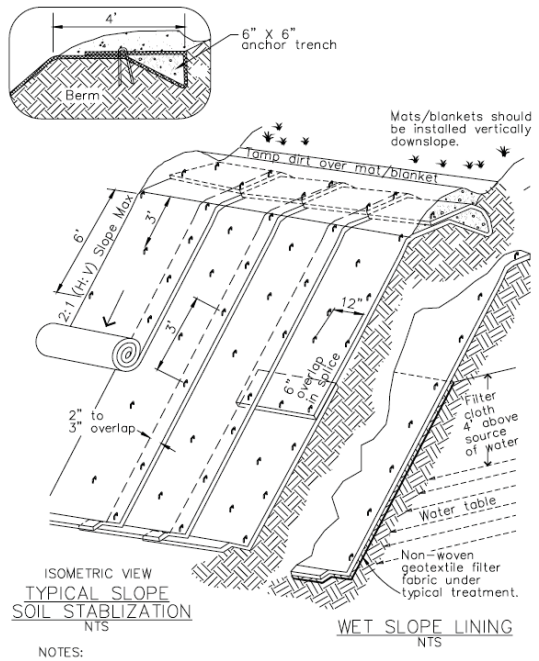


NOTES:
1. Check slots to be constructed per manufacturers specifications.
2. Staking or stapling layout per manufacturers specifications.
3. Install per manufacturer's recommendations

TYPICAL INSTALLATION DETAIL

5 Geotextiles and Mats

CASQA Detail EC-7

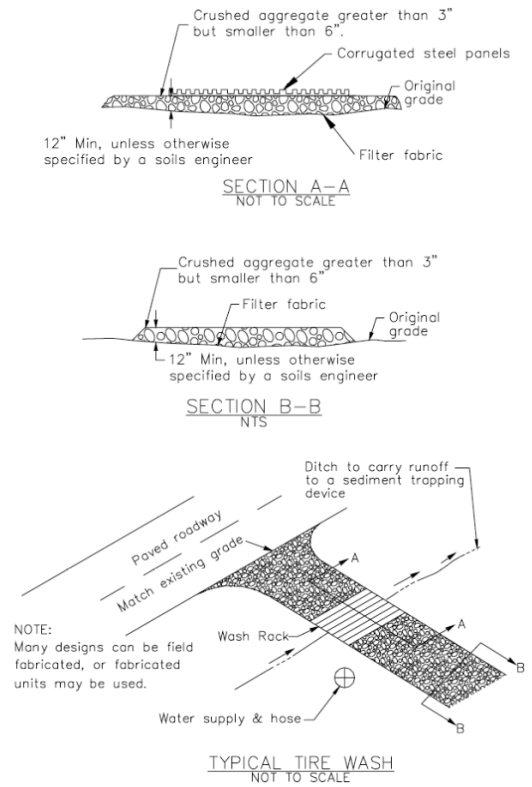


NOTES:
1. Slope surface shall be free of rocks, clods, sticks and grass. Mats/blankets shall have good soil contact.
2. Lay blankets loosely and stake or staple to maintain direct contact with the soil. Do not stretch.
3. Install per manufacturer's recommendations

TYPICAL INSTALLATION DETAIL

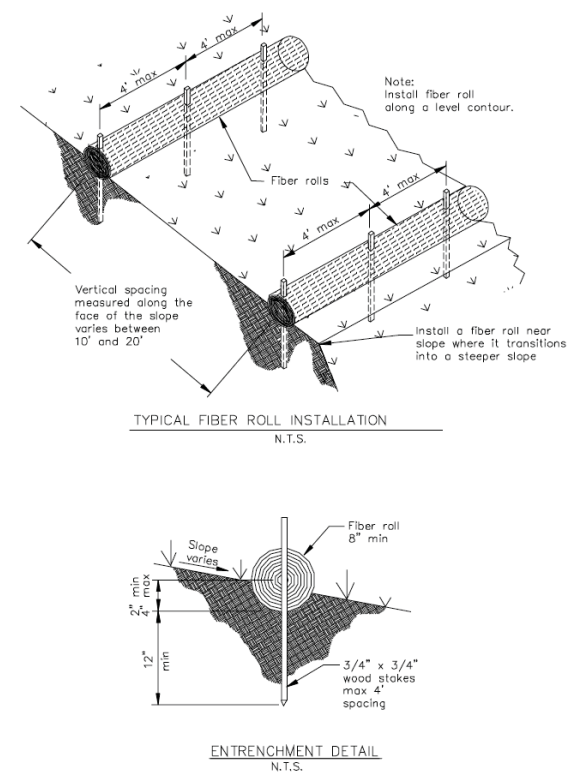
3 Entrance/Outlet Tire Wash

CASQA Detail TC-3



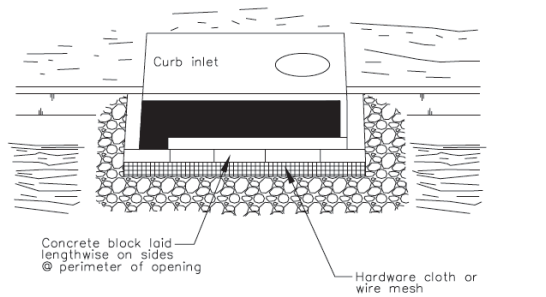
1 Fiber Rolls

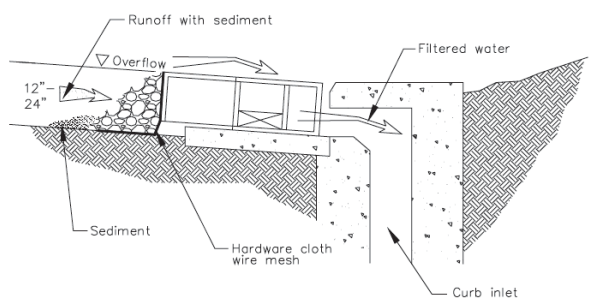
CASQA Detail SE-5



8 Storm Drain Inlet Protection

CASQA Detail SE-10

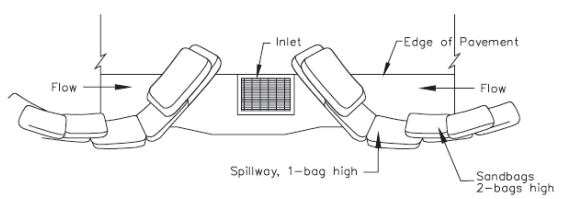




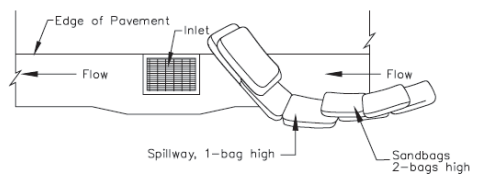
DI PROTECTION – TYPE 4
NOT TO SCALE

6 Storm Drain Inlet Protection

CASQA Detail SE-10



TYPICAL PROTECTION FOR INLET ON SUMP



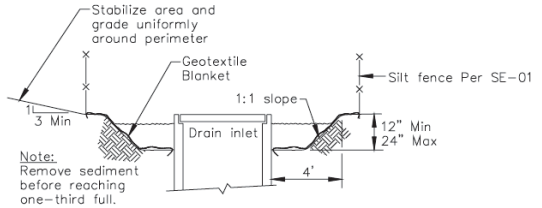
TYPICAL PROTECTION FOR INLET ON GRADE

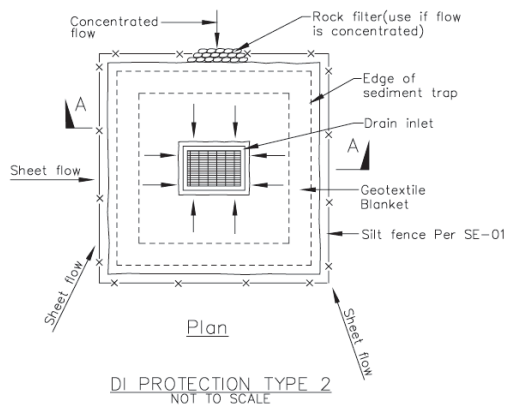
NOTES:
1. Intended for short-term use.
2. Use to inhibit non-storm water flow.
3. Allow for proper maintenance and cleanup.
4. Bags must be removed after adjacent operation is completed
5. Not applicable in areas with high silts and clays without filter fabric.

DI PROTECTION TYPE 3
NOT TO SCALE

4 Storm Drain Inlet Protection

CASQA Detail SE-10



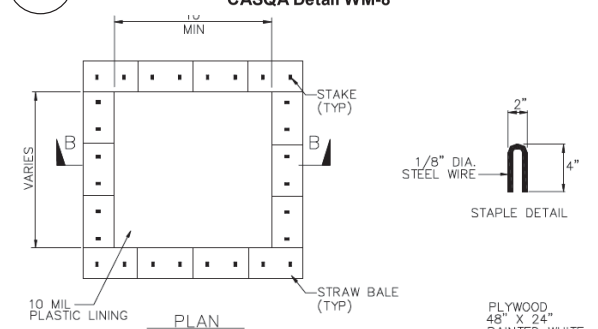


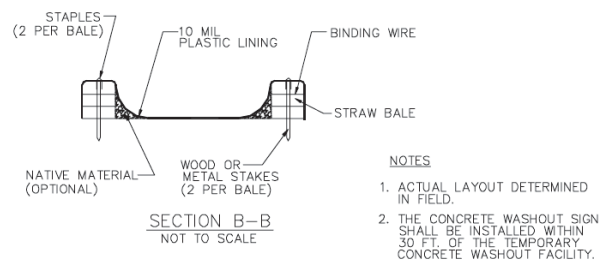
DI PROTECTION TYPE 2
NOT TO SCALE

Notes
1. For use in cleared and grubbed and in graded areas.
2. Shape basin so that longest inflow area faces longest length of trap.
3. For concentrated flows, shape basin in 2:1 ratio with length oriented towards direction of flow.

2 Concrete Waste Management

CASQA Detail WM-8





NOTES
1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

Source for Graphics: California Stormwater BMP Handbook, California Stormwater Quality Association, January 2003.
Available from www.cabmphandbooks.com.

Project Information

STANFORD LAGUNITA DIVERSION DAM REMOVAL AND CREEK RESTORATION PROJECT

SHEET 30

NOTE: This sheet provided for general information purposes only. All erosion control and stormwater pollution prevention work shall be performed in accordance with the project specific information provided in the project Detailed Design Drawings and Specifications and the project Stormwater Pollution Prevention Plan.

Best Management Practices and Erosion Control Details Sheet 2
County of Santa Clara

BMP-2

ATTACHMENT D

AECOM
300 Lakeside Drive
Suite 400
Oakland, CA 94612
aecom.com

Project name:
Lagunita Diversion Dam Removal and Creek Restoration Project

To:
San Mateo County
Planning and Building Department
455 County Center, 2nd Floor
Redwood City, CA 94063
650-363-4849

From:
Seth Gentzler, PE (AECOM)

Date:
December 13, 2017

CC:
Rachel Bejerano, PE (Stanford University)
Tom Zigterman, PE (Stanford University)

Memorandum

Subject: Application for San Mateo County Planning and Grading Permits

1. Purpose

The purpose of this memorandum is to submit an application for San Mateo County Planning and Grading Permits for the Lagunita Diversion Dam Removal and Creek Restoration Project on behalf of Rachel Bejerano, PE of Stanford University.

2. Organization of this Memorandum

This memorandum is organized based on the permit application submittal requirements specified on the San Mateo County Planning and Building Department (County) website located at http://planning.smcgov.org/planning-permits and on the informational brochures and application forms found there. The organization of Section 3 is summarized below.

- **Section 3: Planning and Grading Permit Application Checklist** – provides a list of the required forms, plans, reports and other supplemental information and briefly explains where each has been included within this submittal.
  - 3.1: Planning Permit Application Form
  - 3.2: Grading Permit Application Companion Page
  - 3.3: Environmental Information Disclosure Form Supplement
  - 3.4: Proof of Ownership (Deed or Tax Bill)
  - 3.5: Topographic Survey
  - 3.6: Existing Tree Plan
  - 3.7: Location Map
  - 3.8: Site Plans
  - 3.9: Grading Plans
  - 3.10: Erosion/ Sediment Control

  - 3.11: Haul Routes
  - 3.12: Geotechnical Report
  - 3.13: C.3 and C.6 Development Review Checklist
  - 3.14: Plan Reductions (8.5" x 11")
  - 3.15: Additional Information: No Rise Certification Letter and Hydraulics Memorandum
- **Attachments**
  - A: Planning Application Permit Form
  - B: Grading Permit Application Companion Page
  - C: Environmental Information Disclosure Form
  - D: Proof of Ownership (Deed or Tax Bill)
  - E: 100% Design Drawings
  - F: Geotechnical Memorandum
  - G: Draft SWPPP Site Plans
  - H: Reductions (8.5" x 11") of 100% Design Drawings
  - I: Memorandum to the RWQCB
  - J: No Rise Certification Letter and Hydraulics Memorandum

3. Planning and Grading Permit Application Checklist

3.1 Planning Application Permit Form

A completed Planning Application Permit Form is provided as Attachment A. Required information that did not fit into the fillable form is provided below.

3.1.1 Project Location and Assessor's Parcel Numbers

The proposed project is located on San Francisquito Creek northeast of the Alpine Road exit on Interstate Highway 280, as shown on the Project Location Map located on Sheet 1 of the 100% Design Drawings provided as Attachment E. As shown on Sheet 5 of the 100% Design Drawings, the San Mateo – Santa Clara County line passes through the project area. The project work limits will include portions of each of the San Mateo County parcels listed in the table below, Stanford is working with the additional owner on easement agreements.

County	APN	Site Address	City	Zip	Owner Info
Santa Clara	142-12-009	Near 99 Piers Ln	Stanford	94305	Leland Stanford Junior University
San Mateo	074290130	Near 15 Happy Hollow Ln	Menlo Park	94025	Leland Stanford Junior University
San Mateo	074290620	15 Happy Hollow Ln	Menlo Park	94025	Margaret Anita Sensenbrenner
San Mateo	074290500	40 Sneckner Ct	Menlo Park	94025	Johanna Putnoi
San Mateo	074290600	43 Sneckner Ct	Menlo Park	94025	Michael P. Fischbein and Andrea G. Roberts

3.1.2 Elements of the Proposed Project

The project will include the demolition and removal of most, or all, of the dam and associated headwalls and gate valves and off-haul of approximately 790 cubic yards (CY) of concrete debris. The project area will extend approximately 480 linear feet along San Francisquito Creek, which includes the area of excavation upstream of

the dam to remove accumulated sediment and grading upstream and downstream of the dam to construct a pool-riffle channel bedform designed to mimic reference reaches located nearby.

The areal extent of the project will include the project limit of work (0.87 acre), new access roads (0.54 acre), staging areas (up to 1.6 acres), and existing access roads, which are shown in detail on the 100% Design Drawings provided as Attachment E. Primary construction access to the project will be attained via the existing Piers Lane, off of Alpine Road, and then using an existing unpaved maintenance road which runs along the top of the right bank slope. A secondary access route is via the existing Ranch Road, off of Junipero Serra Road, which also connects to the unpaved existing maintenance road referenced above.

The channel banks and floodplain terraces will be constructed and stabilized using biotechnical methods such as live willow poles, stakes, or other cuttings or plantings of species native to (and preferably sourced from) the San Francisquito Creek riparian corridor. The entire site will be revegetated using native species appropriate for the proposed soils, hydrology and climate.

3.1.3 Existing Site Conditions and Structures

All of the relevant existing site conditions and structures are depicted in the 100% Design Drawings provided as Attachment E. Detailed descriptions of the existing conditions at the project site are included in the Memorandum to the RWQCB provided as Attachment I.

3.2 Grading Permit Application Companion Page

A completed Grading Permit Companion Page is provided as Attachment B. Required information that did not fit into the fillable form is provided below.

3.2.1 Purpose of Removal and Grading

The Lagunita Diversion Dam facility consists of a low concrete dam approximately 8 feet in height, various concrete headwalls, two sliding gate valves, and a flume channel that parallels the creek and extends to Lake Lagunita. The existing facility was constructed by Stanford in the late 1800s and used to supplement the University's water supply for on-campus irrigation. The facility has not been used to divert water since approximately 1985. The proposed removal of the dam and restoration of San Francisquito Creek will enhance habitat and passage for the threatened Central California Coast Distinct Population Segment of steelhead (Oncorhynchus mykiss) and other native aquatic species.

Access to the project area from an existing unpaved maintenance road on Stanford property will require minor vegetation clearing and grading. The demolition and removal of most, or all, of the dam and associated headwalls and gate valves and off-haul of approximately 790 cubic yards (CY) of concrete debris. The purpose of the majority of the required vegetation clearing and grading will be to remove accumulated sediment upstream of the dam and to construct a new pool-riffle channel bedform designed to mimic reference reaches located nearby.

3.2.2 Engineer's Estimate of the Quantity of Materials to be Moved

A breakdown of the estimate volume of earthwork by County is provided in the table below:

	Cut (CY)	Fill (CY)
San Mateo County	763	2,390
Santa Clara County	2,877	4,040
Project Total	3,640	6,430

3.3 Environmental Information Disclosure Form

A completed Environmental Information Disclosure Form is provided as Attachment C. Required information that did not fit into the fillable form is provided below.

3.3.1 Existing Site Conditions

All of the relevant existing site conditions and structures are depicted in the 100% Design Drawings provided as Attachment E. Detailed descriptions of the existing conditions at the project site are included in the Memorandum to the RWQCB provided as Attachment I.

3.3.2 California Environmental Quality Act (CEQA) Review

d. Sheet 4 – Site Access and Staging Plan of the 100% Design Drawings provided as Attachment E includes Table 1 – Tree Action Plan, which summarizes plans for the avoidance, removal, and trimming of native trees by species and diameter at breast height (dbh). Additional information about plans for removal of trees in provided in Section 6.3 of the Memorandum to the San Francisco Bay Regional Water Quality Control Board provided as Attachment I.

e. A breakdown of the estimate volume of earthwork by County is provided in Section 3.2.2 of this memo.

h. CDFW approved this project pursuant to Fish and Game Code section 1652 and issued a Notice of Exemption (NOE) on 3/21/17 stating that the project qualifies for a Class 33 categorical exemption.

   The project may cause temporary adverse effects to habitat for special-status species; however, all disturbed habitat will be revegetated following project construction. Terrestrial habitat will be disturbed for, at most, 348 days and aquatic habitat will be disturbed for up to 154 days.

   The project may temporarily disturb special-status species, potentially causing them to leave or avoid the area during construction. Species that occupy small mammal burrows, such as California tiger salamander and California red-legged frog, may also retreat further into burrows in response to disturbance. For all special-status species, sources of disturbance could include construction-related noise, increased vehicle traffic on access roads, and vegetation removal and grading. For aquatic special-status species, additional sources of disturbance could include dewatering of the project area and use of equipment in the dewatered channel. Project-related disturbances are anticipated to be minor and the project is not expected to injure or kill special-status species under CDFW jurisdiction. In addition to these general impacts, potential species-specific impacts are described in further detail in Section 6.4 of the Memorandum to the San Francisco Bay Regional Water Quality Control Board provided as Attachment I.

3.3.3 National Marine Fisheries Rule 4(d) Review

a. The project will include the construction of a new streambed and banks outside the footprint of existing, legal structures on several residential properties.

b. The project will remove a dam from a stream and reconstruct the stream channel.

c. Removal of the dam and reconstruction of the stream channel will require construction on a stream bank.

d. Access to the project site will require construction activities to occur in a riparian area.

e. As discussed in Section 3.2.1, grading will be required to remove the dam and reconstruct the stream channel.

f. The project will remove a dam from a stream and reconstruct the stream channel.

g. Although the project will be constructed during the dry season, it will require provisions for the exclusion of fish from the project site during construction.

