

**COUNTY OF SAN MATEO
PLANNING AND BUILDING DEPARTMENT**

DATE: July 26, 2017

TO: Planning Commission

FROM: Planning Staff

SUBJECT: EXECUTIVE SUMMARY: Consideration of a Grading Permit for the replacement of an at-grade creek crossing with a low-flow box culvert crossing over the San Francisquito Creek at the Jasper Ridge Biological Preserve in the Stanford Lands area of unincorporated San Mateo County. The project involves 730 cubic yards of cut and 450 cubic yards of fill. No significant trees are proposed for removal. The California Department of Fish and Wildlife, as the lead agency, has determined that the project is exempt from the California Environmental Quality Act (CEQA). The project spans two parcels (APNs 074-480-230 and 074-490-020) which are zoned R-E/S-11 and are located in the Junipero Serra I-280 State Scenic Corridor.

County File Number: PLN 2017-00113 (Stanford)

PROPOSAL

The applicant, Rachel Bejerano for Leland Stanford Jr. University (Stanford), requests a Grading Permit to facilitate the replacement of an at-grade creek crossing with a low-flow box culvert crossing over the San Francisquito Creek, approximately 1/10 mile downstream from the confluence of Corte Madera and Bear Creeks, at Jasper Ridge Biological Preserve. The project site is located within the Junipero Serra Freeway (I-280) State Scenic Corridor, adjacent to Sand Hill Road. The goals of the proposed low-flow box culvert project are: 1) to enhance fish passage in the San Francisquito Creek for the Central California Coast Steelhead (*Oncorhynchus mykiss*), a federally protected threatened species; 2) to maintain vehicular access for Stanford, Pacific Gas and Electric, and the San Mateo County Fire Department; and 3) to create a more naturally shaped channel by removing sediment in an upstream area of the crossing. Access roads and staging areas will be on existing roads and parking areas. A cofferdam and fish-screen will be installed upstream. Native fish will be captured and relocated in areas with suitable water conditions. Pumps will be used to reroute water during construction.

Construction of the proposed crossing will entail the removal of the concrete apron and center section of the existing crossing, grading to the bedrock elevation, and installing the culverts. The few willows and alders that need to be removed will be used for the revegetation of the site. Flow through the project site will be restored to not disrupt the flow in the downstream portion of the watershed.

RECOMMENDATION

That the Planning Commission approve the Grading Permit, County File Number PLN 2017-00113, by making the required findings and adopting the conditions of approval listed in Attachment A.

SUMMARY

Staff has reviewed the project against the applicable policies and standards of the San Mateo County General Plan, Zoning Regulations, and Grading Regulations and found the project, as proposed and conditioned, to be in compliance with each set of policies and standards. In addition, the project has been approved with conditions by the California Department of Fish and Wildlife (lead agency) (Attachment H), the Regional Water Quality Board (Attachment I), the United States Fish and Wildlife Service (Attachment J), and the United States Army Corps of Engineers (Attachment K) that include measures to mitigate and prevent adverse impacts to the environment during and after construction.

The replacement of the existing at-grade creek crossing with a low-flow box culvert serves multiple purposes. It will maintain the necessary vehicular access through the Preserve for Stanford faculty, students, and staff while allowing critical fire and PG&E access. In addition, it will enhance fish passage and dispersal for the Central California Coast Steelhead (*Oncorhynchus mykiss*), a federally protected threatened species, in the San Francisquito Creek. The project scope also entails the elimination of a warm-water pool caused by years of sedimentation. This portion of the creek will be regraded to mimic a more natural creek channel form. Measures will be taken to safely relocate steelhead that would otherwise be impacted by the construction.

The few willows and alders that need to be removed from within the active construction zone will be salvaged and used for the revegetation/bio-engineering of the project site. Sections of the bank disturbed during construction will be re-built using willow brush layering techniques shown on Sheet C-6 (Attachment C). Some rock slope protection will likely be placed adjacent to the culvert wingwalls on the upstream and downstream slopes of the roadway prism. All disturbed areas will also be seeded with a native seed mix, and fiber rolls will be placed as shown on the Planting and Erosion Control Plan shown on Sheet C-7 (Attachment C).

The project is categorically exempt under the provisions of Section 15333 of the California Environmental Quality Act, relating to culvert replacement conducted in accordance with published guidelines of the Department of Fish and Wildlife, the primary purpose of which is to improve habitat (Attachment G). The proposed low-flow box culvert will enhance fish passage and ensure that the flow under the reconstructed crossing will meet State and federal velocity and depth guidelines in fish passage guidance documents.

RSP:jh – RSPBB0390_WJU.DOCX

**COUNTY OF SAN MATEO
PLANNING AND BUILDING DEPARTMENT**

DATE: July 26, 2017

TO: Planning Commission

FROM: Planning Staff

SUBJECT: Consideration of a Grading Permit, pursuant to Section 9283 of the County Ordinance Code, for the replacement of an at-grade creek crossing with a low-flow box culvert crossing over the San Francisquito Creek at the Jasper Ridge Biological Preserve in the Stanford Lands area of unincorporated San Mateo County. The project involves 730 cubic yards of cut and 450 cubic yards of fill. No significant trees are proposed for removal. The California Department of Fish and Wildlife, as the lead agency, has determined that the project is exempt from the California Environmental Quality Act (CEQA). The project spans two parcels (APNs 074-480-230 and 074-490-020) which are zoned R-E/S-11 and are located in the Junipero Serra I-280 State Scenic Corridor.

County File Number: PLN 2017-00113 (Stanford)

PROPOSAL

Project Details:

The applicant, Rachel Bejerano for Leland Stanford Jr. University (Stanford), requests a Grading Permit to facilitate the replacement of an at-grade creek crossing with a low-flow box culvert crossing over the San Francisquito Creek, approximately 1/10 mile downstream from the confluence of Corte Madera and Bear Creeks, at Jasper Ridge Biological Preserve. The goals of the proposed low-flow box culvert project are:

- 1) to enhance fish passage in the San Francisquito Creek for the Central California Coast Steelhead (*Oncorhynchus mykiss*), a federally protected threatened species;
- 2) to maintain necessary access for emergency and maintenance vehicles through the low-flow crossing; and
- 3) to create a dynamic channel that is more representative of nearby natural reaches in an area upstream of the crossing.

The project site is located within the Junipero Serra Freeway (I-280) State Scenic Corridor, adjacent to Sand Hill Road.

Existing Access Improvement:

According to Stanford University, the existing service/access road has been in place for at least a century. This road is not open to the general public. It is used by Stanford

University (operations staff, researchers, and students) and Pacific Gas and Electric (PG&E) (in order to service PG&E electrical lines that pass through the area). It is also a critical route for emergency fire control access and an emergency exit route for the San Mateo County Fire Department.

Fish Passage Improvements:

The proposed project will replace the existing in-channel concrete drive-through crossing with a partially filled box culvert. During typical flow conditions, the creek will flow unimpeded through the new box culvert. Under high flow conditions, the creek will flow through and over the box culvert. The proposed box culvert will allow for steelhead passage and dispersal over a much broader range of flows and, in particular, will improve opportunities for fish to disperse during the low flows typical in the reach during late spring and early fall months.

Hydrologic Improvements:

The creek channel immediately upstream from the existing crossing structure consists of a large pool which is partially filled with sediment. This project will eliminate this artificial pool and create a dynamic channel that is more representative of nearby natural reaches. The project will be constructed during the low-flow period prior to the wet season.

Construction Preparation:

Access roads and staging areas will be on existing dirt roads and existing designated parking areas. The project will include construction of an upstream cofferdam, which is a watertight enclosure pumped dry to permit construction work below the waterline, and installation of a fish-screen barrier upstream of the gravel-bag and plastic cofferdam. This cofferdam will be located approximately 100 feet upstream from the existing concrete low-flow crossing. A pump will be placed in the area between the fish-screen barrier and the upstream cofferdam in order to route water flow if any is present during the projected construction time period to an outfall downstream from the edge of the existing low-flow crossing. Approximately 250 feet of the San Francisquito Creek will be temporarily dewatered during the construction of this project. A temporary sump pump will be installed in the dewatered area to discharge dewatering flows into an infiltration dispersal area away from the creek.

Fish Relocation:

After installation of the fish barrier screen, fish relocation efforts will be initiated. Steelhead will be captured via dip nets, seines, minnow traps, and electrofishing, held in livewells for a brief time period, and released in the nearest portion of the Creek with suitable water conditions. The nearest reaches with suitable conditions will be determined at the start of construction; given the dry conditions present in the area the last few summers, the reaches will likely be located downstream of the project site.

Steelhead/rainbow trout will be the primary focus of capture and relocation efforts, but individuals of all native fish species will be relocated if possible. Any non-native fishes, or bullfrogs, encountered during this work will not be released back into the Creek.

Low-Flow Crossing Construction:

Once fish are removed and the construction site is dewatered, construction will start and consist of removing the existing concrete apron and center section of the concrete crossing, grading to the bedrock elevation, creating a level surface (concrete may be used to provide a leveled pad), and installing the three box culverts. The new box culverts will be partially filled with native materials and will allow a natural creek bed to form under the new crossing. A new concrete driving surface will be added on the approaches to the crossing. Angled wingwalls both downstream and upstream will be installed and debris deflectors/lifters will be installed on the upstream side. Approximately 80 linear feet of the creek channel where sediment has accumulated upstream of the existing crossing (due to the crossing) will be regraded into a natural channel shape. At the edges of the crossing, rock protection will be used to create a smooth transition between the wingwalls and the edge of the channel bank. The few willows and alders that need to be removed from within the active construction zone will be salvaged and used as needed for the revegetation/bio-engineering of the project site. When work in the creek is completed, the cofferdam and fish screen will be removed. Flow through the project site will be restored in such a way as to not disrupt the flow in the downstream portion of the watershed.

RECOMMENDATION

That the Planning Commission approve the Grading Permit, County File Number PLN 2017-00113, by making the required findings and adopting the conditions of approval listed in Attachment A.

BACKGROUND

Report Prepared By: Ruemel Panglao, Project Planner, Telephone 650/363-4582

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

Owner: Leland Stanford Jr. University

Location: Jasper Ridge Biological Preserve, Stanford Lands

APNs: 074-480-230 and 074-490-020

Size: 247 acres

Existing Zoning: R-E/S-11 (Residential Estates District; S-11 Combining District)

General Plan Designation: Institutional/General Open Space/Future Study

Sphere-of-Influence: Town of Woodside

Existing Land Use: Biological Preserve

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

Environmental Evaluation: The California Department of Fish and Wildlife (CDFW) has determined that the project is categorically exempt under the provisions of Section 15333 of the California Environmental Quality Act Guidelines, relating to culvert replacement conducted in accordance with published guidelines of the Department of Fish and Wildlife, the primary purpose of which is to improve habitat.

Setting: The project site is located within the Jasper Ridge Biological Preserve, located east of Sand Hill Road in the unincorporated Stanford Lands area of San Mateo County. The preserve is closed to the public.

Chronology:

<u>Date</u>	<u>Action</u>
September 22, 2016	- The lead agency (California Department of Fish and Wildlife) determined that the project is exempt under CEQA.
March 22, 2017	- Application submitted.
July 11, 2017	- Application complete.
July 26, 2017	- Planning Commission 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 has submitted the Biological Assessment for the proposed Low-Flow Crossing Modification Project prepared by Stanford University on May 13, 2016 (Attachment D), the Technical Construction Specifications for the Low-Flow Crossing Modification Project - San Francisquito Creek prepared by Balance Hydrologics, Inc. on February 13, 2017 (Attachment E), and the Design Basis Memo prepared from Balance Hydrologics, Inc., dated February 14, 2017 (Attachment F). Completion of this project will improve the steelhead's Critical Habitat and eliminate a potential partial barrier to dispersal. The area of the Critical Habitat is shown in Figure 1 of Attachment D. Currently, the existing low-flow crossing is located in the upper/middle portion of the designated Critical Habitat. The project site is located downstream of the Critical Habitat located in the Bear Creek subwatershed and a portion of Corte Madera Creek (downstream from Searsville Dam), and upstream from the portion of the Critical Habitat extending from the low-flow crossing to the San Francisco Bay. Completion of this project will facilitate upstream and downstream fish dispersal throughout the Critical Habitat. This project will also eliminate the relatively long, warm, and deep pool located upstream of the existing low-flow crossing. This pool will be replaced by a channel which is designed to mimic the creek channel in nearby reference reaches. It is anticipated that after completion of this project, the channels immediately upstream and downstream from the site will adapt through time and better mimic the local, natural conditions. Maintenance (removal of accumulated debris and potentially minor repair of the surface during the dry season) of the new facility will not impact steelhead/rainbow trout. The project is not anticipated to negatively affect, and will potentially incrementally improve access to, potential salmonid spawning areas within the Critical Habitat.

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.

All recommended mitigation measures of the biological and hydrologic reports have been incorporated into the project or added as conditions of approval. Construction-related impacts will be temporally and spatially limited due to the projected length of construction time and extent of temporarily disrupted creek (250 feet). Potential impacts will be further minimized due to the typical low-flow rate of the creek in the project area during the time of proposed construction. No construction-related impacts are anticipated in reaches upstream of the project site. Downstream of the project site there may be some very minor and temporary alterations of creek flow as cofferdams and bypass pipes are installed and removed. This potential impact will be minor and will not dewater any downstream reaches. Given the general lack of continuous surface flow in the area during each of the last few summers, creek flow is not anticipated to be impacted by construction activities.