3.3.4 National Pollutant Discharge Elimination System (NPDES) Review

The Property Owner will file an NOI to be covered under the General Permit once the construction contract has been awarded and the contractor has completed a final project Stormwater Pollution Prevention Plan (SWPPP).

3.4 Proof of Ownership

The applicant's proof of ownership is provided as Attachment D.

3.5 Topographic Survey

A topographic survey of the project site was completed by BKF Engineers and is shown on Sheet 5 – Existing Topography of the 100% Design Drawings provided as Attachment E.

3.6 Existing Tree Plan

Existing trees are shown on Sheet 4 through Sheet 7 of the 100% Design Drawings provided as Attachment E. Sheet 4 – Site Access and Staging Plan includes Table 1 – Tree Action Plan, which summarizes plans for the avoidance, removal, and trimming of native trees by species and diameter at breast height (dbh). Additional information about plans for removal of trees in provided in Section 6.3 of the Memorandum to the San Francisco Bay Regional Water Quality Control Board provided as Attachment I.

3.7 Location Map

A project location map is shown on Sheet 1 – Title and Sheet Index of the 100% Design Drawings provided as Attachment E.

3.8 Site Plans

All project site plans are included in the 100% Design Drawings provided as Attachment E.

3.9 Grading Plans

A grading plan is included Sheet 7 – Grading Plan of the 100% Design Drawings provided as Attachment E.

3.10 Erosion/ Sediment Control

Long term control of erosion of the project site will be accomplished by implementing the project itself via the restoration of the San Francisquito Creek Channel and native riparian vegetation. Plans for this revegetation and the irrigation required for rapid establishment of newly planted vegetation are included as Sheets 19 through 21 of the 100% Design Drawings provided as Attachment E.

Short term, post-construction erosion control plans and details are included as Sheets 22 through 25 of the 100% Design Drawings provided as Attachment E.

The final details of provisions for short term erosion control during construction of the project will be included in the project Stormwater Pollution Prevention Plan (SWPPP) to be completed by the construction contractor once the contract is awarded. However, a significant number of project Best Management Practices (BMPs) contributing to erosion control and stormwater pollution prevention are described in the Memorandum to the San Francisco Bay Regional Water Quality Control Board provided as Attachment I, including those found in Section 3.3 – Dewatering and Diversion, Section 4.1 – General Measures to Reduce Potential Impacts, Section 4.2 – Revegetation and Section 4.3 – Water Quality Protection. In addition, we have provided a Draft SWPPP Site Plan as Attachment G.

3.11 Haul Routes

Haul routes from Interstate Highway 280 are shown on Sheet 3 – Project Access Plan of the 100% Design Drawings provided as Attachment E. Final details regarding the direction of traffic on the routes shown, as well as the locations of materials sources and disposal sites will be provided the construction contractor once the contract has been awarded.

3.12 Geotechnical Report

A memorandum detailing a preliminary geotechnical investigation of the project site by AECOM geologists David Simpson, CEG and Sheri Janowski, CEG is provided as Attachment F.

3.13 C.3 and C.6 Development Review Checklist

The proposed project is not regulated under Provision C.3 of the California Regional Water Quality Control Board San Francisco Bay Region Municipal Regional Stormwater NPDES Permit (Order No. R2-2009-0074) as specified in Section C.3.b – Regulated Projects.

However, the project will require coverage under the NPDES General Permit for Discharges from Construction Activities which will require the applicant to file an NOI to be covered under the General Permit once the construction contract has been awarded and the contractor has completed a project Stormwater Pollution Prevention Plan (SWPPP). The project Stormwater Pollution Prevention Plan (SWPPP) will include final details of provisions for short term erosion control during construction of the project to be completed by the construction contractor once the contract is awarded. However, a significant number of project Best Management Practices (BMPs) contributing to erosion control and stormwater pollution prevention are described in the Memorandum to the San Francisco Bay Regional Water Quality Control Board provided as Attachment I, including those found in Section 3.3 – Dewatering and Diversion, Section 4.1 – General Measures to Reduce Potential Impacts, Section 4.2 – Revegetation and Section 4.3 – Water Quality Protection. In addition, we have provided a Draft SWPPP Site Plan as attachment G.

3.14 Plan Reductions (8.5” x 11”)

Letter sized, 8.5” x 11” reductions of the 100% Design Drawings are provided as Attachment H.

3.15 Additional Information: No Rise Certification Letter and Hydraulics Memorandum

A No Rise Certification Letter and Hydraulics Memorandum are provided as Attachment J, containing a summary of the pre- and post-project hydraulics.

January 27, 2018

Ms.Camille Leung
Planning and Building Department
County of San Mateo
455 County Center, 2nd Floor
Redwood City, CA 94063

RE: Stanford University Lagunita Diversion Dam Removal and Creek Restoration Project

Dear Ms. Leung:

We are the owners of 43 Sneckner Court, Menlo Park, California, and a portion of the Stanford creek restoration project will occur on our property. We understand that you need evidence of our consent in order to process Stanford's application for the project. This letter confirms our consent to the application, with the understanding that final approval of the project will not occur until we have granted Stanford a formal easement over our property for the performance of the work.

Sincerely,

Michael P. Fischbein

Andrea G. Roberts

ROBERT J. LANZONE
JEAN B. SAVAREE
GREGORY J. RUBENS
CAMAS J. STEINMETZ

KAI RUESS
KIMBERLY L. CHU

CAMAS J. STEINMETZ, Ext. 225
Email: csteinmetz@adcl.com

LAW OFFICES
AARONSON, DICKERSON, COHN & LANZONE
A PROFESSIONAL CORPORATION
1001 LAUREL STREET, SUITE A
SAN CARLOS, CALIFORNIA 94070
PHONE: 650-593-3117
FAX: 650-453-3911
www.adcl.com

MICHAEL AARONSON
(1910-1998)
KENNETH M. DICKERSON
(1926-2008)
MELVIN E. COHN
(1917-2014)

Of Counsel:
JOAN A. BORGER

January 26, 2018

To: Camille Leung, San Mateo County Planner

From: Camas Steinmetz

Subject: Property Owner Consent to Process Stanford University's Grading Application for the Lagunita Diversion Dam Removal and Creek Restoration Project

Following up on our call, this memo evidences the consent of my clients, Margo Sensenbrenner, owner of 15 Happy Hollow Lane (074-290-620), and Johanna Putnoi, owner of 40 Sneckner Court (074-290-500), to proceed with processing the grading application for the above referenced project which proposes work on my clients' respective properties. Note that this consent is expressly conditioned upon the County imposing the requirement that, prior to any final approval of the grading application, easement agreements allowing Stanford University to conduct the proposed scope of work on my clients' respective properties be executed by my clients and recorded in the Official Records of San Mateo County.

ATTACHMENT E.2

AECOM
300 Lakeside Drive
Suite 400
Oakland, CA 94612
aecom.com

Project name:
Lagunita Diversion Dam Removal Project

Project ref:
CIWQS Place ID No. 827506
CIWQS Reg. Meas. ID No. 408429

From:
Seth Gentzler, PE (AECOM)

Date:
January 23, 2017
Revised March 30, 2017
Revised October 2, 2017

To:
Brian Wines
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 945612

CC:
Tom Zigterman, PE (Stanford University)

Memorandum

Subject: Informal Information Response pertaining to Notice of Exclusion letter dated August 25, 2016

1. Purpose

The purpose of this informal submittal is to provide feedback to the Regional Water Quality Control Board (RWCQCB) for discussion purposes prior to finalizing and submitting a revised permit application for CIWQS Place ID No. 827506. This memorandum details the supplemental information specifically requested in the August 25, 2016 Notice of Exclusion letter from the RWQCB.

2. Organization of this Memorandum

This memorandum is organized based on specific text requests from the August 25, 2016 Notice of Exclusion letter. The organization below summarizes primary section headings and subheadings.

- **Section 1: Purpose** – defines the purpose of this memorandum
- **Section 2: Organization of this Memorandum** – outlines organization of this memorandum
- **Section 3: Project Description, Design and Techniques** – discusses description, design and construction aspects of key project components
  - 3.1: General Project Description
  - 3.2: Detailed Design Plans
  - 3.3: Dewatering and Diversion
  - 3.4 Access and Staging
  - 3.5: Demolition of the Dam and Fish Ladder
  - 3.6: Fish Passage
  - 3.7: Earthwork and Channel Substrate
  - 3.8: Structural Components in the Creek (Weir Designs)
  - 3.9: Revegetation

- **Section 4: Measures to Reduce Potential Impacts** – summarizes measures incorporated into the project design including the following:
  - 4.1: General
  - 4.2: Revegetation
  - 4.3: Water Quality Protection
  - 4.4: Special Status Species
- **Section 5: Monitoring and Reporting** – summarizes monitoring approach to ensure the successful performance of the constructed project
  - 5.1: NMFS PBO and CDFW FRGP Mandated Monitoring and Reporting
  - 5.2: Additional Geomorphic and Revegetation Monitoring and Reporting
- **Section 6: Temporary Disturbance** – summarizes project disturbance and potential impacts to existing resources
  - 6.1: Project Limit of Work
  - 6.2: Access Road
  - 6.3: Tree Removal
  - 6.4: Special Status Species
- **Section 7: Project Compliance with CEQA**
- **Section 8: References**
- **Attachments**
  - A: Detailed Design Plans
  - B: Draft Technical Specifications
  - C: CDFW FGRP Monitoring Forms

3. Project Description, Design and Techniques

3.1 General Project Description

The project will include the demolition and removal of most, or all, of the dam and associated headwalls and gate valves and off-haul of approximately 790 cubic yards (CY) of concrete debris. The project area will extend approximately 480 linear feet along San Francisquito Creek, which includes the area of excavation upstream of the dam to remove accumulated sediment and grading upstream and downstream of the dam to construct a pool-riffle channel bedform designed to mimic reference reaches located nearby. Approximately 2,850 CY of native materials will be excavated, of which approximately 1,400 CY will be processed on site to produce materials to be used in the channel substrate placed in the restored channel. The remainder of the excavated materials will be used to create new floodplain areas or used as fill to regrade disturbed areas outside of jurisdictional waters. It will be necessary to import approximately 1,620 CY of channel substrate material to supplement the onsite fill, and approximately 1,640 CY of various sized boulders.

The restored reach of San Francisquito Creek will consist of three riffles and two pools. Subsurface boulder grade control will be constructed at the upstream and downstream ends of each riffle to control the channel gradient, and the channel will be lined with substrate designed to mimic natural conditions. The subsurface boulder grade control will be designed to be stable but the remaining substrate will be designed to mobilize at high flows along with other sediment in the creek, and be replaced by mobile sediment arriving from upstream, as would occur in a natural channel reach. Design of substrate, grade control and other structural components of the project are discussed in more detail in the following sections.

The channel banks and floodplain terraces will be constructed and stabilized using biotechnical methods such as live willow poles, stakes, or other cuttings or plantings of species native to (and preferably sourced from) the San Francisquito Creek riparian corridor. The entire site will be revegetated using native species appropriate for the proposed soils, hydrology and climate. The restoration design is discussed in more detail in the following sections.

The areal extent of the project will include the project limit of work (0.87 acre), new access roads (0.54 acre), and staging areas (up to 1.6 acres), which are shown in detail on the detailed design plans included in Attachment A. The project access and associated impacts are discussed in more detail in the following sections.

3.2 Detailed Design Plans

The design plans provided in Attachment A are at a level of 90% or better, as required to meet the submittal requirements. Associated project construction specifications are available, as needed. Specification sections referenced in this submittal are provided in Attachment B.

3.3 Dewatering and Diversion

The diversion approach for the project involves the use of a cofferdam upstream of the grading limits, and a diversion pipe that will divert creek flows around the work area. The coffer dam will either be made using sandbags filled with clean gravel or an inflatable cofferdam. The discharge point will be located within the limit of work, downstream of the grading limits, and will include erosion protection measures, as appropriate, to minimize erosion resulting from diversion flows. Key component locations of the diversion system are shown on the diversion plan (Figure 1). Design criteria associated with the system and pipe are listed in the BMPs below.

Dewatering may be required within excavations during earthwork activities. When pumping is necessary to dewater a work site, applicable bag filters or siltation basins will be used to treat all water prior to entering any waterway and to prevent oil or other greasy substances originating from construction activities from entering a wetted channel. Additional Best Management Practices (BMPs) associated with dewatering are listed below.

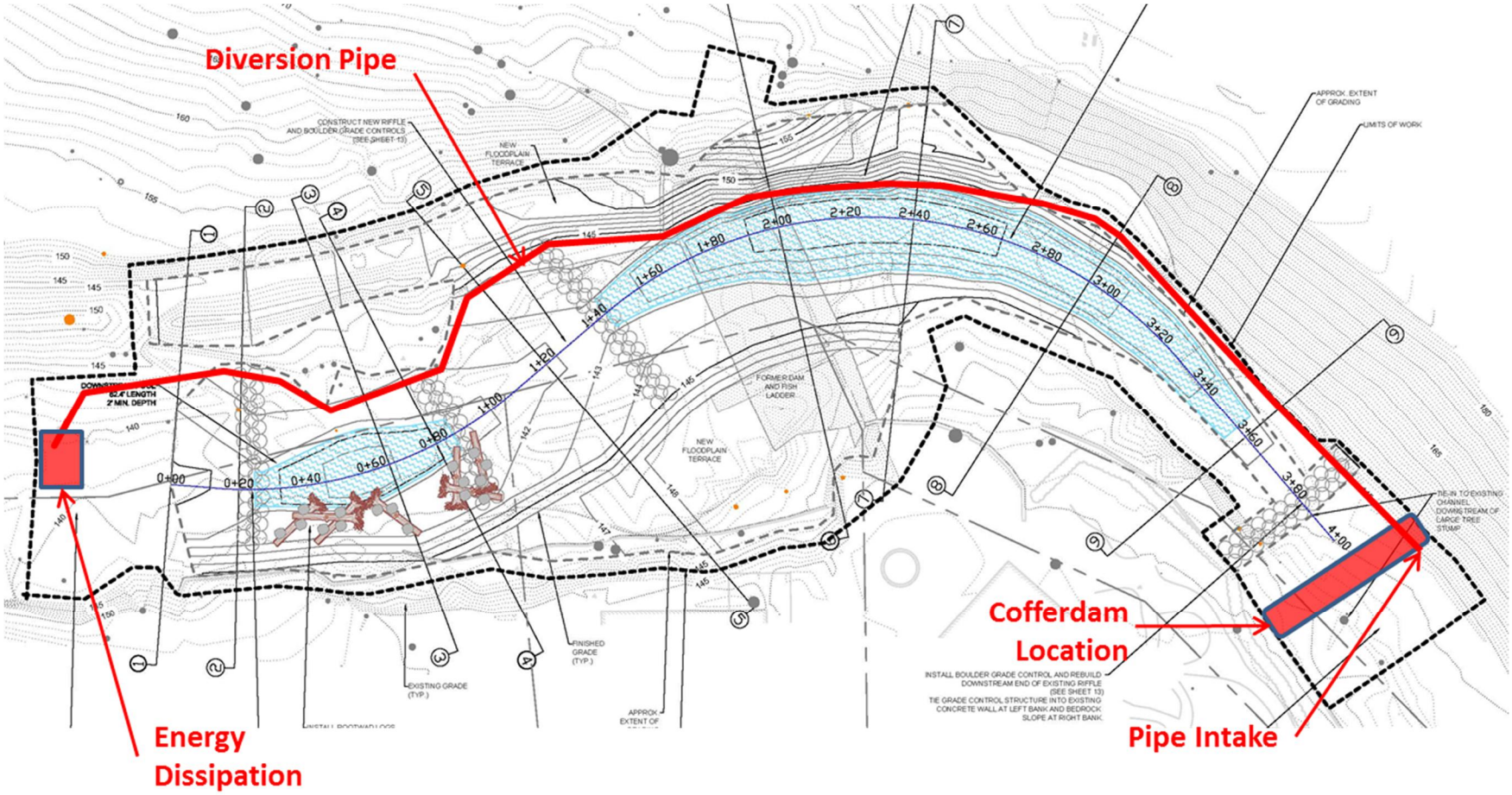


Figure 1. Diversion Plan

BMPs associated with diversion and dewatering are listed below:

1. Prior to dewatering, a diversion plan will be reviewed on site with the Contractor, owner, owner's engineer, and qualified biologist to ensure that the proposed methods minimize disturbance to the channel and avoid direct mortality of fish, amphibians, and reptiles.
2. Prior to dewatering, fish will be excluded from re-entering the work area by blocking the stream above and below the work area with fine-meshed net or screens. Mesh will be no greater than 1/8-inch diameter. The bottom of the net or screen will be completely secured to the channel bed to prevent fish from re-entering the work area prior to dewatering. Exclusion screening will be placed in areas of low water velocity to minimize fish impingement. Upstream and downstream screens will be checked daily (prior to, during, and after instream activities) and cleaned of debris to permit free flow of water. Block nets will be placed and maintained throughout the construction period at the upper and lower extent of the areas where fish will be removed. Block net mesh will be sized to ensure steelhead (*Oncorhynchus mykiss*) upstream or downstream do not enter the areas proposed for dewatering between passes with the electro fisher or seine.
3. Project site dewatering will be coordinated with a qualified biologist, who will perform fish capture and relocation. The qualified biologist will be familiar with the life history and identification of salmonids, reptiles, and amphibians within the project footprint and will provide a resume for CDFW and NMFS approval prior to fish relocation.
4. Prior to dewatering, the qualified biologist will lead a team to capture and relocate fish, reptiles, and amphibians to avoid direct mortality and minimize take.
5. The length of the dewatered stream channel and the duration that the creek is dewatered will be kept at a minimum.
6. Any temporary dam or other artificial obstruction constructed will only be built from materials such as sandbags filled with clean gravel, or inflatable coffer dams filled with water, which will cause little or no siltation. If sandbags are used, impenetrable material will be placed over sandbags used for construction of cofferdams to minimize water seepage into the construction area. The impenetrable material will be firmly anchored to the streambed to minimize water seepage. Certified weed-free straw bales may be used to back the temporary dam. Cofferdams and the stream diversion system will remain in place and fully functional throughout the instream construction period.
7. When cofferdams with bypass pipes are installed, debris racks will be placed at the bypass pipe inlet. Bypass pipes will be monitored a minimum of two times per day, seven days a week, during the construction period. All accumulated debris will be removed by the Contractor.
8. Bypass pipe diameter will be sized to accommodate, at a minimum, twice the existing summer baseflow.
9. The work area may need to be periodically pumped dry of seepage. Pumps will be placed in flat areas, well away from the stream channel. Pumps will be electric, powered by generator placed (if necessary) above the top of bank. No refueling will be conducted in or near the creek bed. Pumps will be secured by tying them off to a tree or staking them in place to prevent movement by vibration. Refueling will occur in an area well away from the stream channel and fuel absorbent mats will be placed under the pump during refueling. Pump intakes will be covered with appropriate sized screening material to prevent potential entrainment of fish or amphibians that failed to be removed. The intake will be periodically checked for impingement of fish or amphibians.
10. When pumping is necessary to dewater a work site, applicable bag filters or siltation basins will be used to treat all water prior to entering any waterway and to prevent oil or other greasy substances originating from construction activities from entering a wetted channel.
11. Water from the construction area (construction water pumped from active work area) will be discharged downstream, out of the stream channel at a location where it will not drain sediment-laden water back to the stream channel.

12. When construction is completed, the flow diversion structure will be removed as soon as possible in a manner that will allow flow to resume with the least disturbance to the substrate. Cofferdams will be removed so surface elevations of water impounded above the cofferdam will not be reduced at a rate greater than 1 inch per hour. This will minimize the risk of beaching and stranding of fish as the area upstream becomes dewatered.

3.4 Access and Staging

Primary construction access to the project will be attained via the existing Piers Lane, off of Alpine Road, and then using an existing unpaved maintenance road which runs along the top of the right bank slope (see Sheet 3 from Attachment A). The existing maintenance road may require minor grading and vegetation trimming for approximately 700 feet to accommodate construction vehicles. A secondary access route is via the existing Ranch Road, off of Junipero Serra Road, which also connects to the unpaved existing maintenance road referenced above.

The access plan has been modified since the previous application submittal to accommodate comments from CDFW concerning a previously proposed truck turn-around located in a grassland area adjacent to the existing maintenance road referenced above. The turn-around has been removed from the access plan.

Access from the existing unpaved road to the project area will require clearing and minor grading of a new road extending downhill from the existing maintenance road, connecting into the existing leveed flume channel adjacent to the creek. The access then runs south along the flume channel for approximately 180 feet until reaching the project limit of work near the existing diversion dam. Sheet 4 from Attachment A shows the alignment of the new access road, which will be restored with native hyrdoseed post construction. Tree impacts and mitigation associated with the access route are discussed in detail in Section 6, Temporary Disturbance.

Two areas are identified on Sheet 3 for proposed equipment and material staging. . Both of the identified areas are relatively flat with minimal vegetation coverage. The Contractor will store equipment and imported fill materials within the staging areas, including, but not limited to, boulders, channel substrate material, and large woody debris. In addition, the Contractor may use to store a construction trailer and portable toilet within the staging areas.

3.5 Demolition of the Dam and Fish Ladder

Existing facilities to be demolished, including the diversion dam concrete weir and apron, fish ladder, diversion gates, gate guides and pipes and all associated wing and headwalls are shown in plan view on Sheet 6, in profile on Sheet 8 and cross section on Sheet 11 of the detailed design drawings in Attachment A. Detailed requirements for the demolition of all existing facilities to be removed are included in Section 02220 of the Technical Specifications, provided in Attachment B.

Demolition will be completed by hoe ramming using a hydraulic excavator. As discussed above, the majority of dam demolition debris will be hauled offsite, but a portion of the concrete rubble may be disposed of by burying in upland fill areas along the existing flume channel (temporary access route).

3.6 Fish Passage

The fish passage design for the restored San Francisquito Creek channel is based on the stream simulation approach, utilizing the pool-riffle channel observed upstream and downstream of the dam as reference reaches that allows for passage of adult steelhead.

Stream simulation is a geomorphic approach to fish passage design that is endorsed by CDFW and described in the California Salmonid Stream Habitat Restoration Manual (CDFW 2010). The objective of the stream simulation approach is to create a channel that mimics the dimensions, slope, bedform and materials that comprise of the surrounding natural creek channel and therefore presents no more of a passage obstacle than the surrounding creek. This is accomplished by designing the restoration to simulate the channel conditions of

one or more natural reference reaches near the restoration site that are known to provide passage for the target species. When properly designed and constructed, the simulation reach should accommodate the natural discharge and sediment regime.

Geomorphic field work was conducted for the purpose of characterizing the geometry of stable riffle and channel segments in the vicinity of the project site. The general geometry and character of the creek was assessed and specific reaches considered to be geomorphically representative of portions of the channel passable for steelhead and were identified as “reference reaches”. As pool-riffle sequences were persistent features of reference reaches, the channel and riffle geometry were noted and measured in detail and are described further below as Reference Reaches #1, #2, and #3 (see Figure 2)

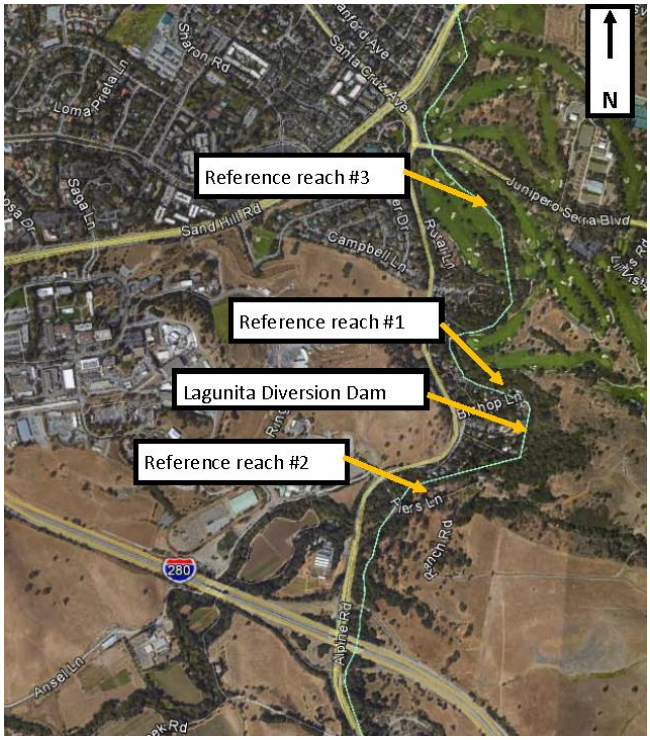


Figure 2. Reference Reach Locations

General channel observations were made by the design team on February 5, 2015, during a walking survey of a reach extending approximately 1,600 feet upstream and 900 feet downstream of the dam. Additional surveys of this reach were conducted on February 24, 2015, and riffle-texture measurements were performed on March 10, 2015.

A longitudinal survey of the channel thalweg was completed using a tripod-mounted auto-level. Tape measures were strung along the thalweg to measure longitudinal stationing and elevations were measured using a stadia rod. The survey included measurements of all major breaks in thalweg slope, transitions from pools, the length of pools and riffles, riffle slopes, the elevations of riffle crests and maximum pool depths, and water surface elevations.

Measurements of key channel dimensions such as riffle length, pool length, low-flow and bankfull channel width were made using cloth tape measures. High water marks and floodplain depositional surfaces were used to identify bankfull dimensions in the field. Riffle slopes were measured using an inclinometer and sighting a stadia rod.

A summary of key reference channel dimensions used for design are listed below:

- Overall average channel slope of approximately 0.7%

- Bankfull flow range of approximately 1,000 to 1,660 cubic feet per second (cfs).
- Bankfull floodplains are approximately 6-7 feet above low-flow surface
- Bankfull channel widths range from approximately 40-76 feet (Wider at riffles, narrower at pools.)
- Riffle lengths range from 49 –310 feet
- Riffle slopes ranged from (1.5 – 4.5%)
- High-flow riffle surface 1-2 feet above the thalweg
- Low-flow channel width ranges from 6-14 feet
- Pool depths range from 2-4 feet
- Pool widths are at least 20 feet

While the stream simulation approach does not require that the channel be design to meet specific hydraulic criteria at specified design flow rates, the design team determined these rates for the purposes of informing the possible arrangement of detailed elements of the stream simulation design to maximize conditions for fish passage. Gaging records from USGS station 1164500 (San Francisquito Creek at Stanford University) were used to estimate daily mean discharge at the project site (Figure 3) and analyzed to determine annual percent exceedance values (Figure 4) to estimate fish passage design flows as recommended by the fisheries agencies. (NMFS 2001 and CDFW 2010.)

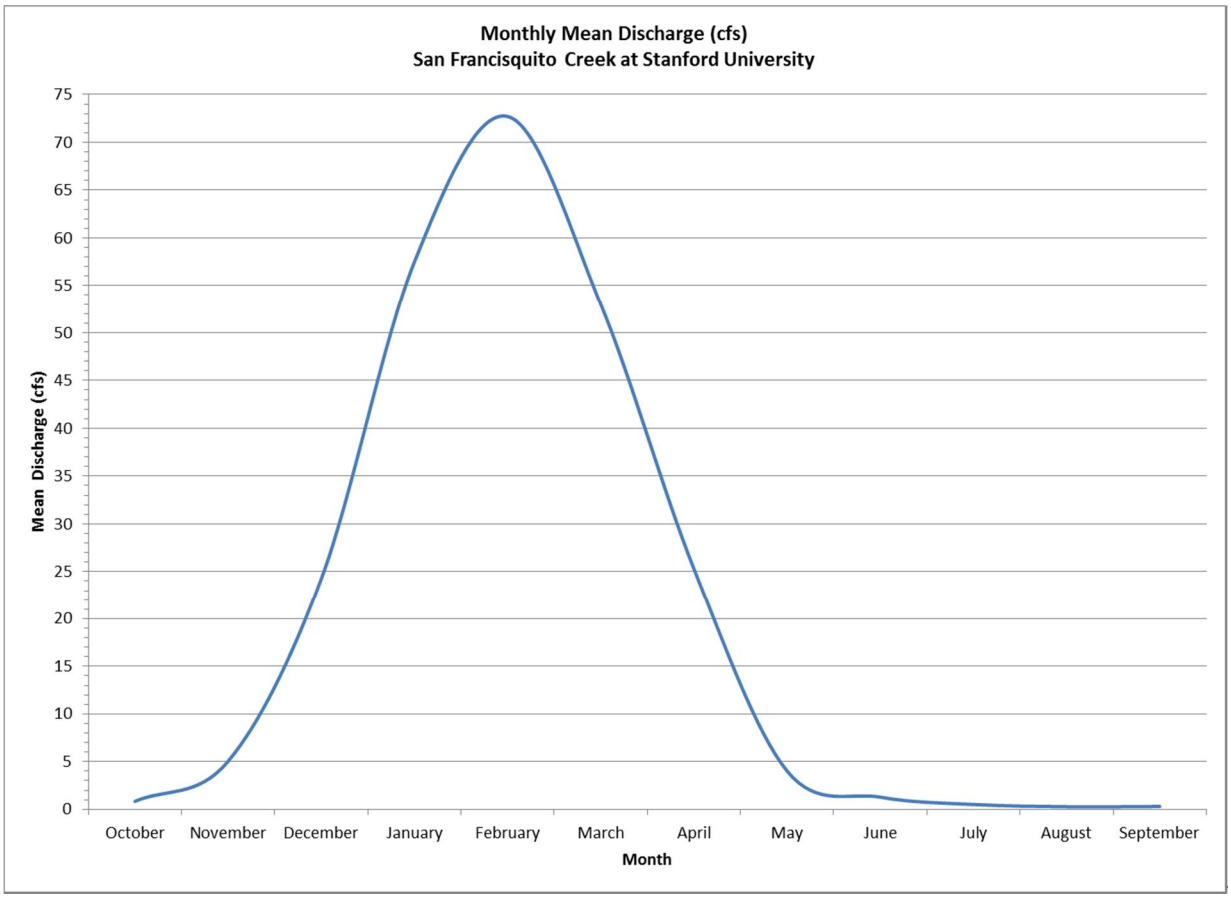


Figure 3. Monthly Mean Discharge (USGS station 1164500)

The recommended high design flow for adult passage, the 1% annual exceedance flow, was estimated to be 402 cfs. The recommended low design flow for adult steelhead head passage is the 50% annual exceedance flow or

3 cfs, whichever is greater. We estimate the 50% annual exceedance flow to be 1 cfs, while 3 cfs corresponds with the 30% annual exceedance.

The recommended high design flow for juvenile upstream passage, the 10% annual exceedance flow, was estimated to be 34 cfs. The recommended low design flow for juvenile passage is the 95% annual exceedance flow or 1 cfs, whichever is greater. We estimate the 95% annual exceedance flow to be 0 cfs, while 1 cfs corresponds with the 40% annual exceedance.

Our design takes a two pronged approach to fish passage at the extremely low natural flows that are typical of San Francisquito Creek during much of the year. First, in an attempt to maximize the sustainability of surface flow during the dry season, a 1.0 ft.-foot thick filter layer of finer material was designed to be placed as part of the channel bed. Second, in an attempt to create low flow depth and complexity, riffle roughness boulders will be placed thoughtfully along the surface of the low flow channel, so as to produce multiple paths of confined flow between them. At higher flows, these boulders may also produce velocity shadows that provide feeding habitat and may also be sufficient to allow fish to rest from burst swimming.

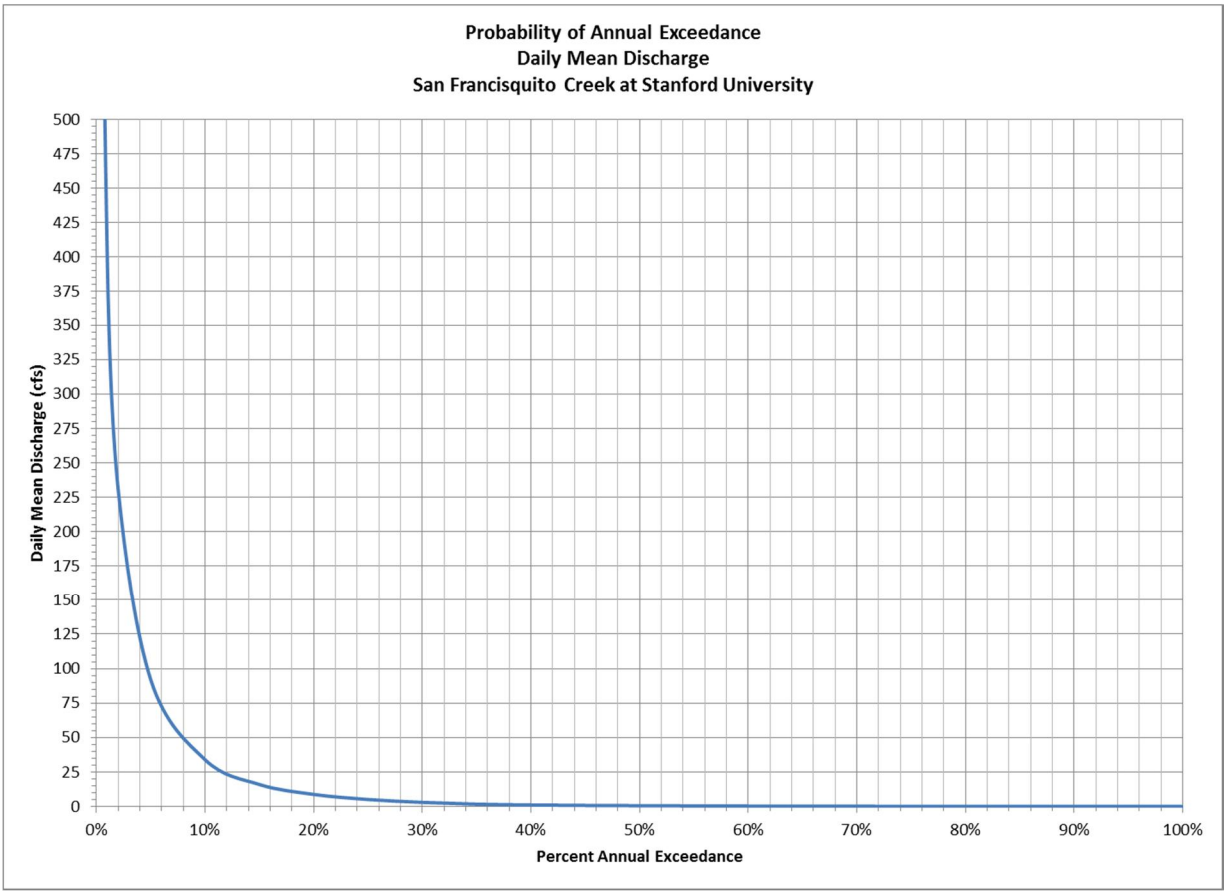


Figure 4. Percent Annual Exceedance (USGS station 1164500)

3.7 Earthwork and Channel Substrate

The overall objective of earthwork activities within the project limits of work is to balance cut (including demolition) and fill volumes to minimize on- or –off hauling of material to the site. Based on the design calculations, complete balance of demolition and earthwork volumes will not be possible. The primary reasons

for this are (1) boulders will be required to be brought on site to fulfill the design requirements for the grade control structures and bank erosion protection, (2) it will not be feasible to dispose of all concrete demolition debris onsite, and (3) certain sizes of channel substrate materials will be required to be brought onsite to meet the overall well mixed gradation requirements of the channel substrate. An overall earthwork summary is provided below:

- Concrete demolition debris: 790 CY
- Onsite Earthwork cut: 2,850 CY
- Onsite Earthwork fill: 2,850 CY
- Additional Fill Material imported from offsite: 1,620 CY
- Boulders imported from offsite: 1,640 CY

Channel Substrate Design

The creation of the longitudinal profile of San Francisquito Creek through the project site will be accomplished through the construction of a pool-riffle bedform analogous to the observed reference reaches (see Figure 5). Since the elevation difference in the channel bed upstream and downstream of the dam will be primarily replaced by a central riffle between the upstream and downstream pools, the sustainability of this riffle is of paramount importance to the success of the project. In the natural riffles found elsewhere in the creek, the boundary between riffle and pool at the upstream end of the riffle is controlled by a stable conglomeration of boulders which sets the minimum elevation for the water surface in the pool, the riffle crest. Emulating this natural feature, the crest of the constructed riffle will be formed by a stable grade control structure constructed from boulders that are among the largest size found in the creek. An additional boulder grade control structure will be constructed at the downstream end of the riffle in order to maintain the slope of the channel profile through the riffle.

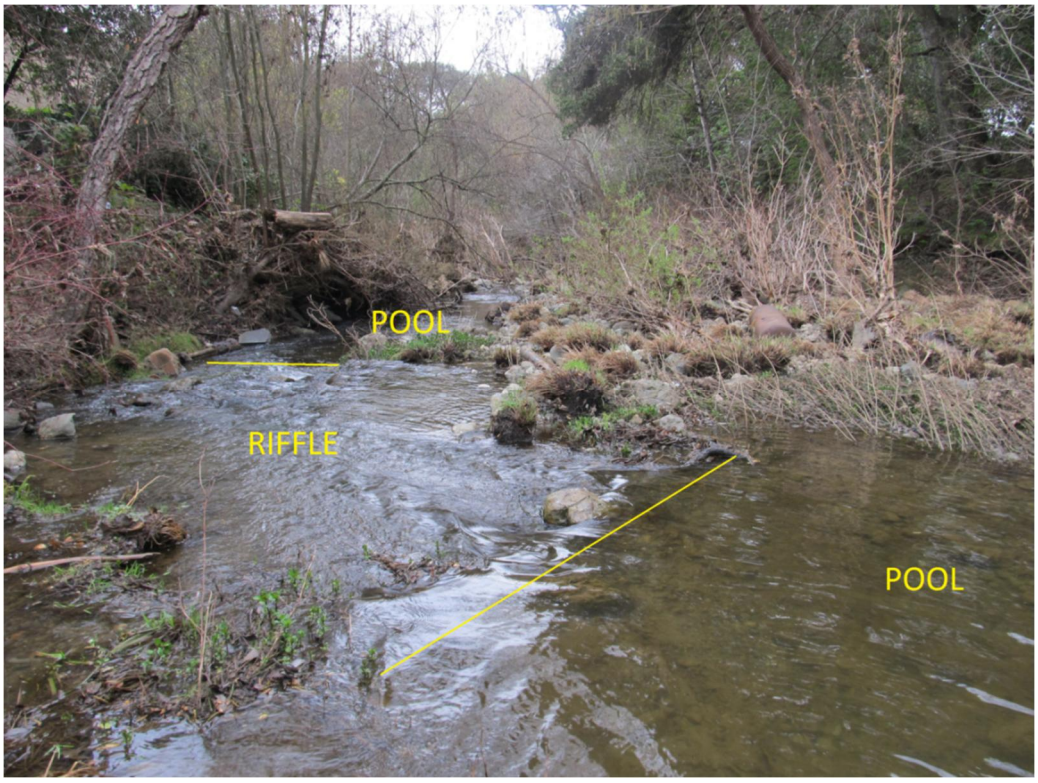


Figure 5. Reference reach pool-riffle

The design of the channel substrate used to form the bed of the channel between grade control structures represents a combination of methods presented in CDFW (2010) and USFS (2008). As described in the discussion of sizing streambed material for roughened channels in CDFW (2009), the well-graded mixture of sediment particle sizes making up the streambed can be view as consisting of two fractions: the larger, less frequently mobile fraction of particles that form the framework of the bed and the smaller, more frequently mobile fraction of particles that fills the spaces in the framework.