Construction-related impacts on Central California coast steelhead will be minor and temporary and will involve removing any individuals from the construction site, and releasing them into the nearest reach with appropriate conditions (likely downstream 10 to 20 meters from the project area). Based on previous work in the area, approximately 15 to 30 individual steelhead/rainbow trout may need to be relocated out of the project area. One hundred (100) previous fish relocations at Stanford have been completed with no observed mortalities or injuries of the captured and relocated steelhead/rainbow trout. Such activities can be stressful to the fish, and some loss of individuals may result from this type of work.

Policy 1.30 (*Uses Permitted in Sensitive Habitats*) seeks to permit only those land uses and development activities that are compatible with the protection of sensitive habitats, such as fish and wildlife management activities, nature education and research, and necessary public service and private infrastructure. One of the project's primary goals is to enhance the fish passage in the San Francisquito Creek, in particular, for the Central California Coast Steelhead, a threatened, federally-protected species. The low-flow crossing also provides access for Stanford University (operations staff, researchers, and students) and PG&E (in order to service PG&E electrical lines that pass through the area). It is also part of a critical route for emergency fire control access and an emergency exit route.

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. Any non-native fishes or bullfrogs encountered during this work will not be released back into the Creek.

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 730 cubic yards of cut and 450 cubic yards of fill for the installation of the low-flow box culvert. As part of the grading operations, approximately 80 linear feet of the creek channel where sediment has accumulated upstream of the existing crossing (due to the crossing) will be regraded into a natural channel shape. The few willows and alders that need to be removed from within the active construction zone will be salvaged and used as needed for the revegetation/bio-engineering of the project site.

Sections of the bank disturbed during construction will be re-built using willow brush layering techniques shown on Sheet C-6 (Attachment C). The anticipated extent of this work is shown on Sheet C-7 (Attachment C). Some rock slope protection will likely be placed adjacent to the culvert wingwalls on the upstream and downstream slopes of the roadway prism.

After the crossing has been constructed and the banks have been stabilized with brush layering, all disturbed areas will be seeded with a native seed mix and fiber rolls will be placed as shown on the Planting and Erosion Control Plan shown on Sheet C-7 (Attachment C). The anticipated extent of this work is shown on Sheet C-7 but will extend as needed to ensure that any disturbed areas are given protection from future erosion.

c. Visual Quality

Policy 4.22 (*Scenic Corridors*) aims to protect the visual quality of scenic corridors by managing the location and appearance of structural development. While the project site is located within the designated area of the Junipero Serra (I-280 Freeway) State Scenic Corridor, it is located completely within a densely forested area that is not visible from any public right-of-ways.

d. Urban Land Use

The County General Plan land use designation for the property is Institutional/General Open Space/Future Study. As proposed and conditioned, the project is consistent with the existing Institutional and Open Space uses of the property.

Policy 8.4 (*Land Use Objectives for Special Urban Areas*) calls for the arrangement of land uses in Stanford Lands to preserve important natural resources, provide for the academic needs of the University, and be compatible with the general plans of adjoining communities as determined in future land use studies. It should be noted that the County has not yet completed a future land use study for the Stanford Lands area. As discussed in Section A(1)(a) of this report, the main goals of the project aim to preserve and enhance the sensitive habitat of the Central California Coast Steelhead as well as maintain access for educational and research endeavors by Stanford University.

Policy 8.8 (*Definition of Special Urban Areas*) defines Special Urban Areas as those devoted primarily, but not necessarily or exclusively, to non-residential uses. The Stanford Lands area supports a variety of uses including open space, biological preserve, research, and administrative uses. The Jasper Ridge Biological Preserve has been subject to many biological studies since the founding of the University in the late 1880s and is regularly included as a location of field exercises for biology courses. Jasper Ridge Biological Preserve and the University's Conservation Program maintain and regularly update inventories of the species found on Stanford Lands.

2. Compliance with the Zoning Regulations

The project site is located within the Residential Estates (RE/S-11) Zoning District. The project results in no new uses or structures, only the replacement of an existing crossing structure with a more advanced crossing. As the project site is undeveloped, the project would not negatively impact existing uses at the site, but would improve access and natural resource management.

3. Grading Regulations

In order to approve a grading permit for 1,180 c.y. of grading, including 730 c.y. of cut and 450 c.y. of fill for the proposed low-flow box culvert, the Planning Commission 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 implement the project. 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 culvert replacement conducted in

accordance with published guidelines of the Department of Fish and Wildlife, the primary purpose of which is to improve the habitat. The proposed low-flow box culvert will enhance fish passage and ensure that the flow under the reconstructed crossing will meet State and federal velocity and depth guidelines in fish passage guidance documents. Appropriate mitigation and conservation measures will be implemented to limit construction-related impacts. In addition, the County's Geotechnical Section and the Department of Public Works - Flood Control have reviewed and approved the project with conditions. The period of construction will continue until October 31, 2017 in line with the associated federal and state permits. The Community Development Director has determined that the project will not endanger the public health or safety or cause excessive erosion. Staff has determined that the project, as proposed and conditioned, will not have a significant adverse impact on the environment.

- 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 relative to 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 Ordinance.

- 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

Section 15050 of the CEQA Guidelines states that where a project is to be carried out or approved by more than one public agency, one public agency shall be responsible for preparing the environmental review. That agency shall be referred to as the lead agency. 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 culvert replacement conducted in accordance with

published guidelines of the Department of Fish and Wildlife, the primary purpose of which is to improve the habitat. The Notice of Exemption is included in Attachment G. The proposed low-flow box culvert will enhance fish passage and ensure that the flow under the reconstructed crossing will meet State and federal velocity and depth guidelines in fish passage guidance documents.

C. REVIEWING AGENCIES

County Building Inspection Section
County Building Inspection Section's Geotechnical Consultant
County Department of Public Works - Flood Control
County Parks
California Department of Fish and Wildlife
Regional Water Quality Board
United States Fish and Wildlife Service
United States Army Corps of Engineers

ATTACHMENTS

- A. Recommended Findings and Conditions of Approval
- B. Vicinity Map
- C. Plan Set
- D. Biological Assessment for Proposed Low-Flow Crossing Modification Project from Stanford University, dated May 13, 2016
- E. Technical Construction Specifications for the Low-Flow Crossing Modification Project - San Francisquito Creek from Balance Hydrologics, Inc., dated February 13, 2017
- F. Design Basis Memo from Balance Hydrologics, Inc., dated February 14, 2017
- G. Notice of Exemption from the California Department of Fish and Wildlife (lead agency), dated September 22, 2016
- H. Streambed Alteration Agreement, dated September 22, 2016 and Amendment, dated March 24, 2017 from the California Department of Fish and Wildlife
- I. Water Quality Certification for Stanford University's Jasper Ridge Low-Flow Crossing Improvement Project at the San Francisquito Creek, Santa Clara County, dated April 27, 2016 from the San Francisco Bay Regional Water Quality Control Board
- J. Formal Consultation on the San Francisquito Creek Low-Flow Crossing Modification Project in San Mateo County, California, from the United States Fish and Wildlife Service, dated August 30, 2016
- K. Approval Letter from the United States Army Corps of Engineers, dated June 22, 2017

RSP:jlh – RSPBB0391_WJU.DOCX

County of San Mateo
Planning and Building Department

RECOMMENDED FINDINGS AND CONDITIONS OF APPROVAL

Permit or Project File Number: PLN 2017-00113

Hearing Date: July 26, 2017

Prepared By: Ruemel Panglao
Project Planner

For Adoption By: Planning Commission

RECOMMENDED FINDINGS

Regarding the Environmental Review, Find:

1. That Section 15050 of the CEQA Guidelines states that where a project is to be carried out or approved by more than one public agency, one public agency shall be responsible for preparing the environmental review. That agency shall be referred to as the lead agency. The lead agency, the California Department of Fish and Wildlife, has determined that the project is categorically exempt under the provisions of Section 15333 of the California Environmental Quality Act Guidelines, relating to culvert replacement conducted in accordance with published guidelines of the Department of Fish and Wildlife, the primary purpose of which is to improve the habitat (Attachment G of the staff report). The proposed low-flow box culvert will enhance fish passage and ensure that the flow under the reconstructed crossing will meet State and federal velocity and depth guidelines in fish passage guidance documents.

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) and the Building Inspection Section's Geotechnical Consultant. In addition, the project has been approved with conditions by the California Department of Fish and Wildlife (lead agency) (Attachment H of the staff report), the Regional Water Quality Board (Attachment I of the staff report), the United States Fish and Wildlife (Attachment J of the staff report), and the United States Army Corps of Engineers (Attachment K of the staff report) that include measures to mitigate and prevent adverse impacts to the environment during construction. With implementation of the proposed Grading Plan prepared by a licensed civil engineer and Condition No. 10, which requires that the project engineer provide written certification that all grading has been completed in conformance with the approved plans, conditions of approval, and the Grading

Regulations, the potential for geological hazards related to geologic conditions would be minimized to a less than significant level. With implementation of the proposed Erosion and Sediment Control Plan and related conditions of approval, potential for significant erosion would be minimized.

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 County General Plan land use designation for the property is Institutional/General Open Space/Future Study. As proposed and conditioned, the project is consistent with the existing Institutional and Open Space uses of the property and complies with policies relating to water, fish, and wildlife resource preservation and enhancement, soil resource management, visual impacts, and land uses for Special Urban Areas.

RECOMMENDED CONDITIONS OF APPROVAL

Current Planning Section

1. The project shall be constructed in compliance with the plans approved by the Planning Commission on July 26, 2017. 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 Planning Commission, with applicable fees to be paid.
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 property owner 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. 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. Grading may be extended past October 31, 2017 with approval from the Community Development Director.

5. The applicant shall include an erosion and sediment control plan to comply with the County's Erosion Control Guidelines on the plans submitted for the building permit. This plan shall identify the type and location of erosion control measures to be installed upon the commencement of construction in order to maintain the stability of the site and prevent erosion and sedimentation off-site.
6. 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.
7. Prior to any land disturbance and throughout the grading operation, the property owner shall implement the erosion control plan, as prepared and signed by the engineer of record and approved by the decision maker. Revisions to the approved erosion control plan shall be prepared and signed by the engineer and submitted to the Community Development Director for review and approval.
8. Prior to issuance of the grading permit "hard card," the property owner 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.
9. 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.
10. For the final approval of the grading permit, the property owner 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.

11. The provision of the San Mateo County Grading Regulations shall govern all grading on and adjacent to the project site. Per Section 8605.5, all equipment used in grading operations shall meet spark arrester and firefighting tool requirements, as specified in the California Public Resources Code.
12. An Erosion Control and/or Tree Protection 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.
13. The applicant shall establish “disturbance-free zones” around streams and drainages, use and location of silt fencing along the downslope boundaries of the areas of disturbance to minimize sedimentation, and the use of standard Best Management Practices (per Condition No. 19) for earth-moving activities to minimize erosion and sedimentation to all sensitive habitats. Boundaries of the disturbance-free zones shall be marked using staking with flags (with stakes a maximum of 10 feet apart). A qualified biologist shall be present to confirm stream and drainage boundaries. The height of stakes and flags shall exceed the height of existing ground-level vegetation by a minimum of 3 feet. These will be required at the pre-site inspection.
14. A Mitigation and Monitoring Plan providing for the complete restoration (including monitoring) of disturbed areas by employing native vegetation, as prepared by a qualified biologist, shall be submitted with the Building Permit Application. The Mitigation and Monitoring Plan shall include a set timeframe, from the completion of restoration activities at the site, for the removal and replacement of crossing infrastructure and restoration of disturbed areas.

15. The applicant shall obtain required creek permits and comply with applicable requirements/mitigation measures in the construction of the proposed crossing prior to the issuance of a Building Permit.
16. No later than thirty (30) days from the start of the next planting season (as identified by a biologist) after the final completion of grading at the site, the applicant shall submit a letter prepared by a qualified biologist stating that restoration of the site was performed in compliance with Sheet C-7 (Attachment C of the staff report).
17. For the entire site, the applicant shall submit a performance surety deposit of \$2,000.00 and a maintenance surety deposit of \$1,000.00 to the Current Planning Section to ensure both the performance of restoration activities and the maintenance of new vegetation. The Current Planning Section shall only allow release of the performance surety upon demonstration of satisfactory restoration of the entire site and release of the maintenance surety upon inspection by Planning staff two years after planting. The applicant shall submit the surety deposit prior to the issuance of the grading permit "hard card".
18. A qualified biologist shall ensure that the spread or introduction of invasive exotic plant species is avoided to the maximum extent possible.
19. The applicant is responsible for ensuring that all contractors minimize the transport and discharge of pollutants from the project site into water bodies by adhering to the San Mateo Countywide Stormwater Pollution Prevention Program "General Construction and Site Supervision Guidelines," Items 14.a through 14.I, below:
 - a. Stabilizing all denuded areas and maintaining erosion control measures continuously between October 1 and April 30. Stabilizing shall include both proactive measures, such as the placement of hay bales or coir netting, and passive measures, such as revegetating disturbed areas with plants propagated from seed collected in the immediate area.
 - b. Storing, handling, and disposing of construction materials and wastes properly, so as to prevent their contact with stormwater.
 - c. Controlling and preventing the discharge of all potential pollutants, including pavement cutting wastes, paints, concrete, petroleum products, chemicals, wash water or sediments, and non-stormwater discharges to storm drains and watercourses.
 - d. Using sediment controls or filtration to remove sediment when dewatering site and obtaining all necessary permits.