The approach for this project was to design the channel substrate such that the D_{100} particle size, or the size representing the 100th percentile in the cumulative distribution of particle diameters, would be used to construct the grade control structures in addition to being the largest particle in the streambed framework. The D_{100} size is designed to be stable during the 100-year storm event and therefore have a less than one percent chance of becoming mobile in any given year. The channel substrate is also designed such that the D_{50} size should be mobile in storm events in the 2-year to 10-year range and therefore have a 10-50 percent chance of being mobilized in any given year. The intent is to allow the majority of the restored streambed to be naturally dynamic while providing for the long-term sustainability of the pool-riffle bedform.

Shields equation is commonly used to calculate the shear stress required to initiate particle motion, for a given particle size, usually represented by the D_{50} size of the streambed. The relationship of forces acting on a sediment particle at the moment that motion is initiated is expressed as a dimensionless ratio known as the Shields parameter:

τ^*=τ_c/(g_s-g)D

where:

τ* = Shields parameter (unitless)

τc = critical average boundary shear stress at which the sediment particle begins to move (lb/ft2)

gs = specific weight of the sediment particle (lb/ft3)

g = specific weight of the fluid (lb/ft3)

D = median size particle diameter of the channel bed, D50 (ft)

In order to select a design D_{50}, the Shields equation was rearranged to solve for D and a spreadsheet was used to calculate a mean and maximum mobile particle size at flow rates equivalent to the peak discharge of the 2, 10, 20 and 100-year recurrence interval storms for each of the Shields parameter values in Table 1 on a separate row.

Table 1. Range of Shield's Parameters for Various Particles Sizes

Particle size classification	*Particle size, D (mm)*	*Angle of repose, ϕ (degrees)*	*Shield's parameter, τ**	*Critical shear stress, τ_c (lb/ft²)*
very large boulders	*> 2,048*	*42*	*0.054*	*37.37*
large boulders	*1,024-2,048*	*42*	*0.054*	*18.68*
medium boulders	*512-1,024*	*42*	*0.054*	*9.34*
small boulders	*256-512*	*42*	*0.054*	*4.67*
large cobbles	*128-256*	*42*	*0.054*	*2.34*
small cobbles	*64-128*	*41*	*0.052*	*1.13*
very coarse gravels	*32-64*	*40*	*0.050*	*0.54*
coarse gravels	*16-32*	*38*	*0.047*	*0.25*
medium gravels	*8-16*	*36*	*0.044*	*0.12*
fine gravels	*4-8*	*35*	*0.042*	*0.057*
very fine gravels	*2-4*	*33*	*0.039*	*0.026*

Source: USFS, 2008; Julien, 1995

The resulting size was selected from the row where the result was within the range of particle sizes for which that Shields parameter is recommended in Table 1. These calculations were completed based on the modeled hydraulic conditions at two cross sections deemed representative of the center riffle feature; one near the midpoint of the riffle at STA 1+20 and a second at the upstream end of the riffle at STA 1+40. An example spreadsheet calculation is shown on the following page in Table 2.

The calculation results showed that at both cross sections the D_{50} based on the maximum shear stress at the 2-year flow and the D_{50} based on the average shear stress at the 10-year flow were both approximately 0.5 ft. This suggests that at the 2-year peak flow rate, particles of this size will begin to be mobilized only at the location on the riffle where the maximum shear stress is exerted by the flow and at the 10-year peak flow rate particles of this size will begin to be mobilized over a significant portion of the riffle surface. Further, since the shear stress is greater at riffles than at pools and more than half of the substrate gradation will be larger than 0.5 feet, the majority of the substrate placed within the reach should be stable at a 2-year flow. This would comport with the design criterion of substrate that is mobilized at flows in the 2-year to 10-year range. Therefore the average value of the calculated D_{50} based on the average shear stress at the 10-year flow, 0.51 feet, or 155 mm, was used as the basis for the remainder of the design substrate gradation.

Table 2. Example D_{50} Particle Size Calculation

Recurrence Interval	Dishcharge, Q (cfs)	Mean Shear Stress[1] (lb/ft^2)	Max. Shear Stress[2] (lb/ft^2)	Shields Parameter[3]	Mean Mobile[4] D_{50} (ft)	Max. Mobile[5] D_{50} (ft)	Mean Mobile[4] D_{50} (mm)	Max. Mobile[5] D_{50} (mm)
2	1700	2.09	2.82	0.039	0.52	0.70	159	215
2	1700	2.09	2.82	0.042	0.48	0.65	148	199
2	1700	2.09	2.82	0.044	0.46	0.62	141	190
2	1700	2.09	2.82	0.047	0.43	0.58	132	178
2	1700	2.09	2.82	0.050	0.41	0.55	124	168
2	1700	2.09	2.82	0.052	0.39	0.53	119	161
2	1700	2.09	2.82	0.054	0.38	0.51	115	155
10	4500	3.17	4.30	0.039	0.79	1.07	241	328
10	4500	3.17	4.30	0.042	0.74	1.00	224	304
10	4500	3.17	4.30	0.044	0.70	0.95	214	290
10	4500	3.17	4.30	0.047	0.66	0.89	200	272
10	4500	3.17	4.30	0.050	0.62	0.84	188	255
10	4500	3.17	4.30	0.052	0.59	0.81	181	246
10	4500	3.17	4.30	0.054	0.57	0.78	174	237
20	5600	3.44	4.80	0.039	0.86	1.20	262	366
20	5600	3.44	4.80	0.042	0.80	1.11	243	340
20	5600	3.44	4.80	0.044	0.76	1.06	232	324
20	5600	3.44	4.80	0.047	0.71	1.00	218	303
20	5600	3.44	4.80	0.050	0.67	0.94	204	285
20	5600	3.44	4.80	0.052	0.65	0.90	197	274
20	5600	3.44	4.80	0.054	0.62	0.87	189	264
100	8400	4.58	8.94	0.039	1.14	2.23	349	681
100	8400	4.58	8.94	0.042	1.06	2.07	324	632
100	8400	4.58	8.94	0.044	1.01	1.98	309	604
100	8400	4.58	8.94	0.047	0.95	1.85	290	565
100	8400	4.58	8.94	0.050	0.89	1.74	272	531
100	8400	4.58	8.94	0.052	0.86	1.68	262	511
100	8400	4.58	8.94	0.054	0.83	1.61	252	492

Notes:

1. Mean shear stress was calculated as the average of reported shear stress values along the active width of the channel at the cross section. Reported shear stress values from SRH2D modeling results. Active channel width was defined by the cross section width reported values of zero depth at the 2-year flow, which for this cross section is equal to the design bankfull top width of 80 feet.
2. Max. shear stress is the maximum reported shear stress values along the active width of the channel at the cross section.

Reported shear stress values from SRH2D modeling results. Active channel width was defined by the cross section width reported values of zero depth at the 2-year flow, which for this cross section is equal to the design bankfull top width of 80 feet.

3. Values for Shields parameter are those found in Table E.1 in Appendix E of "STREAM SIMULATION: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings", USDA Forest Service, August 2008.
4. Calculation of mean mobile D_{50} is based on mean shear stress values and assumes specific weight of sediment is 165 lb/ft^3 and specific weight of water is 62.4 lb/ft^3.
5. Calculation of max. mobile D_{50} is based on max. shear stress values and assumes specific weight of sediment is 165 lb/ft^3 and specific weight of water is 62.4 lb/ft^3.

The material that comprises the streambed in natural channels consists of a wide range of sediment sizes, with the smaller particles filling the voids between the larger particles and sustaining surface flow. Using methods described in USFS (2008) and CDFW (2010) the remainder of the substrate was calculated and is summarized below:

Table 3. Design Substrate Gradation

Percent Finer	Design Substrate (ft)	Design Substrate(mm)
100	4.00	1219
84	1.27	389
50	0.51	155
16	0.03	10.3
8	0.01	2.0

Following the recommendations in CDFW (2010), the required thickness of the bed of channel substrate was determined based on the size of the largest particles in the substrate gradation to be a minimum of 3.0 feet through the riffle sections. Since the substrate sizing and gradation was designed based on the hydraulic conditions in the central riffle and these are expected to be less conducive to mobility through the pools, a 2.0-foot minimum thickness was deemed adequate within pools.

3.8 Structural Components in the Creek

The primary in-stream structural component for the channel design includes the boulder grade control structures that are proposed at the upstream and downstream end of each riffle and pool.

The design intent for these features is to emulate the naturally forming jams of boulders observed to control the locations of riffles in the reference reaches, by constructing channel spanning grade control structures that will be stable at flows up to the 100-year event using boulders approximating the D_{100} size of the proposed channel substrate. Our approach to the design of these boulder structures is to analyze the forces exerted by the modeled hydraulics of the 100-year flow on an individual boulder forming part of a riffle crest.

The moment stability analysis completed for this project made use of a spreadsheet model to complete the required computations and described analysis. As described by Julien 1995, the moment stability analysis computes the balance of resisting and driving rotational components of the forces exerted by the flow on a boulder embedded in the surface of the streambed about a point of rotation defined as the downstream point of contact between the boulder and the stream bed. These forces and their components are illustrated schematically in the diagram below:

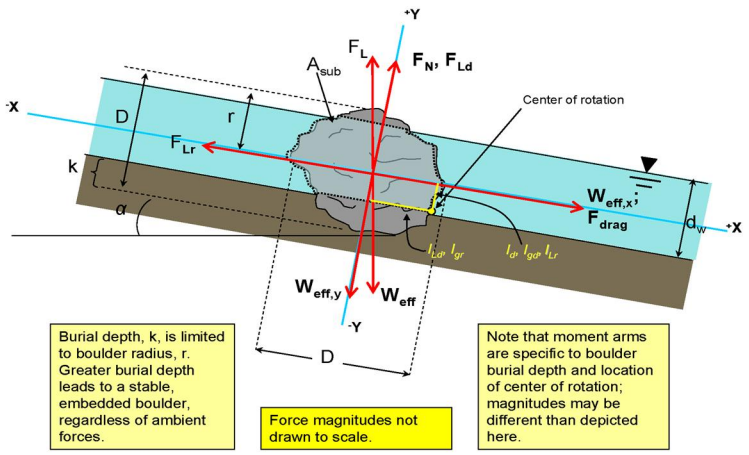


Figure 6. Boulder Moment Diagram

When a boulder is stable, the moment stability analysis suggests:

$$M_{gr} + M_{Lr} > M_{gd} + M_{Ld} + M_{Dd}$$

The resisting moment due to gravity (M_{gr}) and the resisting moment due to lift (M_{Lr}) result from the gravity force and lift force, which are the component forces that resist rotation. The driving moment due to gravity (M_{gd}), the driving moment due to lift (M_{Ld}), and the driving moment due to drag (M_{Dd}) result from gravity force, lift force, and drag force, which are the component forces that drive rotation.

Other than assumed movement by rotation, the moment stability analysis includes several additional key assumptions:

- The streambed has slope equal to the average local channel segment slope
- Boulder shape is approximated by a sphere
- Boulders are embedded in a finite depth of stream bed sediment, which ensures that a moment stability analysis is applicable
- Particles buried by more than half of their vertical dimension (boulder radius) will not be destabilized by rotation due to drag and gravity
- Dynamic considerations that follow destabilization of a boulder are not considered (rotational or translational acceleration, re-deposition, saltation, or flotation)
- Soft sediment deformation at the particle interface with the stream bed is not incorporated in this model. Rigid, non-deformable bed substrate is assumed, which permits particle movement by rotation only (no downstream translation from bed sediment deformation)
- Suction forces for buried rocks (which would be stabilizing forces) are not considered

The boulder grade control structures for this project are designed to span the entire width of the active (bankfull) channel and provide points of long term stability along the longitudinal profile of the channel bed. In addition to controlling riffle crest elevations and the minimum water surface elevations of pools upstream, the boulder grade control structures should prevent downstream channel incision from migrating upstream through the project.

As depicted on Sheet 13 in Attachment A, the grade control structures will consist of a row of crest boulders supported by two rows of foundation boulders, one upstream and one downstream of the crest row. Each crest boulder is placed such that it is supported by solid contact with four foundation boulders below. Each left and right half of the structure is angled slightly in the upstream direction (the center is slightly upstream of the outer ends) such that the elevations of the tops of the crest boulders remain consistent with the cross slope of the

channel bottom towards the centerline. In addition, the slight upstream angle, approximately 5 degrees in this case given the 15:1 cross slope, allows for each of the rows of crest and foundation boulders to be placed such that at any point, a boulder closer to center of the channel is slightly upstream from the next boulder towards the bank. This placement ensures that lateral contact between the boulders resists forces directed in the downstream direction and that the entire structure is buttressed against the channel banks. The stabilizing effect of buttressing lateral contact between the boulders comprising the structure is not accounted for in the moment stability analysis, adding another aspect of conservatism to the design.

In the analysis for this project, the aforementioned spreadsheet was used to determine the stability of a wide range of boulder sizes at a wide range of burial depths given the hydraulic conditions near the crest of the central riffle at design station 1+42.2. Based on the results from our two dimensional hydraulic modeling, hydraulic inputs to the boulder moment stability analysis spreadsheet included the peak flow rate of 8,400 cfs, maximum flow depth submerging the crest boulder of 9.5 feet, maximum flow velocity near the crest boulder of 17.7 feet/second, riffle bed slope of 0.04 foot/foot and Manning's roughness coefficient of 0.037.

Figure 7 shows the required percent embeddedness (burial depth divided by boulder diameter multiplied by 100) for a given boulder size to be stable under the hydraulic conditions at the design riffle crest.

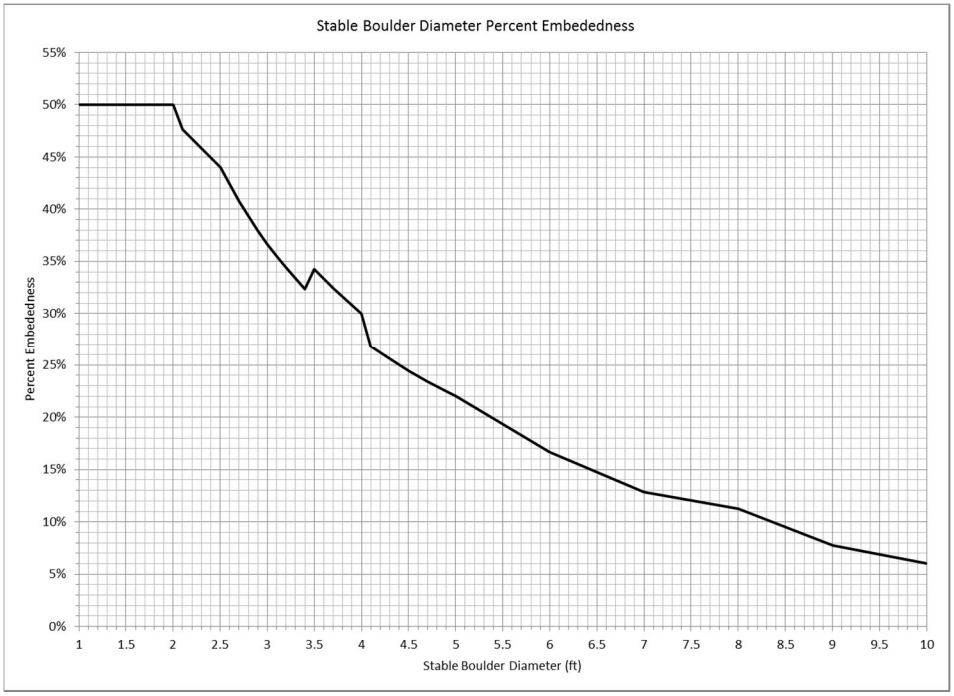


Figure 7. Stable Boulder Diameter per Percent Embeddedness

Figure 8 shows the required burial depth for a given boulder size to be stable under the hydraulic conditions at the design riffle crest.

These results indicate that for the given hydraulic conditions, if the boulders are placed such that the bottom of the crest boulder is at least 1.2 feet below the contact points with the downstream foundation boulders then the crest boulder will be stable regardless of its size.

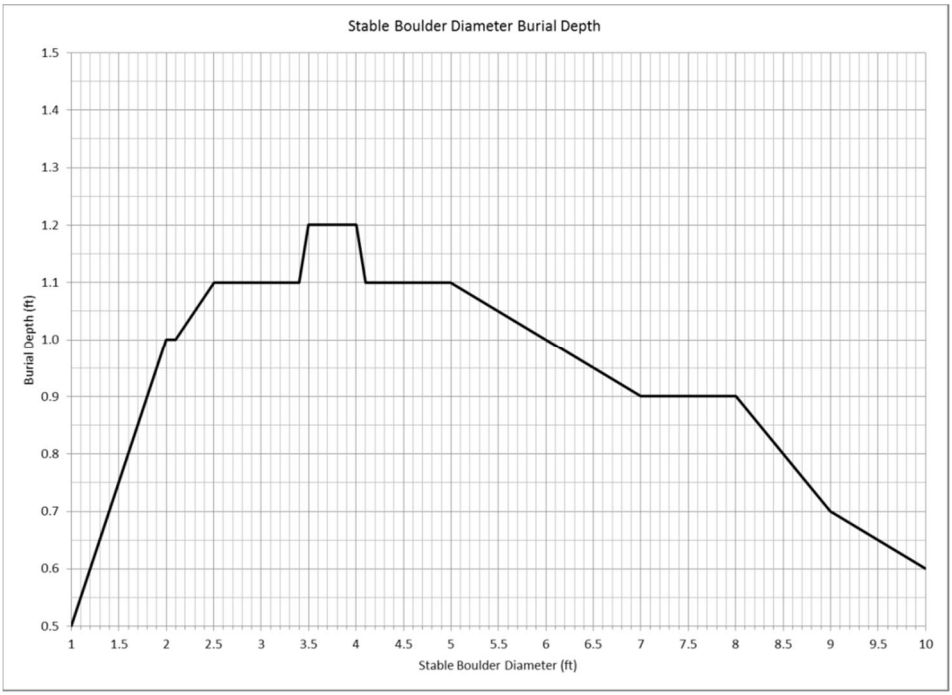


Figure 8. Stable Boulder Diameter per Burial Depth

However, the greater the percentage embeddedness of the crest boulder, the larger the downstream nesting angle will be. For example, a 1.0-foot diameter boulder may be stable if it is 50% embedded, but this would require the nesting angle to be 90 degrees. This would mean that the crest boulder would be located immediately upstream of the foundation boulder instead of being somewhat above and supported by it. With this in mind, the downstream nesting angle was limited to a maximum of 60 degrees. We then determined that a minimum boulder diameter of approximately 4.0 feet is required to achieve a minimum burial depth of 1.2 feet given a downstream nesting angle of 60 degrees.

The restored reach of the creek should be expected to undergo a period of adjustments, first to the increased supply of sediment as the dam influenced accumulation is transported downstream and later to the natural flow and sediment transport regime. These adjustments will be manifest in various ways. The shape of the pools, as well as the slope of the thalweg entering and exiting the pools is expected to vary as the pools episodically fill and scour during storm events. Bars of sediment may form within the reach that may or may not later disappear. A portion of the substrate placed immediately downstream of the boulder grade control structures may be eroded. A long term increase in sediment supply may result in the adjustment of the channel towards a flatter overall profile slope, which might resulting in a smoothing of the channel profile and shallower pool depths.

3.9 Revegetation

The development of the revegetation plan was guided by a close review of the project site, its existing vegetation, hydrology, climatic conditions, and ecological functions in its current condition. Field surveys, solar aspect maps, topography maps, aerial photography and hydrology models were reviewed in development of the revegetation plan. The revegetation plan focuses on the restoration of ecological processes and functions in the project area by placing native, locally occurring plants in the most species-appropriate microhabitats of the project site. This will allow them to thrive and expediently provide key riparian vegetation functions such as erosion protection, bank stabilization, nutrient cycling and production, habitat creation, water retention and many others.

3.9.1 Planting Zones

The riparian wetland plants that constitute the proposed planting zones grow naturally both at the project site and in its immediate vicinity. They were grouped into three planting zones based on their water needs that are reflected by the vertical distance from the ground water table at which they typically grow. This information has been extensively scientifically studied and is well documented by their wetland status for coastal California (USACE 2016). Another important environmental component of the project site is the considerable amount of shade, and only short periods of intense sunlight during the day. This is an effect of the tall mature trees surrounding the site, and the steep north and west banks. Many plants selected for the revegetation are shade tolerant and are expected to perform well at the project site.

As shown on Sheet 19 (the revegetation plan) in Attachment A, the three planting zones are: the channel planting zone, the bank planting zone, and the floodplain terrace planting zone. As described above and much like the project bank treatments, the delineation of revegetation planting zones was driven by the expected hydrologic, hydraulic, environmental, and substrate conditions within the post-project channel.

The revegetation design utilizes planting zones rather than the numerous riparian and wetland vegetation alliances that could be discerned at the site and its vicinity at different levels of resolution. The proposed planting zones loosely correspond to lower, middle, and upper riparian zones. The existing upland vegetation zone touches the project boundary in several areas and the upland California buckeye tree will be planted in these areas. Each planting zone has the potential to contain multiple vegetation alliances and associations as described by the Manual of California Vegetation (MCV) (Sawyer 2008).

The majority of the project reach is expected to be only mesic or dry for much of the year as mean daily flows from May through November are typically less than 5 cfs. The water surface area at these low flows is approximated by the minimum pool areas shown on the engineering plans and the 10 foot wide low flow channel through the riffle sections. However, storms with a 1.5 to 2-year recurrence interval will essentially fill the bankfull channel and floodplain terraces will be completely inundated at the 10-year flow. This stream characteristic will be reflected in the plants used in the channel and bank planting zones where only species that can withstand inundation for several days and high stream velocities will be planted.

Post-project flow velocities within the bankfull channel are expected to be very high very frequently during the wet season from November through April. During a 2.33-year storm, the velocity of flow between the toes of the banks, yet outside of the low-flow channel is expected to range between 6 and 14 ft/s. The velocity of flow along the channel banks is expected to be in the 4-6 fee per second range during a 2-year flow and in the 6-14 feet per second (fps) range during a 10-year flow.

So that the gravel and soil filled rock armored banks are able to resist these velocities, they will be covered with vegetated coir mat, which will be created by covering the banks with coir erosion fabric after they are seeded with a riparian vegetation seed mix.

The entire bottom width of the bankfull channel will be lined with the design substrate mix, consisting of gravels, cobbles, and boulders and having a D_{50} of approximately 6 inches and very limited fines content. Portions of the bank treatments will consist of a plantable mix of gravels and soil and floodplain terraces will be covered with a similar mix.

Additional details for the various planting zones are bulleted below:

- **Channel Planting Zone:** Located between the toe of the banks and the base flow water surface elevation, the channel planting zone is the zone which is closest to the stream's base flow edge and below the OHWM. The width of this zone fluctuates with the cross sectional width of the stream and contour elevations. The plant species proposed for this zone will be well adapted to cobbly substrate and extended inundation of these areas of the project site. Willows, sedges and rushes typically grow below the OHWM and some species prefer bouldery and rocky streams with sandy alluvium soils. The cobbles of the channel bottom will form a stream bed with a structure that will be ideal for these plants. The channel planting zone will provide important ecosystem benefits. One of the primary objectives of

this project is steelhead trout habitat enhancement, and the vegetation in this zone will play a key role in achieving this objective. Growing close to the water's edge, the channel vegetation will shade the river and attenuate water temperatures to maintain a quality steelhead habitat. It will also contribute to improved bank stability, enhance physical channel features, provide organic debris recruitment, and serve as a major source of nutrients to support in-stream fauna and flora, all of which will play important roles in enhancement of steelhead habitat. Dense willow thickets can develop root mats and have the potential to provide increased habitat complexity. The compact and dense foliage of sedges and rushes create suitable habitat for small invertebrates which serve as food for steelhead. Sedges and rushes have strong and extensive root systems and over time will stabilize the river channel. Willow poles can withstand initial velocities of 1 to 2.5 fps, and established velocities of 3 to10 fps.

- **Bank Planting Zone:** The bank planting zone will be delineated by the top and bottom of the sloping banks just below the OHWM that follows approximately the top of the banks. These banks will be occasionally flooded by storms with a 1.5 to 2-year recurrence interval, so vegetation in this zone will have to withstand a flooding regime that is less frequent than that in the channel planting zone. Soils in the bank planting zone will be a mixture of cobbles and fines that will fill the voids of the large 3-ft. dia. boulders that will form the bank armament. This boulder void fill soil will be installed continuously from the base of the boulders to their surface to ensure connection to the ground water table. These soils will be coarse and cobbly near the surface with finer sand, silt and some clay deeper down to provide nutrients for bank vegetation and to allow for the plants' good anchorage. The large boulders will act as bank stabilizers and will also help hold the soil in place when the banks are flooded. Trees planted in this zone will come from pole cuttings and will develop strong root systems in the soil filled voids. The understory will be seeded with a riparian seed mixture.

- **Floodplain Terrace Planting Zone:** Between approximately the 2- and 10-year storm water surface elevation, this zone will contain riparian vegetation that typically grows above the OHWM. The upper edges of this zone will act as an ecotone between the upland and riparian communities. It will be planted in a mosaic pattern with facultative riparian vegetation, also incorporating some upland vegetation along the highest edges, based on site contours and slope aspect. Ecotones are transitional areas between two distinct habitats, in this case the upland and riparian. They play an important ecological role because they provide a niche environment where species adapted to either of the habitat types interact, finding food and shelter between two ecosystems each with unique vegetation, hydrology, and wildlife inhabitants. Salvaged topsoil from the project area as well as chipped and/or composted native plant material will be used to enhance the topsoil qualities on the floodplain terrace before planting.

We believe that long-term post-project erosion control is best provided through the re-establishment of a healthy riparian corridor. As such, we propose to install high quality biodegradable erosion control products in concert with proven native riparian plant species on the floodplain terraces. Biodegradable erosion control products and suitable riparian vegetation will also be fully integrated into the construction of each of the bank treatments. Establishment of the integrated plantings is critically important for the proper performance of each of the bank treatments. In addition, integration of biodegradable erosion control and revegetation with the biotechnical bank treatments should lead to the development of continuity between the restored channel and the surrounding riparian ecosystem. The key restoration tasks to construct a good quality, well armored vegetated bank will be:

1. Planting of vegetation after grading work and soil preparation is complete.

2. Installation of irrigation equipment and emitters before the plants to ensure they receive adequate water immediately after installation and during the initial establishment period.

3. Planting during the rainy season to increase survival rates because newly installed riparian vegetation needs almost constant water for the first year in the ground.

4. Making sure that soil compaction does not exceed 80% relative density for a depth of 24 inches in the boulder voids to promote good aeration, root growth, water holding capacity and natural composting processes.

5. Seeding the boulder void fill soil/gravel with a riparian seed mix before it is covered with coir erosion fabric.

6. Installation of erosion control fabric within 2-3 days after seeding to prevent trampling of germinating seed.

7. Installation of erosion control fabric very tightly to the ground with no voids between the boulders and soil/gravel fill and no loose unsecured edges.

8. Installation of pole cuttings primarily through erosion control fabric without cutting openings in fabric.

3.9.2 Selection of Planting Palette

The habitats along San Francisquito Creek will be revegetated with a wide variety of locally native plant species that were documented in the area during botanical surveys. Areas of the floodplain terrace between the Ordinary High Water Mark (OHWM) and approximately Q10 will be planted with facultative and upland vegetation. The two planting zones that will be restored on the banks and bottom of the channel will consist of a diverse mix of facultative and facultative wetland trees, shrubs, and herbaceous species that typically colonize riparian banks along San Francisquito Creek. They will be installed by direct planting of trees and shrubs or their pole cuttings, and seeding of herbaceous perennials and annuals. The vegetation in the channel planting zone will consist of facultative wetland species well adapted to inundation and high velocity water. The three species most appropriate for this area are common rush (*Juncus effusus var. pacificus*), torrent sedge (*Carex nudata*), and sandbar willow (*Salix exigua*). These species are not only tolerant of extended flooding but also perform well during high flows, very likely only minimally changing the channel roughness because of their flexibility and contribution to laminar flow. As water level rises during storm events, the weight of the deeper water column will be more effective in pressing down the flexible stems of vegetation. This contributes to substantial reduction in erosion and water velocities near the bottom of the stream. This fact has been discovered at the J. Amorocho Hydraulics Laboratory at UC Davis Large Flume (Kavvas and others 2009).

The riparian species of the bank planting zone will primarily consist of tree and shrub pole cuttings of red willow (*Salix laevigata*), arroyo willow (*S. lasiolepis*), sandbar willow, red-twig dogwood (*Cornus sericea*), and boxelder (*Acer negundo*). Red alder will be planted from treepot 4 or 8 containers. The ground area underneath the trees will be seeded with a riparian seed mix consisting of mugwort (*Artemisia douglasiana*), tall cyperus (*Cyperus eragrostis*), western goldenrod (*Euthamia occidentalis*), meadow barley (*Horderum brachyantherum ssp. brachyantherum*), slender hairgrass (*Deschampsia elongata*), spreading rush (*Juncus patens*), cow clover (*Trifolium wormskioldii*), clustered field sedge (*Carex preagracilis*), and small-bracted sedge (*C. subbracteata*).

The floodplain terrace will consist of species that have a wider range of water regime adaptations from facultative wetland species to facultative and facultative upland species. It will include the facultative and shade tolerant Scouler's willow (*S. scouleriana*), along with black cottonwood (*Populus balsamifera ssp. trichocarpa*), blue elderberry (*Sambucus nigra ssp. caerulea*), California buckeye (*Aesculus californica*), twinberry (*Lonicera involucrata*), and the bay tree (*Umbelluaria californica*). The majority of these trees and shrubs will be planted as pole cuttings or seed. The understory will consist of seeded herbaceous perennials such as mugwort, Santa Barbara sedge (*C. barbarae*), salt grass (*Distichlis spicata*), meadow barley, spreading rush, creeping wildrye (*Leymus triticoides*), tomcat clover (*Trifolium wildenovii*), and locally native red fescue (*Festuca rubra*) (from San Francisquito, or one of the adjacent watersheds).

4. Measures to Reduce Potential Impacts

4.1 General

The measures numbered below cover general avoidance and minimization measures to be utilized during project implementation.

1. In-channel work will be restricted to occur only between June 1 and October 31. Restoration, construction, and dewatering activities within any wetted and/or flowing creek channel will only occur within this window. Planting activities, including limited soil preparation outside the active channel, may occur beyond October 31 if necessary to better ensure successful plant establishment during the onset of winter precipitation.
2. If precipitation greater than 1 inch or sufficient to produce runoff is forecast to occur while construction is underway, work will cease and erosion control measures will be put in place sufficient to prevent significant sediment runoff from occurring.
3. **Fencing, flagging, and/or signage will be utilized to identify and establish the boundaries of approved work areas, staging areas, and access roads. This fencing, flagging, and/or signage will be inspected and maintained on a regular basis.**
4. If grading will occur at any California ground squirrel burrows or pocket gopher mounds, the burrow or mound will be carefully excavated prior to grading under the supervision of the biological monitor. The biological monitor will have the authority to control the rate of excavation and the equipment used (e.g., some hand excavation may be necessary), so that excavation proceeds at a slowly and carefully enough for detection of animals that may be within. Burrow excavation will proceed as follows:
    a. To the extent feasible, capped PVC pipe or similar material will be pushed into the burrow approximately 12 inches to prevent the entrance of the burrow from collapsing and to prevent animals from leaving the burrow during excavation.
    b. Approximately 12 inches of the burrow will be excavated under the supervision of the biological monitor.
    c. The capped PVC pipe will be removed and the biological monitor will inspect the burrow for evidence of California tiger salamanders or other special-status species.
    d. The capped PVC pipe will be reinserted approximately 12 inches into the burrow and the process will repeat until the endpoint of the burrow is reached.
    e. If a special-status species is found during excavation, work will be stopped, the animal will be allowed to leave the project footprint, and CDFW and/or USFWS will be contacted within 24 hours.
5. If vehicles will drive over or equipment will be placed on top of California ground squirrel burrows or pocket gopher mounds in staging areas, plywood sheets of at least 0.5-inch thickness will be placed on top of the burrows to minimize the likelihood of burrow collapse.
6. Measures will be taken to prevent the import of invasive plants, animals, and pathogens to the Project area. All personal (e.g., boots, wading gear) and heavy equipment (including construction vehicles) brought to the project area will be new or thoroughly cleaned prior to arrival at the project area. Cleaning methods may include use of brushes, running water, and detergents to remove all visible dirt and debris from the gear and equipment, or pressure washing or steam cleaning for larger equipment such as construction equipment and vehicles.
7. Once cleaned, equipment will be soaked in or sprayed with a quaternary ammonia solution or fresh bleach within a designated containment within the equipment staging area. Gear and equipment will be soaked in a bucket or sturdy garbage bag for 2-5 minutes, using one of the two disinfecting agents described below. Apply the same solution to any equipment too large to submerge in containers by sprayer until saturated. After soaking or spraying, allow the equipment to dry as much as possible before

bringing to the project area. The preferred disinfectant is a quaternary ammonium compound (e.g., Quat-128®). The active ingredient in the quaternary ammonia compound is didecyl dimethyl ammonium chloride (DDAC) and should be used in a 0.01 percent solution. For example, Quat-128 is about 5 percent DDAC. Therefore, about 0.25 ounces Quat-128 would be used per gallon of water to make a 0.01% active ingredient solution. Alternatively, fresh bleach in solution at a 1:20 bleach -to-water ratio may be used in the absence of quaternary ammonia. For example, use about 6 oz. of fresh bleach per gallon of water. Bleach breaks down rapidly so only new bleach bottles or bottles open less than 1 month should be used for disinfecting.

4.2 Revegetation

In order to minimize impacts to existing riparian vegetation, the following measures will be utilized during project implementation:

1. As many trees and as much brush as possible will be retained, emphasizing shade producing and bank stabilizing trees and brush. All disturbed areas will be re-vegetated with native grasses, trees, or shrubs appropriate for the site.
2. Prior to construction, equipment access points will be determined that minimize riparian disturbance. Pre-existing access points will be used whenever possible. Unstable areas will be avoided.
3. Soil compaction will be minimized by using equipment with a greater reach or that exerts less pressure per square inch on the ground, resulting in less overall area disturbed or less compaction of disturbed areas.
4. If riparian vegetation is to be removed with chainsaws, every attempt will be made to use saws that operate with vegetable-based bar oil.

In addition, the following measures apply to post construction riparian restoration and erosion control:

5. Immediately after project completion and before the close of the seasonal work window, all exposed soil will be stabilized with mulch, seeding, and/or placement of erosion control blankets. All artificial erosion control devices will be removed after the project area has fully stabilized. All exposed soil present in and around the project site will be stabilized within seven days.
6. All bare and/or disturbed slopes (larger than 10 feet by 10 feet of bare mineral soil) will be treated with erosion control measures such as hay bales, netting, fiber rolls, native mulch/slash, and hydroseeded as permanent erosion control measures.
7. Where straw, mulch, or slash is used as erosion control on bare mineral soil, the minimum coverage will be 95 percent with a minimum depth of 2 inches.
8. When seeding is used as an erosion control measure, only native seed will be used.
9. Sterile, weed-free straw (free of exotic weeds) is required when hay bales are used as an erosion control measure.
10. Any stream bank area left barren of vegetation as a result of the project will be restored to a natural state by seeding, replanting, or other agreed upon means (including natural recruitment) with native trees, shrubs, and/or grasses after the end of construction. Barren areas will typically be planted with a combination of willow stakes, native shrubs and trees, and/or erosion control grass mixes.
11. Native plant species will be used for planting of disturbed and compacted areas. The species used will be specific to the project vicinity and comprised of a diverse community structure. Plantings will include both woody and herbaceous species.
12. All plastic exclusion netting placed around plantings will be removed and recycled after 3 years or earlier, if appropriate.

4.3 Water Quality Protection

BMPs associated with minimizing erosion and turbidity impacts and hazardous material spill prevention are listed below.

These are practices that will be refined and documented in greater detail in the Contractor's stormwater pollution and prevention plan (SWPPP).

1. Minimizing Erosion and Turbidity:
    a. Effective erosion control measures will be in place at all times during construction. Construction will not begin until all temporary erosion control devices (e.g., straw bales with sterile weed-free straw and silt fences) are in place downslope or downstream of the project site within the riparian area. The devices will be properly installed at all locations where the likelihood of sediment input exists. These devices will be in place and properly maintained during and after construction activities for the purposes of minimizing fine sediment and sediment/water slurry input to flowing water and of detaining sediment-laden water on site. If continued erosion is likely to occur after construction is completed, then appropriate erosion prevention measures will be implemented and maintained until erosion has subsided.
    b. Erosion control devices such as coir rolls or erosion control blankets will not contain plastic netting of a mesh size that would entrain fish, reptiles, or amphibians.
    c. Sediment will be removed from sediment controls once it has reached one-third of the exposed height of the control. Whenever straw bales are used, they will be staked and dug into the ground 12 centimeters and only sterile, weed free straw will be used.
    d. Sediment-laden water created by construction activity will be filtered before it leaves the limit of work or enters the stream.
    e. The Contractor will inspect, maintain, and repair all erosion control materials prior to and after any significant storm event, at 24 hour intervals during extended storm events, and a minimum of every 2 weeks until all erosion control measures have been completed.
    f. Temporary stockpiling of material will be minimized. Excavated material will be stockpiled in areas where it cannot enter the stream channel. Options for temporary staging and stockpile locations are shown on Sheet 3 of Attachment A. No more than 1 acre of staging and stockpiling areas shall be utilized for the project. Locations will be established to deposit spoils well away from watercourses with the potential to deliver sediment into San Francisquito Creek. Spoils will be contoured to disperse runoff and stabilized with mulch and native vegetation. Devices such as silt fences, berms of hay bales, or plastic sheeting held down with rocks or sandbags over stockpiles will be used to minimize movement of exposed or stockpiled soils.
    g. If feasible, topsoil will be conserved for reuse at the project location or in other areas.