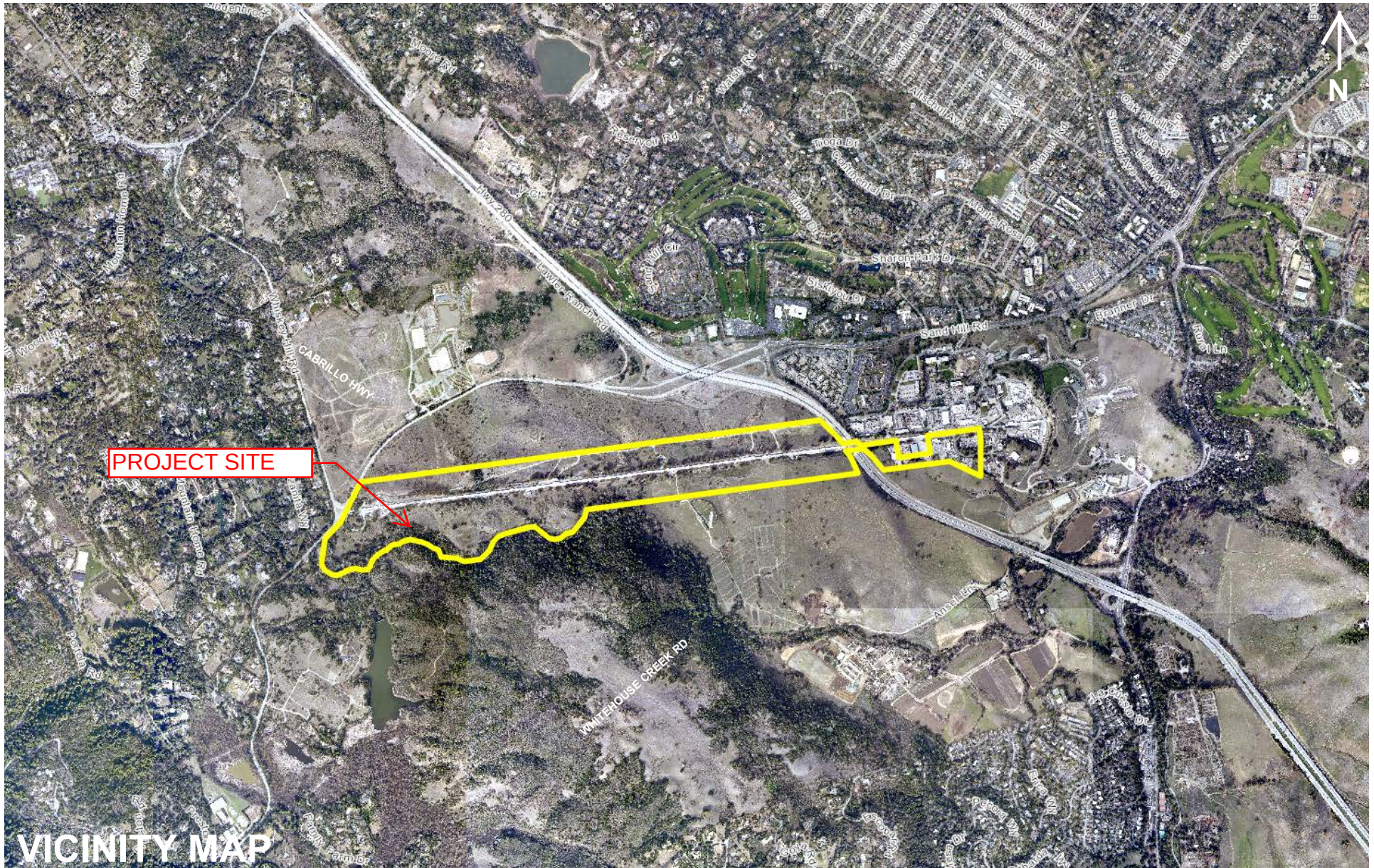
- e. Avoiding cleaning, fueling, or maintaining vehicles on-site, except in a designated area where wash water is contained and treated.
 - f. Delineating with field markers clearing limits, easements, setbacks, sensitive or critical areas, buffer zones, trees, and drainage courses.
 - g. Protecting adjacent properties and undisturbed areas from construction impacts using vegetative buffer strips, sediment barriers or filters, dikes, mulching, or other measures as appropriate.
 - h. Performing clearing and earth-moving activities only during dry weather.
 - i. Limiting and timing applications of pesticides and fertilizers to prevent polluted runoff.
 - j. Limiting construction access routes and stabilizing designated access points.
 - k. Avoiding tracking dirt or other materials off-site; cleaning off-site paved areas and sidewalks using dry sweeping methods.
 - l. The contractor shall train and provide instruction to all employees and subcontractors regarding the construction Best Management Practices.
20. The applicant shall apply for a National Pollutant Discharge Elimination System (NPDES) permit from the Central Coast Region State Water Resources Quality Control Board. Additionally, the applicant shall file a Notice of Intent (NOI) with the State Water Resources Board to obtain coverage under the NPDES Permit. Prior to the issuance of the building permit for the project, a copy of the permit 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."
21. Prior to the issuance of the first grading permit "hard card", the applicant shall submit a permanent stormwater management plan in compliance with the County's Drainage Policy and NPDES requirements, for review and approval by the Department of Public Works.
22. 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 topers. 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.
23. Prior to the issuance of a grading permit "hard card", the applicant shall submit a letter to the Current Planning Section from a qualified biologist describing whether site disturbance activities will occur during the nesting season. The nesting season for most birds, including most raptors, in the San Francisco Bay area extends from February through August. If site disturbance is to occur during the nesting season, then pre-disturbance surveys for nesting birds shall be conducted by a qualified ornithologist to ensure that no nests will be disturbed during project implementation. This survey shall be conducted no more than 14 days prior to the initiation of disturbance during the early part of the breeding season (February through April) and no more than thirty (30) days prior to the initiation of these activities during the late part of the breeding season (May through August). The survey shall include inspection of all potential nesting habitats in and immediately adjacent to within 200 feet of the impact areas for nests. The results of all pre-disturbance surveys shall be submitted to the Current Planning Section and to Randi Adair at the California Department of Fish and Wildlife, Bay Delta Region (7329 Silverado Trail, Napa, California, 94558 / (707) 944-5596 / randi.adair@wildlife.ca.gov), prior to site disturbance. The applicant shall consult with the CDFW regarding survey requirements. If nesting birds are detected, the following mitigation measures shall be implemented:

- a. If an active nest is found sufficiently close to work areas to be disturbed by these activities, a disturbance-free buffer zone shall be established around the nest to ensure that no nests of species protected by the Migratory Bird Treaty Act (MBTA) or State Code will be disturbed during project implementation.
 - b. If disturbance must directly impact nests of birds or raptors, relocation may be permitted pending evaluation of relocation plans by, and receipt of, formal written approval of the relocation from the CDFW. Removal of potential nesting substrate (e.g., bushes, trees, grass, burrows) that will be removed by the project shall be removed before the start of the nesting season (February) to help preclude nesting.
24. 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.
25. 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 body, property, 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.
- 26. 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).

RSP;jlh – RSPBB0391_WJU.DOCX



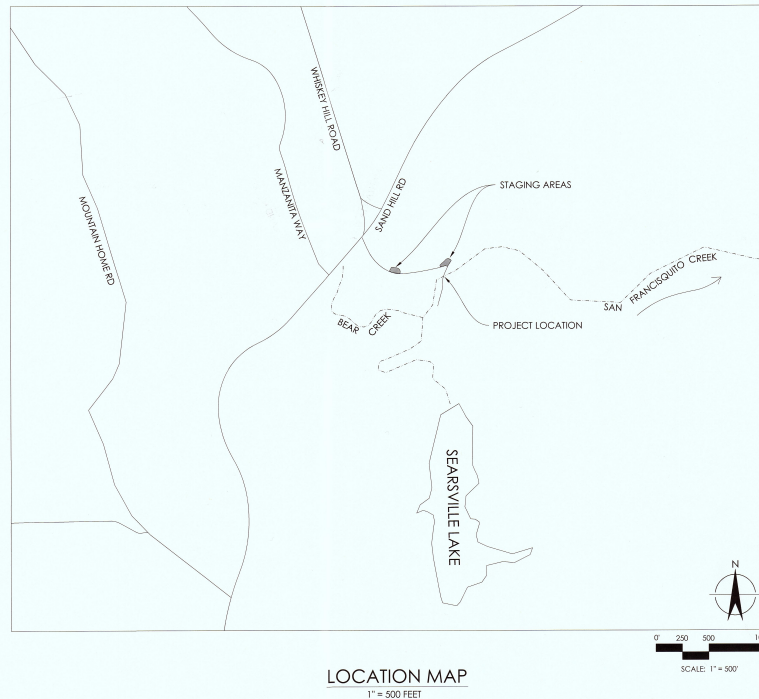
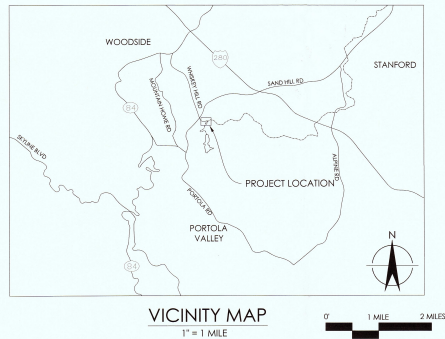
San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: B

File Numbers: PLN2017-00113

SAN FRANCISQUITO CREEK LOW-FLOW CROSSING MODIFICATION COUNTY OF SAN MATEO, CALIFORNIA



SHEET INDEX

C-1	COVER SHEET
C-2	SITE PREPARATION AND DEMOLITION PLAN
C-3	GRADING PLAN
C-4	SECTIONS
C-5	SECTIONS
C-6	SECTIONS
C-7	EROSION CONTROL PLAN

PROJECT TEAM

OWNER

STANFORD UNIVERSITY
STANFORD FACILITIES / UTILITIES
327 BONAIR SIDING
STANFORD, CA 94305
(650) 725-3400

DESIGNERS

BALANCE HYDROLOGICS, INC.
800 BANCROFT WAY, SUITE 101
BERKELEY, CA 94710
(510) 704-1000

LTD ENGINEERING, INC.
1050 NORTHGATE DRIVE SUITE 315
SAN RAFAEL, CA 94903

VAZIRI STRUCTURAL ENGINEERING
905 FOURTH STREET
SAN RAFAEL, CA 94901

PLN2017-00113

RECEIVED

MAR 22 2017

San Mateo County
Planning Division



DESIGNED BY	DATE	BY	SUBMITTALS / REVISIONS
D. JERSEN	20170213	EB	ISSUED FOR REVIEW
E. SALLAMAN			
E. SALLAMAN			
	20170213		