2. Hazardous Material Spill Prevention
    a. Debris, soil, silt, excessive bark, rubbish, creosote-treated wood, raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, resulting from project-related activities, will be prevented from contaminating the soil and from entering waters of the State. Any of these materials placed within or where they may enter a stream will be removed immediately. During project activities, all trash that may attract potential predators will be properly contained, removed from the work site, and disposed of daily.
    b. Where feasible, construction will occur from the bank or on a temporary pad underlain with filter fabric.

c. No heavy equipment will enter wetted channels.

d. Use of heavy equipment will be avoided in a channel with rocky or cobbled substrate. If access to the work site requires crossing a rocky or cobbled substrate, a rubber tire loader/backhoe is the preferred vehicle. Only after this option has been determined infeasible will the use of tracked vehicles be considered. The amount of time this equipment is stationed, working, or traveling within the creek bed will be minimized. When heavy equipment is used, woody debris and vegetation on banks and in the channel will not be disturbed if outside of the project's scope.

e. The use or storage of petroleum-powered equipment will be accomplished in a manner to prevent the potential release of petroleum materials into waters of the State (Fish and Game Code 5650).

f. Areas for fuel storage, refueling, and servicing of construction equipment will be located in an upland location.

g. Prior to use, all equipment will be cleaned to remove external oil, grease, dirt, or mud. Wash sites will be located in upland locations so wash water does not flow into the stream channel.

h. All construction equipment will be in good working condition, showing no signs of fuel or oil leaks. Prior to construction, all mechanical equipment will be thoroughly inspected and evaluated for the potential of fluid leakage. All questionable motor oil, coolant, transmission fluid, and hydraulic fluid hoses, fittings, and seals will be replaced. The Contractor will document in writing all hoses, fittings, and seals replaced and will keep this documentation until the completion of operations. All mechanical equipment will be inspected on a daily basis to ensure there is no motor oil, transmission fluid, hydraulic fluid, or coolant leaks. All leaks will be repaired in the equipment staging area or other suitable location prior to resumption of construction activity.

i. Oil absorbent and spill containment materials will be located on site when mechanical equipment is in operation within 100 feet of waters of the State. If a spill occurs, no additional work will occur in-channel until, (1) the mechanical equipment is inspected by the Contractor and the leak has been repaired, (2) the spill has been contained, and (3) NMFS and CDFW are contacted and have evaluated the impacts of the spill.

4.4 Special Status Species

Species avoidance measures to be utilized during project implementation are broken up into three categories below: environmental awareness training, fish capture and relocation, and species specific measures (San Francisco dusky-footed woodrat, Western pond turtle, special-status bats, migratory birds, white -tailed kite, California tiger salamander, Burrowing owl, California red-legged frog, common gartersnake and special-status plants).

1. Environmental Awareness Training

   a. A worker environmental awareness training will be conducted by a qualified biologist before work begins to provide information on all special-status species (including federally and state endangered, threatened, proposed, and candidate species, and CDFW fully protected species and species of special concern) potentially in the project footprint, the protection afforded the species by Federal Endangered Species Act and the California Endangered Species Act, and guidance on those specific protection measures that must be implemented as part of the project.

   b. The Contractor will be required to have a copy onsite of Avoidance and Minimization Measures to be followed during implementation.

2. Fish Capture and Relocation Activities

   a. Fish capture and relocation activities will only occur between June 1 and October 31.

b. A qualified biologist will lead a team to perform all fish capture and relocation efforts prior to diversion and dewatering. The qualified biologist will capture and relocate steelhead[1] prior to construction of the water diversion structures. The qualified biologist will document the number of salmonids observed in the affected area, the number and species of salmonids relocated, and the date and time of collection and relocation.

c. During dewatering, a qualified biologist will remain at the project site to capture and relocate any additional fish that may have become stranded throughout the dewatering process.

d. The biologist(s) will determine the most efficient means for capturing fish.

e. Initial fish capture and relocation efforts will be conducted several days prior to the start of construction. This provides the fisheries biologist an opportunity to return to the work area and perform additional electrofishing passes or capture attempts immediately prior to construction. If water is left in the construction area, dissolved oxygen levels sufficient for salmonid survival will be maintained.

f. Prior to fish capture, appropriate release locations will be selected for different life-stages of the captured species, and the biologists will release fish only in those pre-determined locations. These release locations will be selected on the basis of having water temperature similar to that of the capture location, having ample habitat, and having a low likelihood of fish re-entering the work site or becoming impinged on exclusion net or screen. Captured fish will be placed into a pool, preferably with a depth greater than 2 feet with available instream cover. Juvenile steelhead will be released downstream of the construction site and adults will be released upstream.

g. During fish capture and relocation, air and water temperatures will be periodically measured at the head of riffle tail of pool interface. Capture and relocation activities will cease if the health of fish is compromised owing to high water temperatures or if mortality exceeds 3 percent of captured steelhead.

h. If more than 3 percent of steelhead captured are killed or injured, NMFS and CDFW will be contacted. All steelhead mortalities will be retained; placed in a whirl-pak bag; labeled with the date and time of collection, fork length, and location of capture; and frozen as soon as possible. Frozen samples will be retained until specific instructions are provided by NMFS and CDFW.

i. All electrofishing will be conducted according to NMFS' Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act (NMFS 2000). A minimum of three passes with the electrofisher will be utilized to ensure maximum capture probability of steelhead within the area proposed for dewatering. Water temperature, dissolved oxygen, and conductivity will be recorded in an electrofishing log book along with the electrofishing settings. A minimum of one assistant will aid the fisheries biologist by netting stunned fish and other aquatic vertebrates. The backpack electrofisher will be set as follows when capturing fish:

		Initial	Maximum
i.	Voltage:	100 Volts	300 Volts
ii.	Duration:	500 microseconds	5 milliseconds
iii.	Frequency:	30 Hertz	70 Hertz

j. When capturing fish with seines, a minimum of three passes with the seine will be used to ensure maximum capture probability of steelhead within the area. All captured fish will be processed and released prior to each subsequent pass with the seine. The seine mesh will be adequately sized to ensure fish are not gilled during capture and relocation activities.

[1] For purposes of this memorandum and implementation of the measures herein, “steelhead” is assumed to include resident rainbow trout, and all protective measures will treat rainbows as steelhead.

k. Captured fish will not be overcrowded in buckets, allowing no more than 150 0+ fish (approximately 6 cubic inches per 0+ individual) per 5 gallon bucket (or live wells) and fewer individuals per bucket for larger/older fish.

l. Every effort will be made not to mix 0+ steelhead with larger steelhead or other potential predators. At least two containers will be used to segregate 0+ fish from larger age classes and potential predators. Larger amphibians will be placed in the container with larger fish.

m. Steelhead predators, including other fishes and amphibians, collected and relocated during electrofishing or seining activities will not be relocated so as to concentrate them in one area. To minimize predation on steelhead, potential predators will be distributed throughout the wetted portion of the stream so as not to concentrate them in one area.

n. All captured steelhead will be processed and released prior to conducting a subsequent electrofishing or seining pass.

o. All native captured fish will be allowed to recover from electrofishing before being returned to the stream.

p. Handling of salmonids will be minimized. When handling is necessary, the biologists will always wet hands or nets prior to touching fish. Handlers will not wear DEET-based insect repellants during relocation activities.

q. Captured fish will be temporarily held in cool, shaded, aerated water in a container with a lid. Aeration will be provided with a battery-powered external bubbler. Fish will be protected from jostling and noise. Fish will not be removed from this container until the time of release.

r. A thermometer will be placed in holding containers and, if necessary, periodic partial water changes will be made to maintain stable water temperature. If water temperature reaches or exceeds those allowed by CDFW and NMFS, fish will be immediately released and rescue operations ceased.

s. In areas where aquatic vertebrates are abundant, capture will be periodically paused so that animals can be released at predetermined locations.

t. The fish will not be anesthetized or measured. The biologists will visually identify the species captured, estimate year-classes of fish at the time of release, and identify hatchery (clipped adipose fin) and wild fish. The number of fish captured will be counted and recorded.

3. San Francisco dusky-footed woodrat

a. If possible, all woodrat surveys and relocation efforts will be completed before January, the start of the breeding season (January to May).

b. Within 1 month prior to the initiation of active relocation efforts, a qualified biologist will conduct a survey to map and flag all woodrat middens within 20 feet of the project footprint. This map and the number of middens proposed for relocation will be submitted to CDFW prior to any relocation efforts.

c. Based on the number of woodrat middens proposed for relocation, artificial middens will be installed at a 2:1 ratio outside of the project footprint. Artificial middens will be placed in clusters within a 50-foot radius of one another in existing riparian or oak woodland habitat outside of the creek channel but within 50 to 550 feet of the project footprint. Each artificial midden will be installed against a "core element" (e.g., a tree, a stump or log, or a rock) or, in the absence of a core element, a small length of 2 x 6 foot board. Artificial middens will be placed in close proximity to dense vegetative cover (ideally 90 percent cover) consisting of plant species such as poison oak *(Toxicodendron diversilobum*), toyon (*Heteromeles arbutifolia*), oak (*Quercus spp*.), willow (*Salix spp*.), California blackberry (*Rubus ursinus*), and coyote bush (*Baccharis pilularis*) and/or foraging materials such as hazelnut (*Corylus cornuta*), oak, California bay laurel (*Umbellularia californica*), and twinberry (*Lonicera involucrata*) (Gerber et al. 2003). The artificial middens will be constructed of several 3-foot-long, 1.5-inch-diameter untreated garden stakes (or similar material) pounded 1 foot into the

ground and interlaced with sticks and woody debris collected onsite or from the middens slated for removal to form teepee-like structures. A suitable pathway will be created allowing access to the midden's inner chamber from the outside. Artificial middens will be provisioned with a combination of California bay laurel blossoms, oak leaves, acorns, rolled oats, wild bird seed, and/or peanut butter for sustenance; and dried grass for nesting materials.

d. If middens are found within 20 feet of the project footprint and can be avoided, the biologist will direct the Contractor in placing orange barrier fencing at least 2 feet, but not more than 15 feet, from the midden to avoid indirect disturbance to the midden. Fencing will be installed prior to the start of other project-related activities.

e. If the minimum fencing distance cannot be achieved and the middens cannot be protected and/or avoided, a qualified biologist will disassemble and relocate middens outside of the project footprint prior to the start of construction, and prior to installation of wildlife exclusion fencing. The midden will be dismantled by hand under the supervision of the qualified biologist. The entire midden site, including the aboveground midden and the belowground basement area, will be carefully examined to ensure that no adults or young are present before the midden is entirely dismantled and the basement filled in. All salvageable midden materials will be relocated to riparian or oak woodland habitat and rebuilt into artificial middens, as described above.

f. After wildlife exclusion fencing has been installed but prior to the start of any work (including clearing, demolition, ground disturbance, or vegetation disturbance), a qualified biologist will perform a preconstruction survey to determine if the San Francisco dusky-footed woodrat has reoccupied the site following the implementation of the midden relocation measures. If newly-constructed middens are found inside of the wildlife exclusion fencing, a midden relocation and woodrat trapping effort will be initiated. Midden relocation will occur as described above. Woodrat trapping will consist of two to three live traps per new, active midden site being set each evening for 3 days. The traps will be baited with oatmeal, peanut butter, and apple and will contain synthetic batting for use as nesting material. Traps will be checked the following morning within 1 hour following sunrise. Traps containing woodrats will be placed facing the entrance of unoccupied artificial or relocated middens and opened, allowing the woodrats to leave the traps on their own accord. Each release site will be monitored for approximately 1 hour after each woodrat is released to determine the short-term success rate of the artificial middens.

g. If additional middens are detected within the project footprint after the start of project construction, construction will cease until exclusion fencing is installed around the midden or trapping and midden relocation is complete as described above.

h. If young are encountered during dismantling of a midden, the material will be replaced and the biologist will return within approximately 24 hours to see if the young have been relocated. If the young have not been relocated, the biologist will make an age determination and return when it is likely that the young have been weaned.

i. Once relocation activities have been completed, a report will be prepared and submitted to the CDFW detailing artificial midden locations, trapping and relocation procedures, and the results of the relocation effort.

4. Western pond turtle

   a. A qualified biologist will be present and will conduct clearance surveys for western pond turtle immediately before and after dewatering.

   b. If western pond turtles are encountered during project activities, the qualified biologist will capture them and relocate them to nearby CDFW-approved areas of suitable habitat that will not be disturbed by project construction.

5. Special-status bats (Townsend's big-eared bat and Pallid bat)

a. If a bat roosting location is found within the project footprint, CDFW will be contacted and Stanford University will work with CDFW to develop a plan to avoid and minimize impacts to bats.

6. Migratory birds and white-tailed kite

   a. When work will occur during the nesting season (February 1 to September 15), two preconstruction nesting bird survey will be conducted no more than 20 days prior (first survey) and no later than 3 days prior (second survey) to the start of construction. Nest surveys will follow standard biological survey methods.

   b. A biological monitor will conduct weekly nest surveys and/or daily nest monitoring in areas adjacent to ongoing construction.

   c. If an active white-tailed kite nest is found, the biological monitor will establish a 500-foot buffer around the nest. If active nests being used by birds covered under the Migratory Bird Treaty Act (MBTA) are found, the biological monitor will establish a buffer around the nest of adequate size to protect the nest. In addition, the biological monitor will be on site when construction is occurring to monitor impacts to the nest. To prevent encroachment, the established buffer(s) will be clearly marked for avoidance and no activity will occur within the buffer area, to the extent feasible or necessary to protect the nest. The established buffer(s) will remain in effect until the young have fledged or the nest has been abandoned, as confirmed by the biological monitor. If work is conducted within the buffer it will be closely monitored by the biological monitor and will cease if it disrupts nesting activities.

   d. Restoration planting design included with the proposed restoration project will fully mitigate temporary loss of riparian vegetation that will occur during construction.

7. California tiger salamander

   a. A qualified biologist will conduct a preconstruction survey for California tiger salamander, including mapping California ground squirrel burrows and pocket gopher mounds in the project footprint.

   b. If a California tiger salamander is encountered during project construction, work will stop until it has left the project footprint and CDFW and USFWS will be notified within 24 hours.

8. Burrowing owl

   a. Two preconstruction surveys for burrowing owls will be conducted in areas supporting potentially suitable habitat no more than 20 days prior (first survey) and no later than 3 days prior (second survey) the start of construction.

   b. Buffers to protect occupied burrows will be established consistent with the Staff Report on Burrowing Owl Mitigation (CDFW 2012) and ground-disturbing activities will not occur within the designated buffers during the breeding season (February 1 through August 31), to the extent feasible.

   c. If it becomes necessary to evict burrowing owls from occupied burrows, Stanford University will consult with CDFW to develop a burrowing owl exclusion plan.

9. California red-legged frog

   a. California red-legged frog surveys following the Revised Guidance on Site Assessments and Field Surveys for the California Red-Legged Frog (USFWS 2005) were conducted from March to August 2016 and resulted in a negative finding. Therefore, no specific avoidance and minimization measures are proposed for California red-legged frog. California red-legged frog surveys will be repeated in 2017 and prior to construction in 2018. Measures for other special-status species, including installation of wildlife exclusion fencing, monitoring of California ground squirrel and pocket gopher excavation, and pre- and post-dewatering clearance surveys will protect any California red-legged frogs in the unlikely event that they occur in the vicinity of the project footprint.

b. If a California red-legged frog is encountered during project construction, work will stop until it has left the project footprint and CDFW and USFWS will be notified within 24 hours.

10. Common gartersnake (including the local intergrade form)

    a. If a common gartersnake[2] is encountered during project construction, work will stop until it has left the project footprint and CDFW and USFWS will be notified within 24 hours.

11. Special-status plants

    a. Preconstruction clearance surveys will be conducted by qualified biologists prior to the start of construction to ensure that there are no special-status plant species present. If any rare plants are identified, they will be flagged or fenced for avoidance. If avoidance is infeasible, species-appropriate measures will be implemented to either salvage special-status plants or mitigate for impacts.

5. Monitoring and Reporting

5.1 NMFS PBO and CDFW FRGP Mandated Monitoring and Reporting

A preconstruction survey will be conducted by a qualified biologist (i.e., the biological monitor) prior to the start of construction to ensure that there are no sensitive species present. Species-specific preconstruction survey requirements are described in more detail in Section 4.4 above.

The project is expected to be covered under the Programmatic Biological Opinion (PBO) for restoration projects within the NOAA Restoration Center's Central Coastal California Office jurisdictional area in California (NMFS 2016). This PBO requires that the project utilize CDFW Fisheries Restoration Grant Program (FRGP) monitoring protocols. The project will fall under the HB (Instream Barrier Removal) project type, which includes instream barrier modifications or removal that occurs anywhere other than a stream crossing (i.e., debris jams or dams) and uses the FB (Fish Passage at Barriers) checklist. The project also includes bank stabilization, instream habitat restoration, and revegetation, so the CB (Channel Reconstruction & Bank Stabilization), IN (Instream Habitat & Bank Restoration), and RT (Revegetation Treatments) checklists will also be completed. CDFW FRGP requires monitoring during the following phases:

- Pre-Treatment (<1 year before project completion),
- Implementation (<2 years after project implementation), and
- Short-Term Effectiveness (3 to 10 years after implementation).

Based on the duration listed above, we propose a 5-year post construction period for NMFS PBO and CDFW FRGP mandated monitoring and reporting to assess and document short-term effectiveness.

During each monitoring phase, a checklist, Photo Description Form, Site Access and Location Data Form, and Onsite Navigation Form will be completed and submitted to CDFW and NMFS, with the RWQCB copied. Copies of these forms are provided as an Attachment C to this document. The checklist is used to qualitatively assess instream habitat, bank stabilization, fish passage, and revegetation in the project area; the Photo Description Form is used to report photo point monitoring; and the Site Access and Location Data Form and Onsite Navigation Form are used to describe directions and access to the project site. In addition, a Pre-Treatment Effectiveness Monitoring Summary will be submitted during the Pre-Treatment phase and a Post-Effectiveness Monitoring Summary will be submitted during the Short-Term Effectiveness phase. During the Implementation phase, an Annual Implementation Monitoring Summary and two Site Summaries (Instream/Fish Passage Implementation Monitoring and Riparian/Bank Implementation Monitoring) will also be submitted to CDFW and NMFS.

[2] **Stanford University is within an intergrade zone between San Francisco and red-sided gartersnakes. Any gartersnake found in the project footprint is considered part of the intergrade population and referred to as "common gartersnake."**

The NMFS PBO requires that a post-construction implementation report be submitted to NMFS and the U.S. Army Corps of Engineers. The RWQCB will be copied in this submittal. The implementation report will include project as-built plans and photo documentation of project implementation taken before, during, and after construction, utilizing CDFW photo monitoring protocols.