COVER SHEET
SAN FRANCISQUITO CREEK
LOW-FLOW CROSSING MODIFICATION
SAN MATEO COUNTY, CALIFORNIA

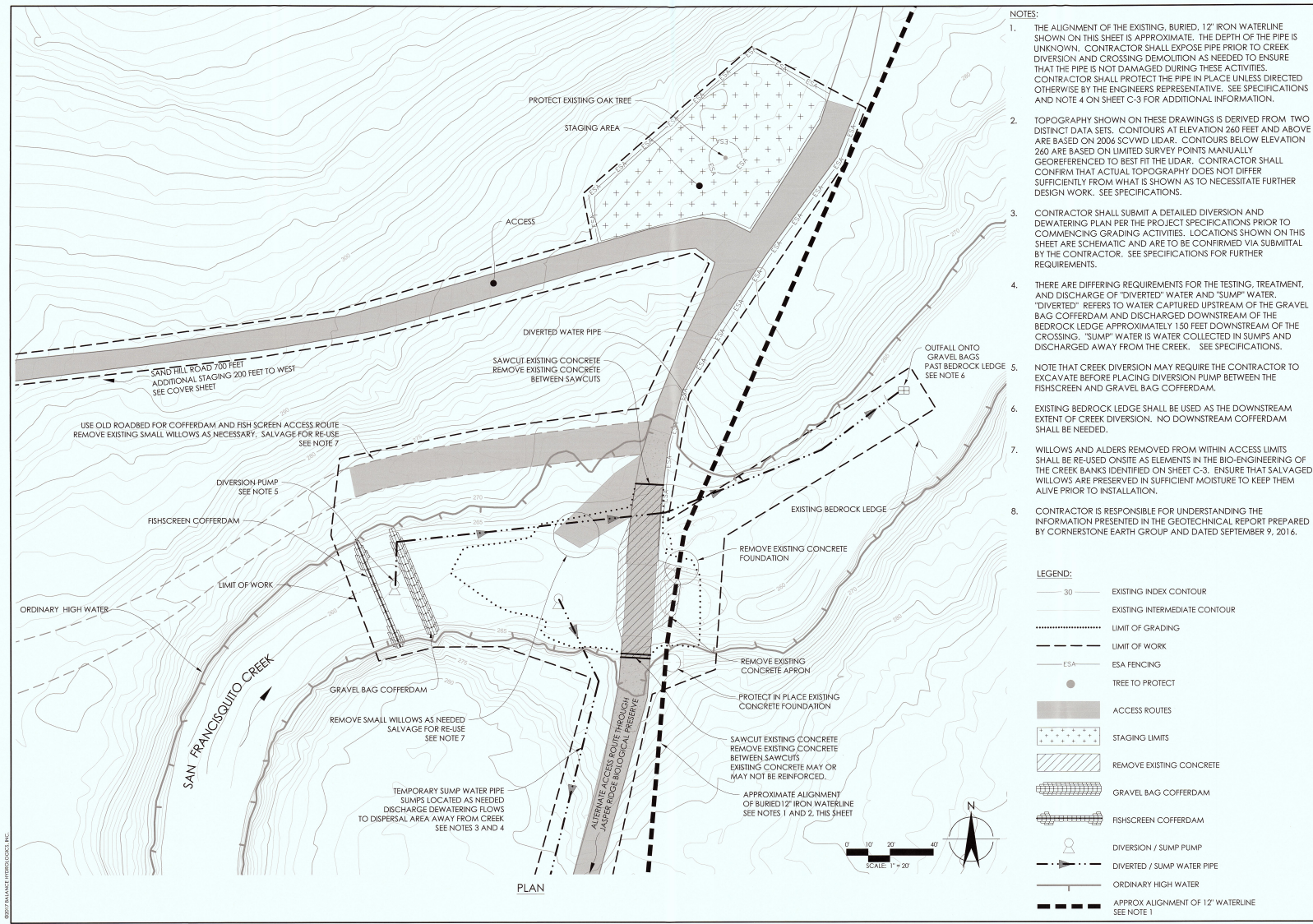
PROJECT NUMBER
014217
SCALE
AS NOTED
SHEET
C-1
OF 7

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: C

File Numbers: PLN2017-00113



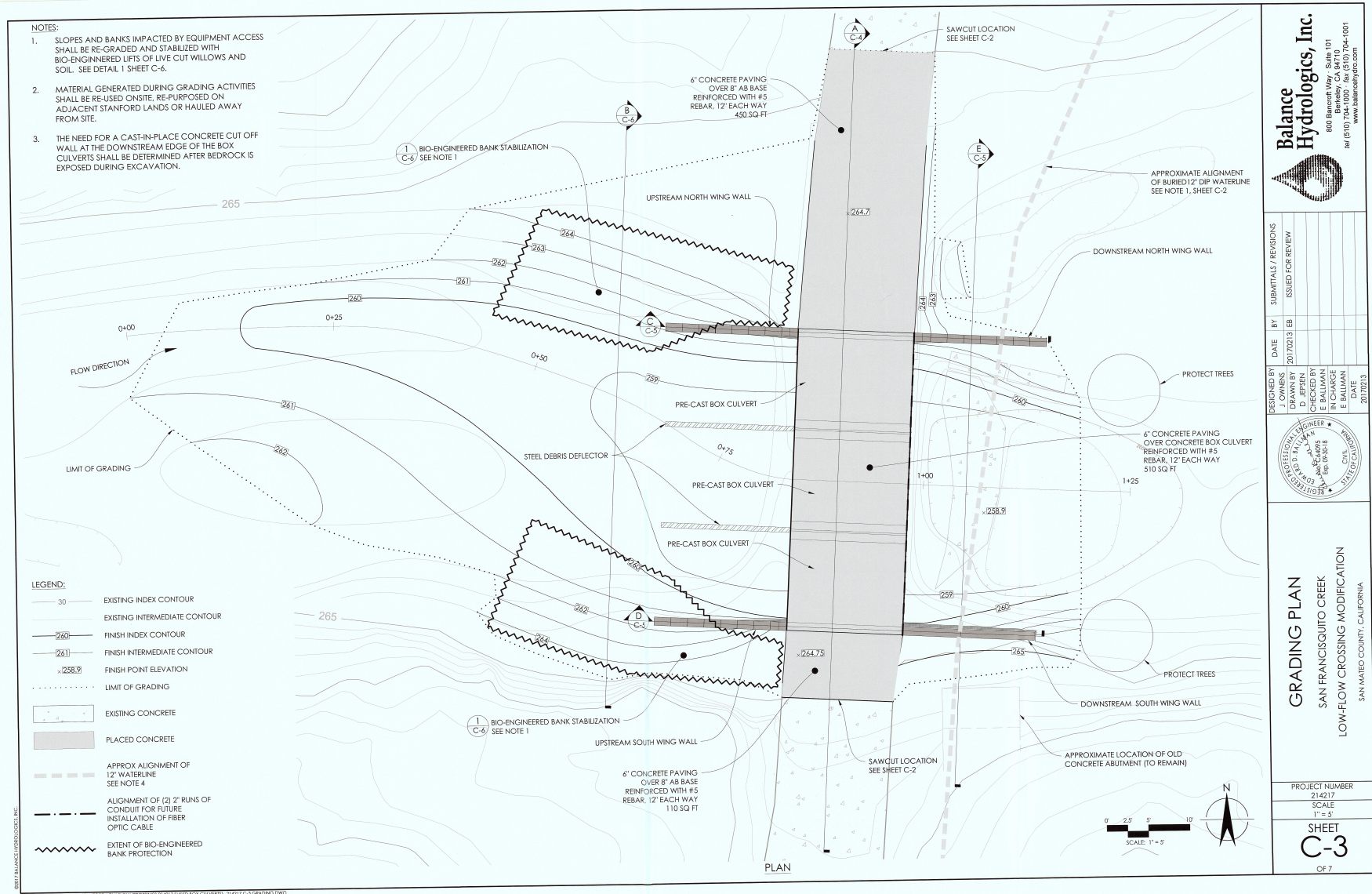
**Balance
Hydrologics, Inc.**

600 Bancroft Way - Suite 101
Berkeley, CA 94710
tel (510) 704-1000 fax (510) 704-1001
www.balancehydro.com



**SITE PREPARATION AND
DEMOLITION PLAN**
SAN FRANCISCO CREEK
LOW-FLOW CROSSING MODIFICATION
SAN MATEO COUNTY, CALIFORNIA

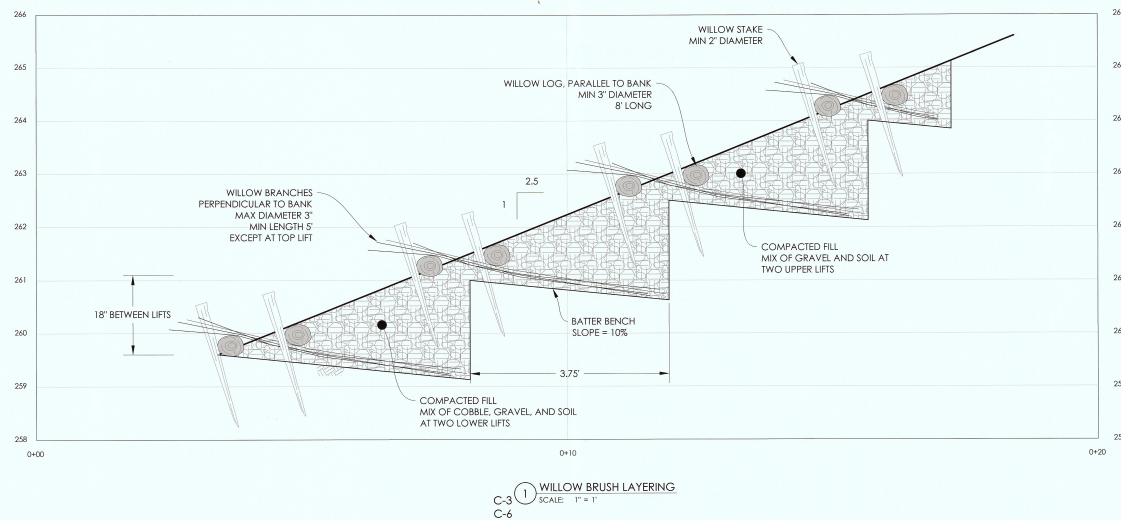
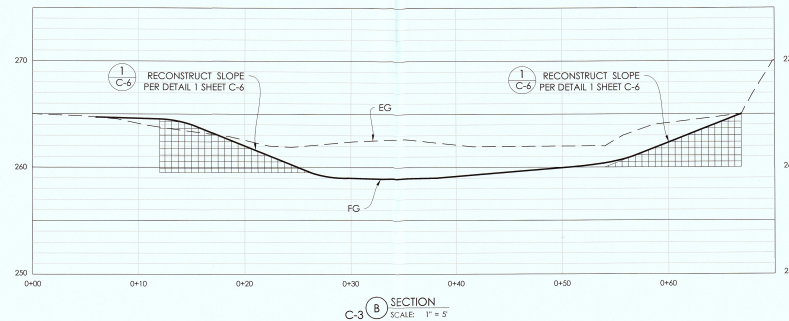
File Numbers: PLN2017-00113



File Numbers: PLN2017-00113

©2017 BALANCE HYDROLOGICS, INC.

W:\CAD\PROJECTS\214217 STANFORD LOW FLOW CROSSING\214217 SHEET BOX CULVERT\214217 C-6 SECTIONS.DWG



DESIGNED BY	DATE	BY	SUBMITTALS / REVISIONS
J. LOWERS	20/07/2013	EB	ISSUED FOR REVIEW
D. JEFFERSON			
E. BALAMAN			
E. BALAMAN			
E. BALAMAN			
E. BALAMAN			
E. BALAMAN			
E. BALAMAN			
E. BALAMAN			
E. BALAMAN			



SECTIONS
SAN FRANCISCO CREEK
LOW-FLOW CROSSING MODIFICATION
SAN MATEO COUNTY, CALIFORNIA

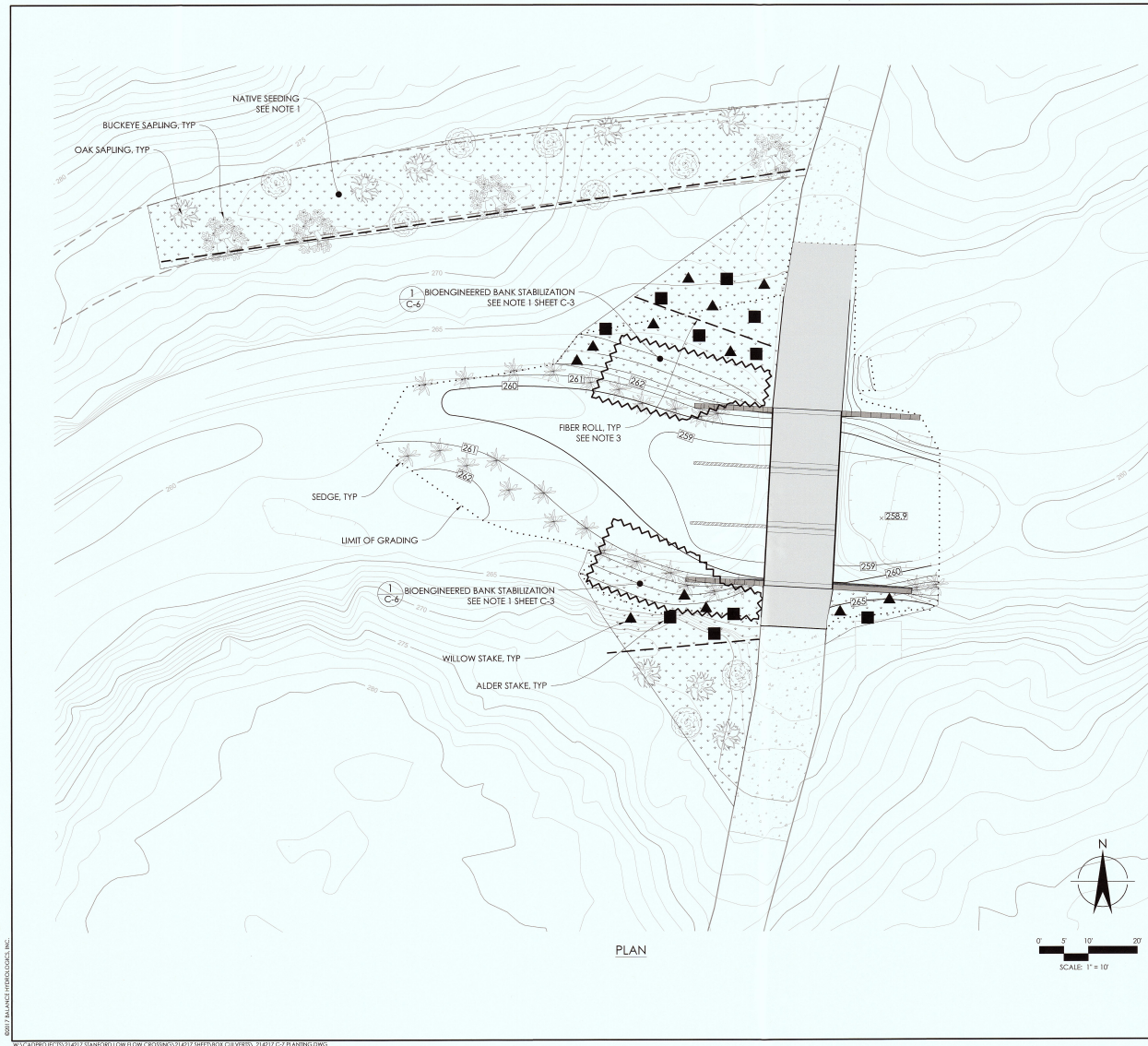
PROJECT NUMBER
214217
SCALE
AS NOTED
SHEET
C-6
OF 7

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: C

File Numbers: PLN2017-00113



NOTES:

1. LIMITS OF NATIVE SEEDING ARE APPROXIMATE. ADJUST LIMITS TO MATCH SPECIFIC AREAS OF DISTURBANCE IN HATCHED AREAS SHOWN.
2. SEE SHEET C-3 FOR NOTE RE: BIO-ENGINEERED BANK STABILIZATION.
3. WHERE FIBER ROLLS ARE INDICATED ADJACENT TO BIO-ENGINEERED BANK STABILIZATION, THE INTENT IS THAT THEY BE PLACED DIRECTLY ABOVE THIS STABILIZED AREA. ADJUST FIBER ROLL LOCATIONS AS NEEDED. INSTALL PER MANUFACTURERS SPECIFICATIONS.
4. INSTALL SEDGES ALONG WETTED CHANNEL EDGE, APPROXIMATELY ELEVATION 61.5'. INSTALL AT MIN 5' SPACING AT LOCATIONS SHOWN.
5. WILLOW STAKES THAT ARE PART OF THE BIOENGINEERED SLOPE PROTECTION SHALL BE INSTALLED AT THE TIME OF CONSTRUCTION. THE NUMBER OF STAKES IN THESE AREAS SHALL TOTAL 1 PER SQUARE FOOT AND BE INSTALLED PER THE SECTION SHOWN ON SHEET C-5. WILLOW AND ALDER STAKES ABOVE ELEVATION 264.5' SHALL BE INSTALLED DURING THE WET SEASON, IN DECEMBER.

LEGEND:

- 30 — EXISTING INDEX CONTOUR
- 260 — EXISTING INTERMEDIATE CONTOUR
- 261 — FINISH INDEX CONTOUR
- 261 — FINISH INTERMEDIATE CONTOUR
- LIMIT OF GRADING
- - - FIBER ROLLS
- NATIVE SEEDING
- OAK SAPLING (NTS)
- BUCKEYE SAPLING (NTS)
- ELDERBERRY SAPLING (NTS)
- ★ SEDGE (NTS, SEE NOTE 4)
- ▲ WILLOW STAKE (OUTSIDE OF BIOENGINEERED SLOPE, SEE NOTE 5)
- ALDER STAKE (SEE NOTE 5)



DESIGNED BY	DATE	BY	SUBMITTALS / REVISIONS
J. OWENS	20/02/23	EB	ISSUED FOR REVIEW
DRAWN BY			
CHECKED BY			
E. BALLMAN			
IN CHARGE			
E. BALLMAN			
	20/02/23		



**PLANTING AND EROSION
CONTROL PLAN**
SAN FRANCISCO CREEK
LOW-FLOW CROSSING MODIFICATION
SAN MATEO COUNTY, CALIFORNIA

PROJECT NUMBER
214217
SCALE
1" = 10'
SHEET
C-7
OF 7

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: C

File Numbers: PLN2017-00113

Biological Assessment for proposed
Low Flow Crossing Modification Project
Stanford University



13 May 2016

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

Biological Assessment for Stanford low flow crossing project 13 May 2016

Biological Assessment for proposed low flow crossing modification project,
San Francisquito Creek, Stanford University (San Mateo County)

Table of contents	page 1
1. Introduction	2
a. Purpose of this biological assessment	
b. General summary of the proposed action	
2. Project description	2
a. Project actions and relative timing	
b. Description of the project site	
c. Project timing	
d. Map of project site, and description of the action area	
e. Conservation measures included in the project	
3. Species/Critical Habitat considered	9
a. Critical Habitat considered	
b. Species considered	
c. Federally protected species	
d. Other species of conservation concern	
4. Effects of the project on the Critical Habitats and species considered	13
a. Effects of the project on Critical Habitat	
b. Effects of the project on species.	
c. Cumulative effects of this and other projects.	
5. Conclusions and rationale	17
6. Literature cited	18
7. Figures	20
8. List of preparers	27

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

1. Introduction

- a. ***Purpose of this biological assessment:*** The purpose of this biological assessment is to assess the potential effects of Stanford's proposed modification of the low flow crossing on the native species present at the project site, with particular emphasis on the potential effects to federally protected species present. The project is located at Jasper Ridge Biological Preserve (JRBP) at Stanford University, San Mateo County. This project is proposed to modify the existing low flow road crossing in SFC in order to improve conditions for steelhead. No negative impacts of this project on federally protected species is anticipated.
- b. ***General summary of the proposed action:*** The existing service/access road has been in place for at least a century. This road is not open to the general public. It is used by Stanford University (operations staff, researchers and students), and PG&E (in order to service their electrical lines that pass through the area). It is also a critical route for emergency fire control access and an emergency exit route. The proposed project will replace the existing in-channel concrete drive-through with a bottomless box culvert. During typical flow conditions the creek will flow unimpeded through the new box culvert. Under high flow conditions the creek will flow through and over the box culvert. The proposed box culvert will allow for steelhead passage and dispersal over a much broader range of flows and in particular the project will improve opportunities for fish to disperse during the low flows typical in the reach during late spring and early fall months. The creek channel immediately upstream from the existing crossing structure consists of a large pool, which is partially filled with sediment. This project will eliminate this artificial pool and create a dynamic channel that is more representative of nearby natural reaches. The project will be constructed during the low-flow period prior to the rainy season.

2. Project description

Project actions and relative timing: Access roads and staging areas will be on existing dirt roads and existing designated parking areas. The project will include construction of an upstream cofferdam and a fish-screen barrier installed approximately 20 feet upstream of the gravel-bag and plastic cofferdam. This cofferdam will be located approximately 100 feet upstream from the existing concrete low flow crossing. A pump will be placed in the area between the fish-screen barrier and the upstream cofferdam in order to route water flow, if any is present during the projected construction time period, to an outfall onto gravel bags past a bedrock ledge located approximately 140 feet downstream from the edge of the existing low flow crossing (given the topography of the creek channel, a downstream cofferdam is not required in order to prevent "backflow" into the project site). Approximately 250 feet of San Francisquito Creek will be temporarily dewatered during the construction of this project. A temporary sump pump will be installed in the dewatered area to discharge dewatering flows into infiltration dispersal area away from the Creek. After installation of the fish barrier screen, fish relocation efforts will be initiated. Fish (steelhead/rainbow trout) captured, via dip nets,

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

seines, minnow traps, and electrofishing, held in livewells for a brief time period (less than 20 minutes), and released in the nearest portion of the Creek with suitable water conditions. The nearest reach, or reaches, with suitable conditions will be determined at the start of construction; given the dry conditions present in the area the last few summers, this reach or reaches will likely be located downstream of the project site. The suitability evaluation will include water depth (some portions of the site need to be at least two feet in depth) and flow, likelihood of drying or becoming isolated before the fall rains, water temperature and clarity, canopy cover, and presence of other aquatic species. Steelhead/rainbow trout will be the primary focus of capture and relocation efforts, but individuals of all native fish species will be relocated if possible. Any non-native fishes, or bullfrogs, encountered during this work will not be released back into the Creek.

Once fishes are removed and the construction site is dewatered, construction will start and consist of removing the existing concrete apron and center section (approximately 60 feet in length) of the concrete crossing, installing new foundation with four 7-foot openings, bridge piers, top stringer and removable metal grates with plates to protect fishes in high flows. The new box culvert will be bottomless and will allow a natural creek bed to form under the new crossing. A new concrete driving surface will be added on the approaches to the crossing. Angled wing walls and debris deflectors/lifters will be installed on the upstream side. Approximately 80 linear feet of the creek channel where sediment has accumulated upstream of the existing crossing (due to the crossing) will be regraded into a natural channel shape. At the edges of the crossing, rock protection will be used to create a smooth transition between the wingwalls and edge of the channel bank. The few willows and alders that need to be removed from within the active construction zone will be salvaged and used as needed for the revegetation/bio-engineering of the project site. When work in the creek is completed, the cofferdam and fish screen will be removed. Flow through the project site will be restored in such a way as to not disrupt flow in the downstream portion of the watershed.

Once completed the constructed facility will be inspected frequently, and will likely accumulate woody debris will be placed in the creek downstream of the structure. The driving surface also will be maintained.

- a. ***Description of the project site:*** The project is located in the San Francisquito Creek watershed (see figures 1,2, and 3). This watershed encompasses an area of approximately 45 square miles and is located on the eastern flank of the Santa Cruz Mountains, at the base of the San Francisco Peninsula (Figure 1). This watershed is located in two counties, San Mateo and Santa Clara, and two of its constituent creeks (Los Trancos and San Francisquito) form part of the boundary between the two counties. The San Francisquito Creek watershed has four major sub-watersheds located at least partially on Stanford lands. Bear Creek (aka Bear Gulch Creek), Los Trancos Creek, San Francisquito Creek, and streams that flow into Searsville Reservoir (including Corte Madera, Dennis Martin, Sausal, and Alambique Creeks) comprise the watershed.

The project site is located on San Francisquito Creek, approximately 1/10 mile downstream from the confluence of Corte Madera and Bear Creeks. This site is located

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

in Jasper Ridge Biological Preserve and is owned by Stanford University. The area has been subject to many biological studies since the founding of the University in the late 1880s, and is regularly included as a location of field exercises for biology courses. Jasper Ridge Biological Preserve, and the University's Conservation Program, maintain and regularly update inventories of the species found on Stanford lands. Studies specially targeting the distribution of fishes, amphibians, and reptiles in the area, including the site of the proposed project have been conducted annually since 1997. Data from these studies were included in a draft Habitat Conservation Plan (HCP) for Stanford lands in 2011. Due to several factors associated with long-term planning in the San Francisco watershed, this portion of the University's land was removed from the final Stanford HCP and incidental take permit (2013), but only after extensive federal review of the available data. Additionally, many studies linked with Searsville Dam have been undertaken and include the site of the proposed project in the areas of the watershed being analyzed. These studies include extensive work by Northwest Hydrologic (several studies from the early 2000s), Balance Hydrologic (studies ongoing since the 1990s), and URS (now AECOM) multiple studies since 2013). Given the location of and ease of access to, the proposed project site, and very extensive history of environmental work and research, the site of the proposed project is well known and understood. A representative number of these studies are listed in the Literature Cited section of this report.

Riparian vegetation is well established along the creek at the project site (see figures 4, 5, 6, and 7 for images of the conditions at the project site). The dominant trees in this riparian zone are valley oak (*Quercus lobata*) and coast live oak (*Q. agrifolia*). Associated tree species within this community at the project site and vicinity include California buckeye (*Aesculus californica*), bay (*Umbellularia californica*), willow (*Salix* species), and white alder (*Alnus rhombifolia*). A dense understory shrub layer occurs beneath much of the riparian canopy, particularly in areas where gaps in the overstory allow direct sunlight. Shrub species present include poison oak (*Toxicodendron diversilobum*), California rose (*Rosa californica*), blackberry (*Rubus ursinus*), dogwoods (*Cornus* species), common snowberry (*Symphoricarpos albus*), blue elderberry (*Sambucus nigra*), bee plant (*Scrophularia californica*), and coyote bush (*Baccharis pilularis*).

Small clumps of native and non-native grasses and forbs are also present in the understory of the riparian zone, including ripgut brome (*Bromus diandrus*), wild oat (*Avena fatua*), horehound (*Marrubium vulgare*), poison hemlock (*Conium maculatum*), wild radish (*Raphanus sativus*), field mustard (*Brassica rapa*), milk thistle (*Silybum marianum*), and California mugwort (*Artemesia douglasiana*). Aquatic vegetation found intermittently along the creek channel and adjacent moist areas includes water cress (*Rorippa nasturtium-aquaticum*), rushes (*Juncus* species), sedges (*Carex* species), duckweed (*Lemna* species), water fern (*Azolla filiculoides*), broad-leaved cattail (*Typha latifolia*), and curly dock (*Rumex crispus*).

The creek and riparian zone of the general area, including the project site, provides abundant food, cover, and breeding habitat for wildlife. Bird species that are

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

characteristic of this habitat at Jasper Ridge include California quail (*Callipepla californica*), mourning dove (*Zenaidura macroura*), orange-crowned warbler (*Vermivora celata*), Nuttall's woodpecker (*Picoides nuttallii*), black phoebe (*Sayornis nigricans*), black-crowned night heron (*Nycticorax nycticorax*), belted kingfisher (*Ceryle alcyon*), western wood-pewee (*Contopus sordidulus*), California towhee (*Melospiza crissalis*), and song sparrow (*Melospiza melodia*). Many of these species nest or roost in riparian vegetation and feed in adjacent habitat areas, such as annual grasslands. Stellar's jay (*Cyanocitta stelleri*) and western scrub jays (*Aphelocoma californica*) are found in abundance in the riparian zones at Jasper Ridge, as are California thrasher (*Toxostoma redivivum*), red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*) and sharp-shinned hawk (*Accipiter striatus*). The riparian vegetation at the project site also provides feeding, resting, and nesting for neotropical songbirds such as warblers (Parulidae), vireos (Vireonidae), and flycatchers (Tyrannidae).