Additional monitoring related BMPs to be utilized during project implementation are listed below:

1. In addition to the inspection requirements documented in the forms within Attachment C, monitoring must include the depth, size and substrate of pools and riffles in the project area, the depth and size of floodplain areas, and the flow level for activation of the floodplain.
2. A biological monitor will be on site during all clearing, grubbing, ground-disturbance and in-channel activities to prevent adverse and unforeseen effects to special-status species (i.e., federally and state endangered, threatened, proposed, and candidate species, and CDFW fully protected species and species of special concern). The biological monitor will survey the work area for special-status species and signs of their presence before the start of all new ground disturbance, monitor any vegetation removal, conduct a daily inspection in areas where work is occurring but there is no new ground disturbance, and conduct daily inspections of dewatering screens and erosion control materials. In the event that a special-status species is observed, the biological monitor will have the authority to stop activities if necessary. Additional species-specific biological monitoring requirements are described above in Section 4.4.
3. The Contractor will install flagging or fencing around the work area and staging areas along the footprint boundary, under the supervision of the biological monitor, to clearly mark the work area limits.
4. To reduce the potential for attracting sensitive wildlife species and their predators to the area, all trash will be properly contained and removed from the area regularly. All construction debris and trash will be removed from the site when work activities are complete.
5. Any suspected take of special-status species will be reported immediately to USFWS, NMFS, and/or CDFW and construction of the Proposed Action will stop immediately. Any carcasses of special-status species will be frozen in a whirl-pak bag, labeled with the date, time, and location of collection and retained until instructions are received from the applicable agency.

5.2 Additional Geomorphic and Revegetation Monitoring and Reporting

5.2.1 Geomorphic Monitoring Plan

The successful application of the stream simulation approach to the restoration of steelhead passage through the project reach depends on the sustainability of the constructed pool-riffle bedform. Maintenance of this bedform requires the central riffle to remain in place, as this provides both the majority of the grade change through the reach and the control for the scour pool upstream, which is likely to persist due to the confinement and curvature of the channel at that location. The boulder grade control structures to be built at either end of the central riffle are intended to ensure that it remains intact and the additional grade control structures at the upstream and downstream ends of the project should somewhat isolate the reach from any changes in the channel profile beyond the project extents. In addition, the bank treatments have been designed conservatively to be relatively immobile. The geomorphic monitoring tasks proposed in the following section will determine whether the combination of the grade control structures and bank treatments continues to limit the expected channel adjustments described in Section 3.8 by serving as vertical and lateral boundaries within which the adjustments can occur within the project reach.

5.2.2 Geomorphic Monitoring Tasks and Reporting

We propose annual geomorphic monitoring inspections following the cessation of spring rainfall, when storm flows have receded. Each monitoring inspection will include the following tasks:

1. A walking inspection to document the structural integrity of the boulder grade control structures, bank treatments and rootwad log elements, as well as the presence of any significant changes in channel alignment or longitudinal profile.

2. Monitoring photos will be taken to support the written documentation described above. Numbered photo point locations and directions will be established during the as-built inspection and comparative photos will be taken in subsequent inspections.

In addition, an as-built longitudinal profile and six representative cross sections will be surveyed to document the completed construction and allow for a comparison to the reference channel dimensions used for design. The as-built profile will extend a minimum of 50 feet upstream and downstream of the project reach. The exact locations of the cross sections will be selected when they are established during the as-built survey, but representative locations might include design centerline stations 0+20, 0+60, 1+20, 2+00, 3+00 and 4+00. The longitudinal profile and cross section survey will be repeated in monitoring years 1, 3, 5, 7 and 10 to allow quantitative documentation of channel adjustments and comparative graphics will be included in the monitoring reports for those years.

An annual monitoring report will be prepared and submitted to the RWQCB and other regulatory agencies by no later than December 31st of the year the construction is completed and each subsequent monitoring year 1 through 10. Each annual report will cover both the geomorphic and revegetation monitoring scheduled for that monitoring year.

5.2.3 Geomorphic Monitoring Performance Criteria

This project has been specifically designed to improve conditions for the upstream migration of adult steelhead while naturalizing sediment transport through the reach and avoiding any exacerbation of existing channel instability and flooding hazards. As such, documentation during the proposed monitoring investigations of evidence of channel instability that impedes the upstream migration of adult steelhead or endangers neighboring properties may necessitate further investigation and possibly, corrective maintenance actions. The proposed geomorphic monitoring performance criteria are as follows:

1. Movement or settlement of one or more boulder grade control structures or other adjustment in the longitudinal profile shall not cause the slope of the constructed central riffle to significantly exceed the design slope.

2. One or more significant hydraulic drops or steps in the longitudinal profile shall not develop.

3. Channel bank treatments shall not exhibit slump failures or significant undercutting.

4. The constructed floodplain shall not exhibit channel avulsion or significant erosion.

Documentation of any such evidence during an annual monitoring inspection will require further investigation by the design engineer to determine the severity of the channel changes and the risk to the overall stability of the project and the results of this investigation shall be included in the monitoring report for that year. In the event that such an investigation determines that the project is exhibiting severe structural instability or clearly impedes the upstream migration of adult steelhead or endangers neighboring properties, the Applicant shall propose corrective maintenance actions. Such actions would be implemented only after the Applicant obtains the requisite authorization and/or additional permits from the RWQCB and other regulatory agencies.

5.2.4 Revegetation Monitoring Plan

Unlike many construction projects for which the goal of revegetation efforts is to mitigate for the disturbance of a specific number of plants or to replicate pre-project canopy complexity or percent coverage, the aim of this

project is to restore pre-dam ecological processes and functions to the extent possible. Because of this, the project is not proposing fixed replacement ratios for trees and vegetation removed, but instead is proposing to implement the planting plans included (Attachment A), with the aim being the restoration of a pre-dam riparian corridor. As discussed in Section 3.9, the development of the project revegetation plan was informed by a detailed review of existing site conditions. However, delineation of the proposed revegetation planting zones was driven by the expected hydrologic, hydraulic, environmental, and substrate conditions within the post-project channel. Our goal is to establish microhabitats within the project site that will provide key riparian vegetation functions such as erosion protection, bank stabilization, nutrient cycling and production, habitat creation and water retention. The monitoring tasks proposed in the following section will determine the extent to which the revegetation of each of the three primary proposed planting zones, channel, bank and floodplain terrace, is providing the intended ecological functions that are specific to that zone, as described in Section 3.9.1.

5.2.5 Revegetation Monitoring Tasks and Reporting

Annual revegetation monitoring inspections will be conducted during the summer season in monitoring years 1 through 5 followed by additional inspections in years 7 and 10. Monitoring inspections shall be conducted by a qualified botanist, ecologist, or landscape architect with specific expertise in local native riparian wetland ecology. Monitoring inspections in years 1 through 5 will include the following tasks, and inspections in years 7 and 10 will revaluate this list based on years 1 through 5 inspection results:

1. A walking inspection to document the progress of vegetation establishment in each planting zone. The inspections will include documentation of the general condition of herbaceous seed plantings, as well as recruitment of both native and non-native invasive species. A qualitative assessment will be made of the current ability of the vegetation in each planting zone to provide the intended ecological function.

2. A quantitative assessment of percent survival of all trees and shrubs planted in the bank and floodplain terrace planting zones and a qualitative assessment of the size, health and vigor of each of the surviving trees and shrubs in these zones by assigning a health/vigor category (thriving (100%), struggling/declining (50%), dead (0%)).

3. A quantitative assessment of absolute percent cover by non-native invasive species within the project footprint, and a list of these species with recommendations on priority and method of removal. Assessment results will be compared to similar assessments from nearby non-impacted, reference areas.

4. A qualitative assessment of the tree canopy cover extent and complexity at the site by estimating the absolute cover of large shrubs (>8 feet tall) and trees at the site and listing species of these shrubs and trees.

5. A detailed inspection and testing of the irrigation system and documentation of whether it is functioning properly and the required repairs if any.

6. Monitoring photos will be taken to support the written documentation described above. Numbered photo point locations, camera focal length, and directions will be established during the initial inspection and comparative photos from the same photo points, in the same directions, and same camera settings will be taken in subsequent inspections.

An annual monitoring report will be prepared and submitted to the RWQCB and other regulatory agencies by no later than December 31st of the year the construction is completed and each subsequent monitoring year 1 through 10. Each annual report will cover both the geomorphic and revegetation monitoring scheduled for that monitoring year.

5.2.6 Revegetation Monitoring Performance Criteria

Successful revegetation will be based on the survival and health of trees and shrubs planted in the bank and floodplain terrace zones and the control of non-native invasive species within the project site. The establishment of native willows, sedges and rushes in the channel planting zone is expected to provide important ecosystem benefits and contribute to the enhancement of steelhead habitat in the long term. However, vegetation in this zone is also the most likely to adjust dynamically during the monitoring period in concert with the expected post-project channel adjustments described in Section 3.8. Therefore, we believe that direct quantification during the monitoring period of percent survival or percent cover of vegetation planted in this zone would neither be a practical nor appropriate measure of performance. However, the establishment of vegetation planted in the bank and floodplain terrace planting zones and development of strong rooting systems are integral to the design of the bank treatments and floodplain terraces and, by extension, to the performance of the project as a whole. Therefore, the proposed performance criteria are as follows:

1. Percent survival of shrubs and trees planted in the bank and floodplain planting zones shall be approximately 150 shrubs and trees or greater (approximately 75% of the proposed floodplain and bank planting).

2. Health and vigor of surviving shrubs and trees planted in bank and floodplain planting zones shall be at least 67% (as described above).

3. Percent absolute cover by non-native, invasive species shall be less than the average of the absolute cover by non-native invasive species in two nearby reference areas. No Cal-IPC High-rated invasive plants will be present at the site (such as French broom, Algerian ivy, fennel, giant reed grass, yellow-star thistle, German ivy, purple loosestrife, Himalayan blackberry, gorse or others)

4. Tree and tall shrub (>8 feet) absolute canopy cover of the project site shall be 50% or greater at the end of the monitoring period.

5. The tree and tall shrub (>8 feet) canopy complexity shall consist of at least the same number of native riparian species as the average number of native riparian species in two nearby reference areas.

These criteria would be applicable to both interim and final performance of project revegetation. Should any scheduled revegetation monitoring inspection reveal that any of these criteria have not been met, the monitoring report for that year will include an evaluation of the potential factors that may be hindering project revegetation and suggest a plan for improving performance. Suggestions for improving performance may include specific recommendations for removing invasive species or for an adaptive plan for supplemental plantings. The Applicant shall propose any such maintenance actions or supplemental plantings to the RWQCB and other regulatory agencies and such actions would be implemented only after the Applicant obtains the requisite authorization and/or additional permits.

6. Temporary Disturbance

6.1 Project Limit of Work

The project limit of work is shown on Sheet 7 in Attachment A and includes approximately 0.87 acres. All existing vegetation within the limits of work will be impacted. Impacts to trees and other resources are discussed in more detail in the following sections. Within the limits of work, the grading limits are also shown, which include approximately 0.58 acres. Within this area, grading equipment, such as a hydraulic excavator, will excavate, process and fill material to meet the final project grades. The area outside the grading limits will be used for

construction equipment access. All disturbed areas will be revegetated and restored as shown on the detailed design drawings (Sheet 19) and described in Section 3.9, Revegetation.

6.2 Temporary Construction Access

Temporary construction access and staging are summarized in Section 3.4, Access and Staging. As noted in that section, temporary disturbance associated with construction access and staging include the following:

- Minor grading and vegetation trimming along approximately 700 feet of the existing maintenance road on Stanford property
- Clearing and grubbing, minor grading and vegetation trimming along approximately 630 feet of new road down the hillside and along the existing flume channel adjacent to the creek
- Temporary storage of equipment and import materials within 1 acre of staging area. No tree removal of clearing/grubbing will be required within the staging area.

All disturbed areas associated with access and staging will be revegetated using a native hydroseed mix appropriate for the specific habitat impacted. Impacts to trees and other resources are discussed in more detail in the following sections.

6.3 Tree Removal

Removal of trees and native vegetation in eucalyptus grove, oak woodland, blue elderberry, coyote brush scrub, and California buckeye grove habitat will be necessary for the construction of staging areas and new access roads. Removal of trees and native vegetation in riparian habitat will be necessary during construction in the project area. Trees greater than 6 inches diameter at breast height (DBH) within the project footprint (limits of work, access roads and staging area) were inventoried on October 11, 2016. The detailed design drawings and the project footprint extents were then used to estimate which trees would be removed, trimmed, or avoided and protected in place. A conservative estimate of trees that will be removed during project construction is presented in Table 4. Additional trees within and adjacent to the project footprint will be trimmed to allow for access, staging, and construction, as determined by the Contractor. It is our intent to minimize the removal and trimming of native trees to the maximum extent possible. As such, all tree removal and trimming will be done in consultation with a licensed arborist. Trees that are removed will be replaced with native species at a density that maximizes the restoration of ecological processes and functions as described in Section 3.9, Revegetation.

Table 4. Trees to be Removed due to Project Construction

Common Name	Scientific Name	DBH (inches)	Number to be Removed
box elder	*Acer negundo*	5-10	1
California bay laurel	*Umbellularia californica*	5-10	6
		10-20	5
		20-30	1
California buckeye	*Aesculus californica*	5-10	5
		10-20	5
		20-30	1
California sycamore	*Platanus racemosa*	20-30	2
coast live oak	*Quercus agrifolia*	10-20	3
stone pine	*Pinus pinea*	10-20	1
valley oak	*Quercus lobata*	5-10	1
white alder	*Alnus rhombifolia*	5-10	3
		10-20	1
		20-30	2
		30-40	1

6.4 Special Status Species

The project may cause temporary adverse effects to habitat for special-status species; however, all disturbed habitat will be revegetated following project construction. Terrestrial habitat will be disturbed for, at most, 350 days and aquatic habitat will be disturbed for up to 160 days.

The project may temporarily disturb special-status species, potentially causing them to leave or avoid the area during construction. Species that occupy small mammal burrows, such as California tiger salamander and California red-legged frog, may also retreat further into burrows in response to disturbance. For all special-status species, sources of disturbance could include construction-related noise, increased vehicle traffic on access roads, and vegetation removal and grading. For aquatic special-status species, additional sources of disturbance could include dewatering of the project area and use of equipment in the dewatered channel. Project-related disturbances are anticipated to be minor and the project is not expected to injure or kill special-status species under CDFW jurisdiction. In addition to these general impacts, potential species-specific impacts are described below. A biological monitor will be onsite for all work, including preconstruction surveys, as discussed in more detail below.

6.4.1 San Francisco dusky-footed woodrat

Construction of new access roads and construction in the project limits of work will temporarily reduce riparian, California buckeye grove, and oak woodland habitat that is occupied by San Francisco dusky-footed woodrats. The total area of temporary habitat disturbance due to the construction of new access roads and work in the project area will be 1.1 acres.

In addition to the potential disturbances described in the introduction to this section, woodrat midden relocation efforts may disturb adults and/or young. San Francisco dusky-footed woodrat middens within 20 feet of the project footprint were mapped during a site visit on October 11, 2016. Based on this preliminary mapping effort, up to 10 middens would need to be relocated. An additional 22 middens were mapped up to 20 feet from the project footprint and would likely have avoidance buffers installed around them. The locations of active middens will be confirmed during a preconstruction survey within 1 month before the start of relocation efforts. Relocation of middens could cause woodrats to abandon the midden, but proper implementation of the Avoidance and Minimization Measures, including relocating middens near vegetation, constructing middens at a 2:1 ratio to relocated middens, and the addition of batting and food, is expected to limit midden abandonment. Adverse effects due to exposure of young during midden relocation will be minimized by immediately rebuilding middens in which young are discovered and waiting to relocate the midden until young have likely been weaned.

6.4.2 Western pond turtle

Construction within the project limits of work, which will include dewatering around the dam, will temporarily reduce aquatic habitat that could potentially be occupied by western pond turtles, although they are not known from the project area despite focused surveys for other herpetofauna. The largest potential area of temporary aquatic habitat disturbance (i.e., the largest area that may be dewatered) will be approximately 0.6 acres. The project area currently contains potentially suitable western pond turtle habitat, including the pools upstream and downstream of the dam. These pools will be permanently replaced by riffle-pool habitat as a result of the project, which will likely provide habitat that is of similar value for western pond turtles compared to the existing pools.

The project may temporarily disturb western pond turtles during construction. Adverse effects to western pond turtles and their habitat resulting from dewatering and instream construction would be minimized through implementation of the Avoidance and Minimization Measures (Section 4), including a qualified biologist conducting clearance surveys immediately before and after dewatering; capture and relocation of western pond turtles discovered in the project footprint; and a biological monitor being present during all clearing, grubbing, ground-disturbance and in-channel activities.

6.4.3 Special-status bats (Townsend’s big-eared bat and Pallid bat)

Construction within the project footprint is not expected to adversely affect roosting habitat for special-status bats. Trees and structures in the project footprint were inspected for evidence of bat use and none was detected. The abandoned manmade structures in the Biological Study Area are subject to regular human disturbance and will not be directly impacted by project activities. As described in the Avoidance and Minimization Measures (Section 4), if a previously unidentified bat roosting location is found within the project footprint, CDFW will be contacted and Stanford University will work with CDFW to develop a plan to avoid and minimize special-status bats.

Project-related disturbances may cause special-status bats to avoid foraging in the project limits of work during construction. The temporary loss of foraging opportunities due to project construction will likely have minimal effects on special-status bats due to the relatively small area of habitat disturbed compared to the size of the surrounding habitat.

6.4.4 Migratory birds and white-tailed kite

Construction of new access roads and vegetation removal in the project limits of work and staging areas will temporarily reduce riparian, oak woodland, California buckeye grove, coyote brush scrub, annual grassland, blue elderberry, and eucalyptus grove habitat that could be used by white-tailed kites or migratory birds covered under the Migratory Bird Treaty Act for foraging or nesting. The project may also temporarily disturb white-tailed kites and/or migratory birds. Adverse effects to nesting white-tailed kites, migratory birds, and their habitats resulting from project activities would be minimized through implementation of the Avoidance and Minimization Measures (Section 4), including a qualified biologist conducting preconstruction nesting bird surveys, a biological monitor conducting nest surveys during construction, and installing avoidance buffers around active nests in the project footprint.

6.4.5 California tiger salamander

Construction of new access roads and staging areas will temporarily reduce the amount of annual grassland habitat in the project footprint, which could serve as upland habitat for California tiger salamanders. California ground squirrels and pocket gopher mounds have been observed within the project limits of work, and project-related grading may reduce the number of California ground squirrel burrows and pocket gopher mounds that could be used by California tiger salamanders as refugia. All disturbed habitat will be revegetated following project completion and fossorial mammals are expected to continue occupying and creating burrows in grassland habitat within the project footprint after revegetation. The project is expected to have no permanent effects, neither adverse nor beneficial, to California tiger salamander habitat.

While unlikely, the project may temporarily disturb California tiger salamanders. Adverse effects to California tiger salamanders and their habitat in the project footprint would be minimized through implementation of the Avoidance and Minimization Measures (Section 4) which will include preconstruction surveys for California tiger salamanders and their habitat; installation of wildlife exclusion fencing; careful excavation of California ground squirrel burrows and pocket gopher mounds that will be graded; biological monitoring during all clearing, grubbing, ground-disturbance and in-channel activities; and stopping work in the event that a California tiger salamander is encountered within the project footprint.

6.4.6 Burrowing owl

Construction of new access roads and staging areas will temporarily reduce the amount of annual grassland habitat in the project footprint, which could serve as nesting or overwintering habitat for burrowing owls. California ground squirrels have been observed in the project footprint, and project-related grading may temporarily reduce the number of California ground squirrel burrows that could be used by burrowing owls. The project may also temporarily disturb burrowing owls during construction activities. Adverse effects to burrowing owls and their habitat in the project footprint would be minimized through implementation of the Avoidance and Minimization Measures (Section 4), which would include preconstruction surveys; biological monitoring during all clearing, grubbing, ground-disturbance and in-channel activities; and installation of avoidance buffers around occupied burrows.