Common mammals at least occasionally found at the project site include: deer (*Odocoileus hemionus*), opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), deer mice (including *Peromyscus truei* and *P. maniculatus*), Botta's pocket gopher (*Thomomys bottae*), tree squirrels (*Sciurus* species), San Francisco dusky-footed wood rat (*Neotoma fuscipes annectens*), California vole (*Microtus californicus*), coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), mountain lion (*Puma concolor*), and striped skunk (*Mephitis mephitis*). Recent work by a Stanford graduate student (Evelyn et al. 2004) and other researchers indicates that the riparian areas at Jasper Ridge, including the project site, are used extensively by foraging bats. A number of bat species have been recorded foraging along San Francisquito Creek at the project site, including: Townsend's big-eared bat, red bat (*Lasiurus blossevillii*), hoary bat (*Lasiurus cinereus*), California myotis (*Myotis californicus*), Yuma myotis (*Myotis yumanensis*), long-ear myotis (*Myotis evotis*), fringed myotis (*Myotis thysanodes*), long-legged myotis (*Myotis volans*), big brown bat (*Eptesicus fuscus*), and western pipistrelle (*Pipistrellus hesperus*).

Amphibians and reptiles known to occur in the creeks and riparian zones of the project site include western toad (*Anaxyrus boreas*), Sierra treefrog (*Pseudacris sierra*), arboreal salamander (*Aneides lugubris*), slender salamander (*Batrachoseps attenuatus*), California newt (*Taricha torosa*), rough-skinned newt (*Taricha granulosa*), Santa Cruz ensatina (*Ensatina eschscholtzi*), California kingsnake, gopher snake (*Pituophis catenifer*), western night snake (*Hypsoglena torquata*), northern Pacific rattlesnake (*Crotalus oreganus oreganus*), western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Elgaria multicarinata*), western skink (*Plestiodon skiltonianus*), and western pond turtles (*Clemmys marmorata*). An intergrade form of the common gartersnake (*Thamnophis sirtalis*) has been recorded from Stanford, but the form accepted to be present at Stanford has long been considered to be an intergrade between two subspecies (*T. s. infernalis* and *T. s. tetrataenia*). Despite many decades of biological field work at the project site, no *T. sirtalis* have been observed.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

Biological Assessment for Stanford low flow crossing project 13 May 2016

California red-legged frogs (*Rana draytonii*) were historically observed in the area of the project site, but this species has not been observed at the site since 1999, and has not been observed in any portion of the San Francisquito watershed at Stanford since 2007. California tiger salamanders have not been recorded from Stanford's riparian zones and are not present at the project site.

Native fish species recorded from the project site and immediate vicinity include three-spined stickleback (*Gasterosteus aculeatus*), roach (*Lavinia symmetricus*), Sacramento suckers (*Catostomus occidentalis*), and sculpin (*Cottus asper*). Steelhead/rainbow trout (*Oncorhynchus mykiss*) are also present at the project site. Hitch (*Lavinia exilicauda*) and Sacramento blackfish (*Orthodon microlepidotus*) have been recorded from the watershed, from near the project site, but have not been observed in the area in many years. Native mussels (*Anodonta* species) are found scattered across the San Francisquito Creek system.

Non-native aquatic animals that have been recorded from the creek at the project site include bullfrog (*Rana catesbeiana*), green sunfish (*Lepomis cyanellus*), bluegill (*Lepomis macrochirus*), red-ear sunfish (*Lepomis microlophus*), mosquito fish (*Gambusia affinis*), largemouth bass (*Micropterus salmoides*), Louisiana red swamp crayfish (*Procambarus clarki*), and signal crayfish (*Pascifasticus leniusculus*).

- b. **Project timing:** This project will consist of two phases; construction and maintenance. There are no "operations," per se, associated with the resultant structure, only maintenance and removal of debris. The construction phase will take an estimated six weeks to complete and will occur in the dry season. Some additional non-invasive activities (biological surveys) being initiated several months prior to construction. The life-span of the new low flow crossing is anticipated to be several decades, with maintenance (mainly anticipated to be debris removal) occurring as needed. If possible, these maintenance activities will occur during the dry season. The actions included in this project are summarized as:

Construction phase

Biological surveys of the project site	April until start of construction
Biological monitoring	Ongoing during construction
Fish barrier screen, fish relocation, cofferdam construction	Week 1
Dewatering of the site	Week 1
Demolition of portions of existing structure	Week 1
Construction of new structure	Weeks 2 and 3
Channel work and replanting	Weeks 3 and 4
Removal of cofferdam	End of week 4
Monitoring of the construction site	TBD

Operations and maintenance phase

Debris removal	As needed
Routine maintenance (projected to be minimal)	As needed

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

- c. **Map of project site, and description of the action area:** Figures 1, 2, and 3 indicate the general location of the project site, and where the elements of the project will be occurring. The main “action area” is located in the creek channel, between the upstream cofferdam and downstream water release point. This is the area that will be dewatered, have a portion of the creek channel restored, have the existing structure partially demolished, and have a new structure built. The adjacent creek banks will be subject to minimal and temporary impacts from this project, and these impacts will be in the form of indirect disturbance (mainly construction related noise and vibration). A very limited amount of vegetation (willows) that are growing in the channel adjacent to the structure will be removed during construction. These will be replanted at the site as part of the project restoration. The staging area and access routes are along existing roads and in an existing parking area. There will be minimal, if any, biological impacts due to use of these facilities. Impacts downstream of the construction phase of the project are anticipated to be negligible. Flow in the creek during the projected summer construction period is typically very low, less than 0.5 cfs, and many portions of the watershed are intermittent. This low of flow will minimize any potential effects from the project from propagating to downstream areas. Once the construction phase is complete, and the cofferdams removed, there are not anticipated to be any lasting or ongoing negative impacts of the project on the project site or upstream/downstream of the project site.
- d. **Conservation measures included in the project:** This entire project is designed to be a conservation project – enhancing fish passage and restoring approximately 80 feet of channel to a more natural and dynamic condition. In addition to the main goal of the project, there are multiple conservation measures associated with this work. These will occur before, during, and after the construction phase. These conservation measures are:

Preconstruction site surveys

General surveys noting the physical and biological conditions of the site have occurred annual for numerous years, and are ongoing. These general surveys are used primarily to note unusual occurrences, so that more specific can be scheduled (if deemed necessary).

Species specific surveys will start in May. These will be focusing on species of conservation concern. California red-legged frogs and western pond turtles have not been observed at the project site for more than a decade, but are surveyed for annually in Stanford’s creeks. Additional surveys for these two species will be conducted at the project site. In the very unlikely event that a California red-legged frog is observed in the project area during these pre-construction surveys, the project will be put on hold pending further consultation with USFWS. If pond turtles are observed in the project area, they will be captured and relocated to the nearest reach with suitable conditions (water depth of at least three feet, basking locations, other native aquatic species, and location that is far enough away [at least 250 meters from the project site, dependent on the schedule of

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

the project and the timing of the capture] that a relocated turtle would not disperse back to the original site of capture in the time frame of the project). Surveys for San Francisco dusky-footed woodrat nests will also be conducted in the riparian vegetation adjacent to the construction site. No vegetation where woodrat nests are generally located (nests are common in riparian vegetation, but generally away from the active creek channel) are anticipated to be directly impacted by construction, but if nests are found in close proximity to proposed work areas, buffer fencing (10 feet from the nest) will be installed in order to minimize impacts.

Nesting bird surveys (note the project is scheduled to start after the typical end of the local nesting season) will be conducted prior to start of construction. If active bird nests are found in the project area, or within 100 meters of the project area, fenced buffers will be installed around the nests (100 feet for nest of non-raptors, 300 feet for raptor nests). These buffers will remain in place until the nests are observed to be no longer actively used. In the event an active nest is located in an area central to construction project, the project will be delayed until either the nest is no longer active or an alternate option for protection can be determined by Stanford and California Department of Fish and Game.

Installation of fish screen barrier, cofferdam and relocation of fishes

As described previously, native fishes, particularly steelhead/rainbow trout, will be removed from the construction site and released in a nearby reach where conditions are appropriate (described above). Relocations will be conducted in a manner consistent with biological permits and fisheries management practices (CDFW 2010).

Biological monitor

A biological monitor will be on site for all construction activities. The monitor will maintain a daily log, and conduct daily inspections of the fish barrier screen and cofferdams.

Plant salvage and reuse on site

Some vegetation, primarily willows, will need to be removed from areas of active construction. These will be saved and replanted as part of the restoration/bioengineering design of the project plan.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

Woody debris

Upon completion of the construction phase, if any woody debris needs to be removed from the facility it will be placed in the creek immediately downstream of the structure.

3. Species and Critical Habitat Considered

- a. **Critical Habitat considered:** The site is included in the Critical Habitat designated for the Central California Coast Steelhead DPS pursuant to the Federal Endangered Species Act (16 U.S.C.A §1531. Downstream from the site, San Francisquito Creek until San Francisco Bay is also within the designated Critical Habitat area. Upstream of the site, much of the Bear Creek subwatershed and Corte Madera Creek downstream from Searsville Dam, are also designated Critical Habitat.

Critical Habitat for the Bay checkerspot butterfly is located within ~0.5 miles of the project area (the Critical Habitat for the butterfly is located along the ridgeline, well away from the canyon-bottom project area). This insect's habitat is serpentine soil-based grasslands and the subspecies is not associated with creeks or riparian zones.

- b. **Species considered:** The species present on lands of Stanford University have been regularly studied since the founding of the university, and more than 50 native species of mammals and 175 species of native birds have been recorded on Stanford lands and immediate vicinity. Additionally, 20 species of native reptiles, 12 species of native amphibians, 10 species of freshwater fishes, and more than 650 species of native plants have been recorded on Stanford lands. The species present on Stanford lands (and creeks) and from the general vicinity were thoroughly reviewed and studied during the development of the Habitat Conservation Plan (HCP). This work included reviewing internal Stanford records (from research activities and academic course projects), conducting targeted field surveys, identifying and documenting literature accounts of species present in the area, and checking museum records. Information from the general state-maintained Natural Diversity Database was also extensively reviewed during the development of the HCP, and is currently reviewed by Stanford on a regular basis.

The flora and fauna of Jasper Ridge Biological Preserve (a Stanford University, School of Humanities and Sciences facility), where the project area is located is particularly well known, and the plants and animals in the project area been surveyed many times by researchers and classes over the last 40 years, and the area has been used by zoology and botany field work since the founding of the University. The project area has also been included in the annual surveys of creek-dwelling vertebrates since 1997 (surveys conducted specifically to provide data for long-range conservation planning efforts). There are numerous mammal and bird species in the area of the project, and many species seasonally forage or nest along the creeks. None of the non-bat species of mammal

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

observed in the area are species of conservation concern. More than a dozen species of bats have been recorded foraging from the area, including Townsend's big eared bats *Corynorhinus townsendii*. There are no known maternal roosts for bats near the project site, although it is possible that some of the tree-roosting bat species may use some of the larger trees in the general area (no large trees will be impacted by this project). Many species of birds nest in the riparian vegetation at Jasper Ridge Biological Preserve, and some nests may be located in the project area. Most of these birds are considered migratory and their active nests are protected by the federal Migratory Bird Treaty Act. Raptors, including golden eagles, are common in the area, but are not known to nest in the project area. Surveys for active bird nests will be conducted prior to start of any field work on this project, and appropriate measures to avoid impacts will be taken. After many decades of biological field work at the biological preserve and elsewhere at Stanford, the fishes, amphibians, and reptiles potentially found in Stanford's portion of the watershed are well understood. Of the many fish, amphibian, and reptile species present at Stanford, steelhead/rainbow trout, California red-legged frogs, California tiger salamanders, common gartersnakes, and western pond turtles are analyzed for potential effects of this project and discussed below. No plant species of conservation concern are found in the creek or riparian zone near the project area.

c. **Federally protected species**

Central California Coast Steelhead DPS (Threatened): This protected salmonid is **PRESENT IN THE PROJECT AREA**. The purpose of the project is to facilitate steelhead dispersal throughout the rock area. Steelhead/rainbow trout have long been documented to be present in the San Francisquito watershed, but, as with most salmonid populations in similar small water sheds, few specifics are known about the mean number of individuals annually spawning in the system. There are non-migratory adults in the downstream reaches of San Francisquito, Los Trancos, Corte Madera, and Bear Creeks, but recent surveys by Stanford do not attempt to conclusively distinguish between the migratory and non-migratory forms. The majority of individuals encountered in our surveys were juveniles. For study and management purposes, all *O. mykiss* in the reaches downstream from Searsville Dam have been considered to be steelhead.

Relatively large numbers of parr are typically found in Los Trancos Creek and in a few portions of San Francisquito Creek and Bear Creek. In the project area, surveys conducted by Stanford in the late 1990s and early 2000s estimated the number of steelhead/rainbow trout per mile (via intensive single-pass electrofishing) to be from ~125 per mile to 225 per mile, which translates to approximately 15 to 30 individual steelhead/rainbow trout within the project area. During the last five years of drought most of the creek in the project area was dry during the summers. 2016 has seen more rain in the area, but the creek flows are still impacted by the extremely dry conditions caused by the drought and there may be lasting effects of the dry conditions. As a result of the drought, it is expected that the density of steelhead/rainbow trout encountered

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

during construction of the project will be much lower than previously recorded for the area.

California red-legged frog (Threatened): This species is currently **NOT PRESENT** at the project site. California red-legged frogs (CRLF) are protected by the USFWS and have been monitored annually on Stanford lands since 1997. These annual Stanford surveys documented two distinct frog populations on University lands, one along Matadero and Deer creeks, and one along San Francisquito Creek, including the project area. The population along Matadero and Deer creeks is covered by Stanford's approved HCP, and has persisted through the recent drought. No frogs from the San Francisquito Creek population of CRLF have been observed since 2007, and this likely extirpated population is not covered in the Stanford HCP (2013).