6.4.7 California red-legged frog

USFWS (2005) protocol surveys were conducted for California red-legged frog in the project area in 2016 and none were detected. Construction of new access roads and staging areas in the project footprint and vegetation removal within the project limits of work will temporarily reduce the amount of potential upland habitat for California red-legged frogs. Dewatering and work in the project area will temporarily reduce the amount of potential aquatic habitat for California red-legged frogs. The project may also temporarily disturb California red-legged frogs if they are present during construction. Adverse effects to California red-legged frogs and their habitat in the project footprint would be minimized through implementation of the Avoidance and Minimization Measures (Section 4), which would include installation of wildlife exclusion fencing; biological monitoring during all clearing, grubbing, ground-disturbance and in-channel activities; and stopping work in the event that a California red-legged frog is encountered in the project footprint.

6.4.8 Common gartersnake

There is no evidence of San Francisco gartersnake being present in the project area or vicinity. Construction of new access roads and staging areas will temporarily reduce the amount of annual grassland habitat that could be used by common gartersnakes for breeding and basking, although no common gartersnakes have been observed in the project area despite focused surveys for gartersnakes and other herpetofauna. Vegetation removal in the project area will also temporarily reduce riparian habitat that could serve as basking habitat. Dewatering and work in the project area will temporarily reduce potentially suitable aquatic habitat for common gartersnakes. The project may also temporarily disturb common gartersnakes during construction. Adverse effects to common gartersnakes and their habitat in the project footprint would be minimized through implementation of the Avoidance and Minimization Measures (Section 4), which would include installation of

wildlife exclusion fencing; biological monitoring during all clearing, grubbing, ground-disturbance and in-channel activities; and stopping work in the event that a gartersnake is encountered in the project footprint.

6.4.9 Special-status plants

Special-status plants are not expected to occur in the project footprint. In the event that a special-status plant does occur in the project footprint, adverse effects will be minimized through implementation of the Avoidance and Minimization Measures (Section 4), including preconstruction surveys, flagging special-status plants for avoidance, and salvaging or mitigating for any impacted special-status plants.

7. Project Compliance with CEQA

We believe the project meets the requirements for a categorical exemption under California Code of Regulations title 14, Section 15333 “Small Habitat Restoration Projects.” Under California Code of Regulations title 14, Section 15333, the project must not exceed 5 acres in size and must meet the following criteria:

1. There would be no significant adverse impact on endangered, rare, or threatened species or their habitat,
2. There are no hazardous materials at or around the project site that may be disturbed or removed, and
3. The project will not result in impacts that are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

The overall project footprint, which is depicted on Sheet 3 of Attachment A and includes the project limit of work (dam removal, grading, and excavation); staging areas; existing, paved access path along Piers Lane; and new access road; is approximately 3.5 acres in size and does not contain hazardous materials that may be disturbed or removed. Stanford University owns the majority of the land within the project footprint and the surrounding area to the east and manages the land as an open space with limited recreation. Past, current, and future projects on this land are unlikely to contribute to cumulative significant impacts as their purpose is most often to maintain the value of the land for special-status species and native plants and wildlife. A small portion of the project footprint and the surrounding area to the west consists of residential properties. Past, current, and future projects on this land are unlikely to contribute to significant impacts as they are typically small in scale and limited to the boundaries of the individual property owners. Therefore, the project is not expected to result in cumulative significant impacts. Additional information concerning temporary disturbance, impact analysis and avoidance and minimization measures are provided in Sections 4 and 6 of this submittal. This additional information supports the conclusion that the project will not have significant adverse impacts on special-status species or their habitat.

8. References

California Department of Fish and Wildlife (CDFW). 2010. California Salmonid Stream Habitat Restoration Manual. http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp.

California Department of Fish and Wildlife (DFW). 2012. Staff Report on Burrowing Owl Mitigation. March 7.

Gerber, L. R., E. W. Seabloom, R. S. Burton, and O. J. Reichman. 2003. Translocation of an Imperiled Woodrat Population: Integrating Spatial and Habitat Patterns. Animal Conservation 6: 309-316.

Julien, P.Y. 1995. Erosion and sedimentation. Cambridge University Press, New York.

NMFS (National Marine Fisheries Service). 2000. Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act. June 2000.

NMFS (National Marine Fisheries Service). 2001. Guidelines for Salmonid Passage at Stream Crossings. September 2001.

NMFS (National Marine Fisheries Service). 2016. Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Program for restoration projects within the NOAA Restoration Center's Central Coastal California Office jurisdictional area in California. Issued June 14, 2016. NMFS Tracking Number WCR-2015-3755.

State Water Resources Control Board (SWRCB). 2012. Amended Order for Clean Water Act Section 401 General Water Quality Certification for Small Habitat Restoration Projects File SB12006GN.

U.S. Forest Service (USFS) Stream Simulation Working Group. 2008. Stream simulation: an ecological approach to providing passage for aquatic organisms at road-stream crossings.

U.S. Fish and Wildlife Service (USFWS). 2005. Revised Guidance on Site Assessments and Field Surveys for the California Red-Legged Frog. August 2005. http://www.fws.gov/sacramento/es/documents/crf_survey_guidance_aug2005.doc

Notice of Exemption

To:
Office of Planning and Research
For U.S. Mail:
P.O. Box 3044
Sacramento, CA 95812-3044

Street Address:
1400 Tenth Street
Sacramento, CA 95814

From:
Department of Fish and Wildlife
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558

Project Title: Lagunita Diversion Dam Removal Project, (Request No. 1652-2016-010-001-R3)

Project Applicant: Rachel Bejerano, Leland Stanford Jr. University

Project Location (include county): The Project is located on San Francisquito Creek just north of the east end of Happy Hollow Lane approximately one mile southwest of Stanford University in the unincorporated area south of Menlo Park, in San Mateo County.

Project Description: Pursuant to Fish and Game Code section 1652, the California Department of Fish and Wildlife has approved the Lagunita Diversion Dam Removal Project submitted by Leland Stanford Jr. University.

The Project includes removal of the existing Lagunita Diversion Dam on San Francisquito Creek, a nonoperational 8-foot-high concrete dam, and restoration of the stream bed to improve fish passage and sediment transport. Habitat complexity will be increased by removing the dam, headwalls and gate valves, and by creation of a pool-riffle bedform along a 400-foot reach of stream. Specifically, the Project will provide a net benefit to steelhead by increasing the length and depth of pools, improving spawning gravel retention and deposition downstream of scour areas, and providing additional pool shelter.

Public Agency Approving Project: California Department of Fish and Wildlife

Person or Public Agency Carrying Out Project: Leland Stanford Jr. University

Exempt Status:

☒ Categorical Exemption. Type – Class 33 California Code of Regulations, title 14, section 15333

Reasons why project is exempt: Class 33 consists of small projects not to exceed five acres in size to assure the maintenance, restoration, enhancement, or protection of habitat for fish, plants, or wildlife.

CDFW Contact Person: Randi Adair, Senior Environmental Scientist Supervisor, (707) 576-2786

Signature: _____ *Date:* 3/21/17

Sandra Morey, Deputy Director

Date received for filing at OPR: _____

Governor's Office of Planning & Research

MAR 23 2017

STATE CLEARINGHOUSE

ATTACHMENT G

Balance Hydrologics, Inc.®

800 Bancroft Way • Suite 101 • Berkeley, CA 94710 • (510) 704-1000
224 Walnut Avenue • Suite E • Santa Cruz, CA 95060 • (831) 457-9900
PO Box 1077 • Truckee, CA 96160 • (530) 550-9776
www.balancehydro.com • email: office@balancehydro.com

February 16, 2017

Mr. Seth Gentzler, P.E.
AECOM
300 Lakeside Drive, Suite 400
Oakland, California 94612

RE: No-Rise Certification Letter, Stanford Lagunita Diversion Dam Removal Project, San Mateo County, California

Dear Mr. Gentzler:

The following is intended to satisfy the requirement from San Mateo County to provide a No-Rise Certification as part of the grading permit application for the Stanford Lagunita Diversion Dam Removal Project ("project") located along San Francisquito Creek near Happy Hollow Road. Included is a summary of the currently effective FEMA floodplain mapping covering the project site, a description of the technical analysis used to assess potential flood impacts resulting from the project, and a summary of the modeled results.

FEMA Floodplain Mapping

Portions of the project site within San Mateo County are designated as FEMA Special Flood Hazard Area Zone X, defined as areas to be determined outside of the 0.2% annual chance floodplain. Portions of the project within Santa Clara County are designated Zone D, defined as areas in which flood hazards are undetermined, but possible. The project site does not lie within a FEMA defined floodplain or floodway and no currently effective modeling is available along this reach of San Francisquito Creek.

A No-Rise Certification is required by FEMA in the event of a proposed encroachment into an adopted regulatory floodway and is specifically required to be assessed in the context of the currently effective model used to develop the mapped 100-year floodway and floodplain. Due to the absence of both a regulatory floodway and currently effective model at the project site, our assumption is that a flood impact assessment using best available modeling information can satisfy the County's requirement.

Technical Approach

A two-dimensional hydraulic model was developed for the project to meet a number of objectives, including to provide an assessment of potential flood impacts that would result from the proposed project. The Bureau of Reclamations SRH-2D modeling platform was used to

complete the flood impacts assessment comparing peak 100-year water surface elevations between pre- and post-project conditions as defined in the Project Detailed Design Drawings prepared by AECOM. A more complete summary of this analysis is included in the attached memorandum.

Flood Impacts Assessment

Hydraulic modeling completed along the reach of San Francisquito Creek surrounding the project site indicates that the Stanford Lagunita Diversion Dam Removal Project will provide an overall benefit in terms of flood impacts estimated to result from the 100-year flood event (Figures 6 and 7 in the attached memo). In most locations the post-project water surface will be lower than the pre-project conditions.

An increase in the post-project water surface elevations immediately downstream from the dam location is predicted, but attributable to the location of deep plunge pool and a hydraulic jump immediately downstream from the dam in the pre-project condition. This location is essentially an artificially low point in the creek profile; the project proposes to raise the creek bed at this location to form a boulder riffle. This isolated area of increased water surface elevations is not predicted to propagate laterally beyond the banks of the channel.

Closing

The hydraulic analysis completed for the Stanford Lagunita Diversion Dam Removal Project indicates that the project will not create a measurable flood impact during the 100-year event to any of the adjacent developed areas and will provide a clear overall flood reduction benefit to the impacted area. Do not hesitate to contact us if you have questions related to the issues discussed here.

Sincerely,

BALANCE HYDROLOGICS, Inc.

Eric Riedner, P.E.
Civil Engineer/Hydrologist

Jonathan Owens
Principal Hydrologist

Memo

To: Seth Gentzler, P.E., AECOM

From: Eric Riedner, P.E. and Jonathan Owens

Date: February 16, 2017

Subject: Summary of Hydraulic Modeling for the Stanford Lagunita Diversion Dam Removal Project

The following memo presents hydraulic modeling completed for the Stanford Lagunita Diversion Dam Removal Project ("project") located along San Francisquito Creek near Happy Hollow Lane and Sneckner Court. Included is a summary of the objectives for the study, description of the model platform, summary of key model input parameters, and presentation of model results.

Study Objectives

This hydraulic analysis accompanies the Project Detailed Design Drawings dated December 9, 2016 prepared by AECOM. This analysis has evolved iteratively along with the project design to meet the following objectives:

- Inform the channel design including the riffle-pool geometry to promote bed stability and meet fish passage objectives.
- Identify areas of high velocity and shear stress to inform the location, type, and scale of bank protection features.
- Assess potential flood impacts resulting from the project to neighboring properties.

Model Platform

The hydraulic modeling used to assess and inform the project design was completed using the Sedimentation and River Hydraulics – Two-Dimensional (SRH-2D) model coupled with the Surface-water Modeling System (SMS) graphical pre- and post-processing software package. Developed by the Bureau of Reclamation, the SRH-2D model is publicly available and widely accepted.

A two-dimensional model presents a number of advantages including an improved means for analyzing lateral changes in velocities around the channel bend immediately upstream from the dam and hydraulic connectivity between the channel and proposed floodplain terraces. Two-dimensional modeling results are also inherently more descriptive in terms of vectored velocity results and contoured data output. Additional capabilities offered specifically by the SRH-2D model including utilization of a flexible mesh to represent the channel geometry, calculation of both sub- and super-critical flow regimes, and application of a robust and stable calculation scheme make it ideally suited for the Lagunita Diversion Dam Removal Project.

Key Input Parameters

Scenarios analyzed using the SRH-2D model were limited to pre- and post-project conditions. As with any hydraulic analysis a number of assumptions were used. Several of the most important are summarized below:

- *Channel geometry*. Surveyed topographic data presented in the Project Detailed Design Drawings was used to represent the pre-project channel geometry near the project site with San Mateo County LiDAR data used to define the channel geometry further upstream and downstream. The pre-project geometry was revised to reflect post-project conditions using design information provided by AECOM and presented in the Project Detailed Design Drawings. Bank protection features including logs with rootwads and the log cribwall are included in the post-project geometry. The pre-project model mesh includes a combination of approximately 23,000 triangular and quadrilateral shaped cells ranging in size from 0.7 to 60 square feet with the post project-mesh including 22,000 cells ranging in size from 2 to 60 square feet. Pre- and post-project mesh geometries are displayed on the attached Figures 1 and 2. All elevation data is presented in NAVD-88.

- *Manning's 'n'*. Channel roughness is accounted for in the model using a Manning's 'n' parameters of 0.037 in the channel and 0.070 along the floodplains. Spatial variations in the 'n' values over the pre-and post-project meshes are displayed on the attached Figures 3 and 4.

- *Inflow hydrograph*. The model was run in an unsteady state mode using a simulated inflow hydrograph developed to produce model output at key recurrence interval flow rates including the 2.33-, 10, and 100-year peak flood flows. Flow rates included in the hydrograph were taken from the San Francisquito Creek Hydrology Study dated November 2015 prepared by the Santa Clara Valley Water District. The inflow hydrograph is plotted on the attached Figure 5. Results were extracted from the model for the separate flow rate steps in the inflow hydrograph.

- *Starting water surface elevation*. The downstream boundary of the model was set as a stage-flow rating curve located nearly 700 feet downstream from the downstream project limit to minimize its influence on results along the project site. The rating curve was defined using a normal depth calculation.

Model Results

Detailed model output is presented graphically in the attached Appendix A including calculated water surface elevations, velocities, and shear stresses for the 2.33-, 10-, and 100-year flow rates, and for pre- and post-project conditions.

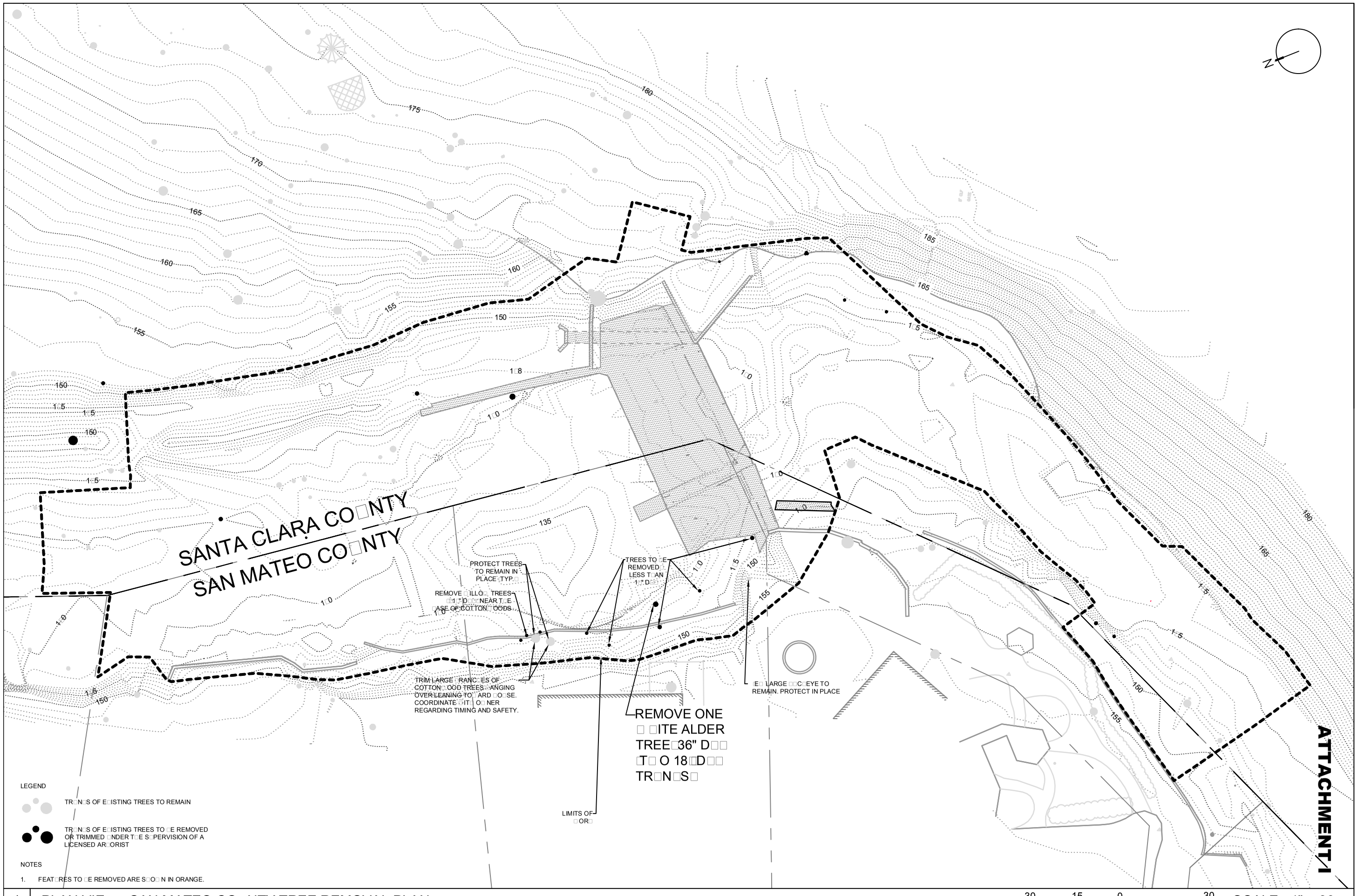
Because the dam currently focuses the elevation drop (and resulting shear stress) at one location, model results indicate the removal of the dam will result in higher velocities and shear stresses over a larger area compared to the pre-project condition. A range of bed and bank protection features designed by AECOM have been included in the Project Detailed Design Drawings to address this potential impact.

Post-project water surface elevations calculated at the 100-year peak flow rate are generally predicted to be lower relative to the pre-project condition as indicated on the water surface elevation comparison graphic included as Figure 6 and profile plot included as Figure 7. The increase in the post-project water surface elevation immediately downstream from the dam location is attributable to a hydraulic jump immediately downstream from the dam in the pre-project condition and this impact is not predicted to propagate laterally beyond the banks of the channel.

Closing

We appreciate the opportunity to provide this hydraulic analysis for the Stanford Lagunita Diversion Dam Project.

Do not hesitate to contact us if you have any questions or comment related to the items discussed here.



1 PLAN VIE□ □ SAN MATEO CO□NTY TREE REMOVAL PLAN

REVISIONS | DATE

AECOM

LAG□NITA DIVERSION DAM REMOVAL AND CREE□ RESTORATION PRO□ECT

SAN MATEO CO□NTY TREE REMOVAL PLAN

ATTACHMENT I

DRA□N □Y□	PRO□ECT NO.□ 6039□030
C□EC□ED □Y□	DATE□ 11-7-□017

S□EET□ 6