Starting in the early 2000s the distribution and abundance of CRLF in the Stanford portion of the San Francisquito Creek watershed has declined and no CRLF have been observed in annual surveys since 2007 (and none from the project area since 1999). The reasons for this decline are unclear. Isolation, modification of surrounding upland habitat, and disease (the chytrid fungal pathogen *Batrachochytrium dendrobatidis* has been confirmed to present in the watershed) are possible factors, but the precise reasons behind the decline is not known. California red-legged frogs are still likely present in the upper portions of the San Francisquito watershed, particularly in the spatially extensive lands owned by the Mid-Peninsula Open Space District (MPOSD). These MPOSD areas are located approximately 2 miles west and south of the project site and have not been comprehensively surveyed from CRLF since the onset of the recent drought.

San Francisco gartersnake (Endangered): This subspecies is **NOT PRESENT** in the project area or anywhere on lands owned by Stanford. Stanford is within the southern portion of the red-sided/San Francisco gartersnake intergrade zone (Barry 1994, Fitch 1941, Fox 1951, Rossman *et al.* 1996, Stanford 2011 and 2013; USFWS 2012). The intergrade populations of this species, *Thamnophis sirtalis*, have been studied at Stanford and vicinity for nearly 100 years, have been surveyed annually at Lagunita since 2013, and other areas at Stanford since 2014. At the present time, this species is infrequently encountered at Stanford; a few individuals are encountered at Lagunita every year, but surveys of other locations at Stanford have not found these intergrade gartersnakes for several decades (surveys at SLAC and the nearby former Christmas tree farm by Barry 1976, Balgooyen 1981, Seib and Papenfuss 1981, found one intergrade individual in 1981[Seib and Papenfuss] in a drainage near the main SLAC accelerator building). Surveys since 2014 in locations on Stanford lands away from Lagunita have not found any gartersnakes of this species. Additionally, no *T. sirtalis* have been observed during the creek surveys conducted annually since 1997.

Bay checkerspot butterfly (Threatened): The Bay checkerspot butterfly, *Euphydryas editha bayensis*, is **NOT PRESENT** in the project area and is no longer found at

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

Stanford. There is designated Critical Habitat for this insect subspecies located ~0.5 miles from the project area. This butterfly resides in serpentine soil-based grasslands and is not associated with creeks or riparian vegetation. This subspecies was studied annually at Stanford beginning in early 1960s, but has not been observed since the late 1990s. Annual monitoring of its habitat is still conducted.

California tiger salamander (Threatened): The California tiger salamander is **NOT PRESENT** in the project area. This species is the focus of an approved Habitat Conservation Plan/Incidental Take Permit at Stanford. The local salamander population has been the focus of research by University scientists since the 1940s and has been intensively monitored annually since the early 1990s. The project area is 3.5 miles from the nearest California tiger salamander breeding pond.

d. Species not federally protected but which are of conservation concern and might be found in the project area

Western pond turtle: Western pond turtles are **UNLIKELY TO BE PRESENT** in the project area. Western pond turtles are the only native turtles found at Stanford. They are found scattered throughout San Francisquito Creek, from Searsville Dam to the downstream edge of Stanford's boundary. In the Jasper Ridge Biological Preserve, they have also been historically found along marshier areas of Searsville Reservoir, and one was observed at the reservoir in 2015. Pond turtles are present at Felt Reservoir (located three miles from the project site), and more than a dozen individuals have been identified at this water supply Reservoir during the last four years. Despite annual creek surveys and numerous biology classes visiting the project area, no western pond turtles have been seen in the project area since 1999. Turtles are observed with some regularly, during the annual creek surveys and by academic researchers, in locations downstream of the project area (generally 1.25 miles downstream of the project area).

There are no historic quantitative records of turtle abundance or distribution in the watershed, and the status of the local population is unclear. The paucity of sightings of adult turtles in the creeks and nearly complete absence of juvenile turtles suggests that the local turtle population is low in number and likely declining. Western pond turtles are currently being studied at Stanford. The first phase of this work is underway at Felt Reservoir (5 individuals radio tagged, and 7 others marked). The second phase of this work intends to focus on San Francisquito Creek, in a reach located approximately 1 mile downstream of the project area. Preliminary scouting for the second phase of this project indicates that the proposed work in San Francisquito Creek may be shifted to another location due to lack of turtles.

Freshwater mussel (*Anodonta* species): Freshwater mussels are very **UNLIKELY TO BE PRESENT** in the project area. At least one species of freshwater mussel is present in

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

the San Francisquito Watershed as indicated by the *Anodonta* shells that are occasionally found during the annual creek surveys which have been conducted since 1997. During these annual surveys only two live mussels have been recorded in the Stanford portion of the watershed. The paucity of records of any kind indicate that freshwater mussels are quite uncommon in the watershed. Since they are uncommon in the watershed and since most of the project area went dry during each of the last few summers, it is very unlikely that mussels are present in the project area.

San Francisco dusky-footed woodrat: This subspecies, *Neotoma fuscipes annectens*, is common in the San Francisquito Creek Watershed, and is **PRESENT IN THE PROJECT AREA**. The riparian zones in the local watersheds support this subspecies, and their large nests are easily observed. During night surveys along the creeks, conducted primarily for frogs, woodrats are one of the most frequently encountered animal species. No San Francisco dusky-footed woodrat nests, however, are anticipated to be impacted by the project but relocation or avoidance protocols will be implemented if nests are encountered during construction.

4. Effects of the proposed project on the Critical Habitat and species discussed above

a. Critical Habitat

Critical Habitat for the Central California Coast steelhead DPS: This Critical Habitat will be **IMPROVED** by the project. Currently the existing low flow crossing is located in the upper/middle portion of the designated Critical Habitat. The project site is located downstream of the Critical Habitat located in the Bear Creek subwatershed and portion of Corte Madera Creek (downstream from Searsville Dam), and upstream from the portion of the Critical Habitat extending from the low flow crossing to San Francisco Bay. Completion of this project will facilitate upstream and downstream fish dispersal throughout the Critical Habitat. Completion of this project will also eliminate warm-water pool currently located just upstream from the crossing, and restore a more natural creek channel. The project is not anticipated to negatively effect, and will potentially incrementally improve access to potential salmonid spawning areas within the Critical Habitat.

Construction-related impacts will be temporally and spatially limited due to the projected length of construction time (less than six weeks) and extent of temporarily disrupted creek (250 feet). Potential impacts will be further minimized due to the typical low flow rate of the creek in the project area during the time of proposed construction. No construction-related impacts are anticipated in reaches upstream of the project site. Downstream of the project site there may be some very minor and temporary alterations of creek flow as cofferdams and bypass pipes are installed and removed. This potential impact will be minor and will not dewater any downstream reaches. Given the general lack of continuous surface flow in the area during each of the last few summers, creek flow is not anticipated to be impacted by construction activities.

Critical Habitat of the Bay checkerspot butterfly: There will be **NO IMPACT** on the butterfly Critical Habitat by this project.

b. **Species**

Central California Coast Steelhead DPS: Completion of this project will **BENEFIT** the steelhead by eliminating a potential partial barrier to dispersal. This project will also eliminate the relatively long, warm and deep pool located upstream of the existing low flow crossing. This pool will be replaced by a channel which is designed to mimic the creek channel in nearby reference reaches. It is anticipated that after completion of this project, the channels immediately upstream and downstream from the site will adapt through time and better mimic the local, natural conditions. Maintenance (removal of accumulated debris and potentially minor repair of the surface during the dry season) of the new facility will not impact steelhead/rainbow trout.

Construction-related impacts on Central California coast steelhead will be **MINOR AND TEMPORARY**, and involve removing any individuals from the construction site, and releasing them into the nearest reach with appropriate conditions (likely downstream 10 to 20 meters from the project area). Based on previous work in the area, approximately 15 to 30 individual steelhead/rainbow trout may need to be relocated out of the project area. Given the possible enduring impacts of the recent drought and the year's rains, a broader range of number of individuals possibly encountered in the project area will be considered: 100 individuals. Previous fish relocations at Stanford have been completed with no observed mortalities or injuries of the captured and relocated steelhead/rainbow trout. Such activities can be stressful to the fish and some loss of individuals may result from this type of work.

California red-legged frog: There will be **NO IMPACT** of this project on California red-legged frogs. California red-legged frogs have not been observed in the Stanford portion of the San Francisquito Creek Watershed since 2007, and have not been observed in the project area since 1999. There is no evidence that CRLF presently traverse the project area. Shortly (within a year) after construction of this project is completed, the creek and riparian vegetation present in the project area will be similar to other nearby reaches. If in the future CRLF are again present in the area, the project site will provide habitat of quality similar to nearby reaches and the project site will be of better habitat quality than is present under existing conditions.

As they have been since the 1990s, annual surveys for red-legged frogs will be conducted throughout Stanford's portion of the watershed, including the project area. The site of the proposed low flow crossing project will be targeted for additional day and night surveys, in advance of the start of construction.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

San Francisco gartersnake: There will be **NO IMPACT** of this project on San Francisco gartersnakes. This subspecies is not found at Stanford, and no individuals of the species have been observed at the project area.

Bay checkerspot butterfly: There will be **NO IMPACT** of this project on Bay checkerspot butterflies. The local populations of this subspecies went extinct in the late 1990s and their habitat is located on the ridge, approximately 0.5 miles from the project area.

California tiger salamander: There will be **NO IMPACT** of this project on California tiger salamanders. The local population is the salamander is centered more than 3.5 miles away from the project site.

Western pond turtle: Completion of this project will have **NO IMPACT** (or will possibly provide a slight **BENEFIT**) on western pond turtles. The existing low flow crossing is not a barrier to turtle dispersal, but the project will eliminate the relatively long, deep, and un-natural for the area, pool found just upstream of the existing low flow crossing. This pool has not been observed to support pond turtles in recent years (turtles are observed annually in more natural reaches downstream of the project area). This pool will be replaced by a channel which is designed to mimic the creek channel in nearby reference reaches. It is anticipated that without the low flow crossing in place, the channels immediately upstream and downstream from the site will be able to change through time and better mimic the local, natural conditions. Maintenance of the new facility will also not impact pond turtles.

Construction-related impacts will have **NO IMPACT** on western pond turtles as none are expected to be present in the project area, and none are anticipated to need to be captured and relocated. Annual surveys for turtles will be continued throughout Stanford's portion of the watershed, including the project area. The site of the proposed low flow crossing project will be targeted for additional day surveys, in advance of the start of construction. If a turtle is found in the project area, it will be captured and relocated to a nearby area with conditions for turtle survival.

Freshwater mussel (*Anodonta* species): Completion of this project will have **NO IMPACT**, or will possibly provide a slight **BENEFIT**, to freshwater mussels. Although the project will eliminate the relatively long and deep pool found just upstream of the existing low flow crossing, this pool has not been observed to support freshwater mussels. This pool will be replaced by a channel which is designed to mimic the creek channel in nearby reference reaches (some of which are apparently occupied by mussels). It is anticipated that without the low flow crossing in place, the channels immediately upstream and downstream from the site will be able to change through time and better mimic the local, natural conditions. Maintenance of the new facility will also not impact freshwater mussels.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

Construction-related impacts will have **NO IMPACT** on freshwater mussels as none are expected to be present in the project area. Annual surveys for creek-dwelling species will be continued throughout Stanford's portion of the watershed, including the project area. The site of the proposed low flow crossing project will be targeted for additional day surveys, in advance of the start of construction.

San Francisco dusky-footed woodrat: Completion of this project will have **NO IMPACT** on San Francisco dusky-footed woodrats. The reconfigured crossing and improved creek channel will have no impact on the riparian vegetation, and hence the woodrats. Maintenance of the new facility will also not impact woodrats.

Construction-related impacts will be **MINOR AND TEMPORARY**. Woodrats are often disturbed the noise and vibration of nearby construction and it anticipated that some individuals will relocate themselves during periods of active construction. No woodrat nests are anticipated to directly impacted by construction (there is very little vegetation trimming associated with the proposed work). A survey of the project area for woodrat nests will be conducted prior to construction so that they can be relocated or avoided.

c. Cumulative impacts of this and other projects potentially occurring in the watershed in the foreseeable future

Several other creek-related projects in the watershed are either scheduled for construction or are in the planning stages.

San Mateo County – Alpine Road stabilization: San Mateo County has proposed to conduct two bank stabilization projects along Alpine Road in the summer of 2016. These sites are located along Los Trancos Creek, and are not directly downstream of the proposed San Francisquito Creek low flow crossing project. Potential temporary and permanent impacts of these bank stabilization projects will not synergistically interact with construction of the low flow crossing (given the size and nature of the low flow crossing project, it is extremely doubtful that any physical impacts from the low flow crossing will be measureable in the reaches more than a few tens of meters downstream of the project area).

Lagunita Diversion Dam Removal: Stanford is analyzing potential removal of the Lagunita Diversion dam, also known by some locally as the Happy Hollow Dam and a project to remove it is being designed. This potential project is in San Francisquito Creek and is located approximately 3.5 miles downstream of the low flow crossing project site. The two projects are not anticipated to result act synergistically and result in unexpected negative cumulative effects.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

Searsville Dam/Reservoir Modification: There is an ongoing process to determine possible modifications of Searsville Dam/Reservoir. Searsville Dam is less than 0.5 mile upstream from the low flow project site. The planning process for a project at Searsville is progressing, but the specifics of any project at the dam/reservoir and the time-table of a construction project are still being determined. Design of the low flow project has taken into account the range of physical changes to the watershed that might result from a variety of Searsville-related projects but given the undetermined timing and scope of the Searsville Project cumulative effects are not anticipated to be significant.

5 Conclusions and rationale

The project has been designed to benefit Central California Coast Steelhead by removing a potential impediment barrier to fish dispersal and establishing more natural creek conditions in a small reach of San Francisquito Creek. Some construction-related impacts to this protected species are anticipated, in the form of the need to capture and relocate a few individuals out of the construction zone. This capture and relocation may result in minor effects to species, but based on the success of previous capture and relocation efforts in creeks at Stanford, it is anticipated that it can be accomplished with no mortalities or injuries to steelhead/rainbow trout. Given the recent drought the number of individual steelhead/rainbow trout which are anticipated to be encountered during the project is low, likely fewer than the 15 to 30 individuals estimated in the project site during electrofishing activities in the late 1990s and early 2000s. A conservative (maximum) estimate of the number of individual steelhead/rainbow trout that could be encountered by this project is 100 likely all juveniles, and potentially resident rainbow trout adults could be encountered. All native fishes will be captured and safely relocated. This project may temporarily effect Central California Coast Steelhead during construction, but is anticipated to provide a net benefit to the species in the future. Similarly, the Critical Habitat for Central California Coast Steelhead DPS is anticipated to be enhanced by this project.

No other federally protected species, or other species of conservation concern, will be negatively impacted by this project.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

6 Literature cited

Balance Hydrologic. Annual water quality and stream flow monitoring of San Francisquito and Los Trancos creeks. Unpublished reports submitted annually to Stanford, 2002 to present.

Balگوoyen, T. G. 1981. The Occurrence of the San Francisco Garter Snake and Subspecific Intergrade Populations at Stanford Linear Accelerator Center (SLAC), Phase II. Draft Environmental Assessment. SLAC (1981): 118-121.

Barry, S. 1976. Investigations on the occurrence of the San Francisco garter snake at the Stanford Linear Accelerator Center. Unpublished report to the Stanford Linear Accelerator Center (SLAC-TN-76-5). 13 pages.

Barry, S. 1994. *The distribution, habitat, and evolution of the San Francisco garter snake, *Thamnophis sirtalis tetrataenia**. Unpublished Masters dissertation, U.C. Davis, 143 pages.

Barry, S.J., and M. R. Jennings. 1998. *Coluber infernalis* Blainville 1835 and *Eutaenia sirtalis tetrataenia* Cope in Yarow, 1875 (currently *Thamnophis sirtalis infernalis* and *T. s. tetrataenia*; Reptilia: Squamata): proposed conservation of the subspecific names by the designation of a neotype for *T. s. infernalis*. Bulletin of Zoological Nomenclature 55: 224-228.

California Department of Fish and Wildlife. 2010. California Salmonid Stream Habitat Restoration Manual. Access online from <http://www.dfg.ca.gov/fish/resources/habitatmanual.asp>

Evelyn, M.J., D.A. Stiles, and R.A. Young. 2004. Conservation of bats in an urban landscape: roost site selection *Myotis yumanensis* in a residential area in California. Biological Conservation 15: 463-473. Additionally, multiple course-related projects have focused on the bats of Jasper Ridge including projects by Chang, A. (1999), Lebacqz, K. (1998), and Sedgwick, J. (1994).

Fitch, H. S. 1941. Geographic variation in the garter snakes of the species *Thamnophis sirtalis* in the Pacific Coast region of North America. American Midland Naturalist 26: 570-592.

Fox, W. 1951. The status of the garter snake *Thamnophis sirtalis tetrataenia*. Copeia 1951 (4): 257-267.

Northwest Hydraulic Consultants. 2004. San Francisquito Creek. Watershed analysis and sediment reduction plan. Unpublished report submitted to San Francisquito Creek Joint Powers Authority. 121 pages.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

Biological Assessment for Stanford low flow crossing project 13 May 2016

Rossman, D.A., N.B. Ford, and R.A. Seigel. 1996. The garter snakes: evolution and ecology. University of Oklahoma Press, Norman, Oklahoma, 332 pages.

Seib, R. L. and T. J. Papenfus. 1981. Survey of SLAC lands for San Francisco garter snakes. Unpublished report to the Stanford Linear Accelerator Center (SLAC-TN-81-8). Nine pages.

Stanford University. 2011. DRAFT Stanford University Habitat Conservation Plan. Accessible online <http://hcp.stanford.edu/>.

Stanford University. 2013. Stanford University Habitat Conservation Plan. Accessible online <http://hcp.stanford.edu/>.

Sokol, D. 1963. The hydrology of the San Francisquito Creek Basin, San Mateo and Santa Clara Counties, California. Unpublished Doctoral Dissertation, Stanford University.

U.S.F.W.S and N.M.F.S. 2012. Final environmental impact statement for authorization of incidental take and implementation of the Stanford University Habitat Conservation Plan. 693 pages. Accessible online <http://hcp.stanford.edu/>.

Weiss, S.B., P.M. Rich, and A.E. Launer. 2008. San Francisquito Creek Habitat Monitoring Project, Final Report. Stream Temperature Characterization. Unpublished report submitted to the San Francisco Foundation. 34 pages.

San Mateo County Planning Commission Meeting

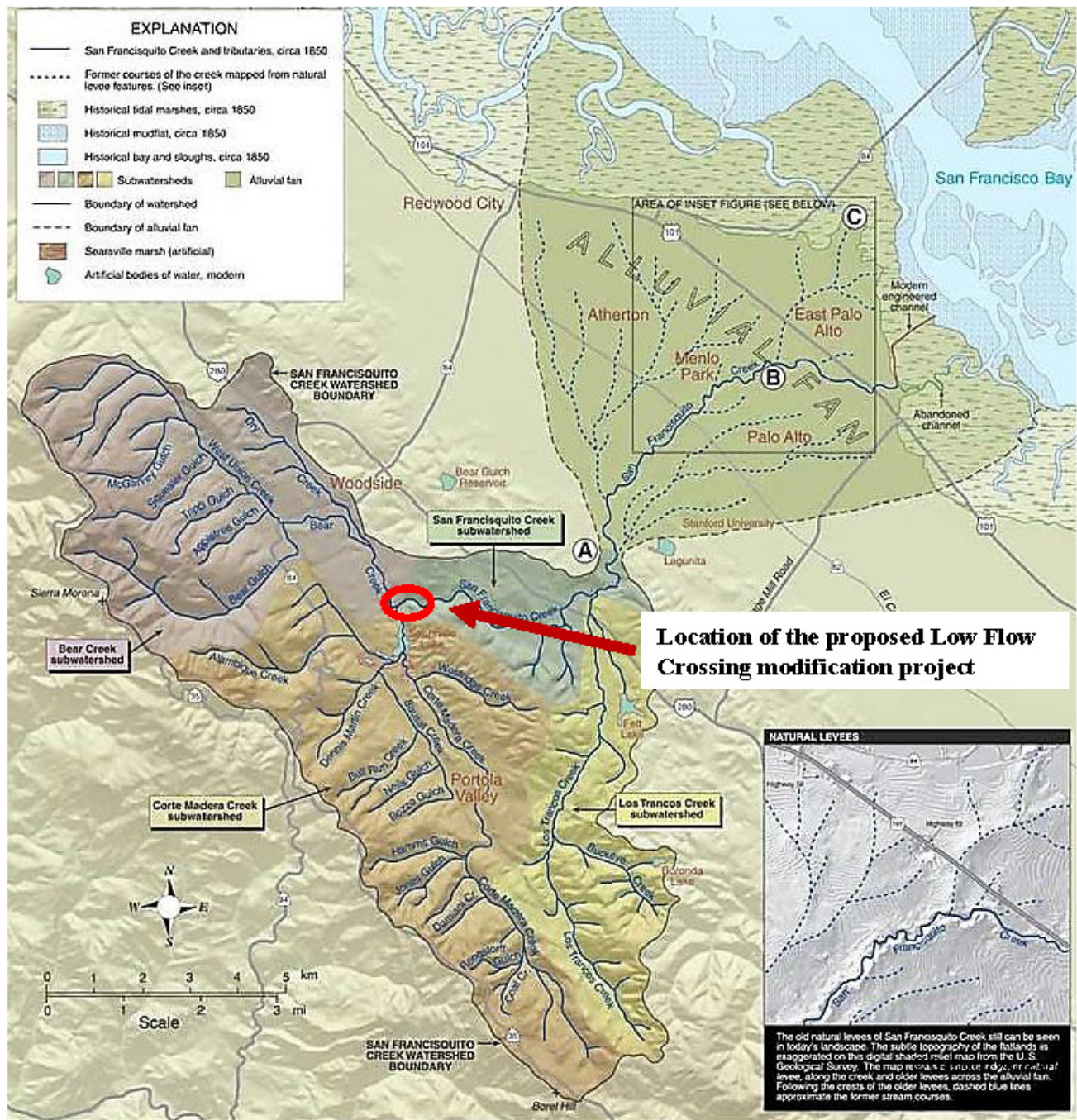
Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

Section 8 - Figures

Figure 1 Low Flow Crossing Modification Project - Location



The proposed Low Flow Crossing modification project is located in San Francisco Creek Watershed, on San Francisco Creek, approximately 1/10 mile downstream from the confluence of Corte Madera and Bear creeks.

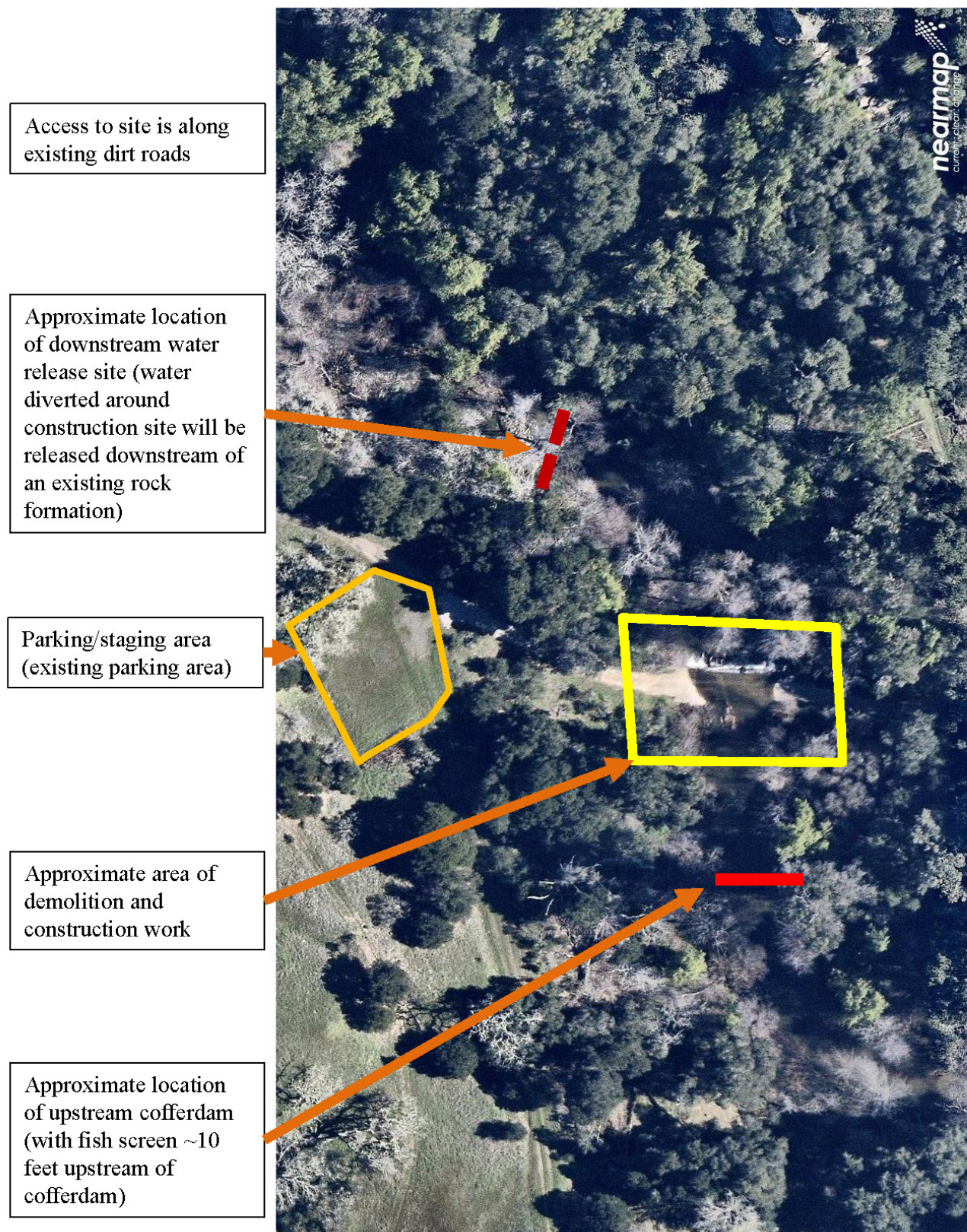
San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

Figure 2 Low Flow Crossing Modification Project - project tsite



Aerial view of project area (1 Feb 2016; NearMap)

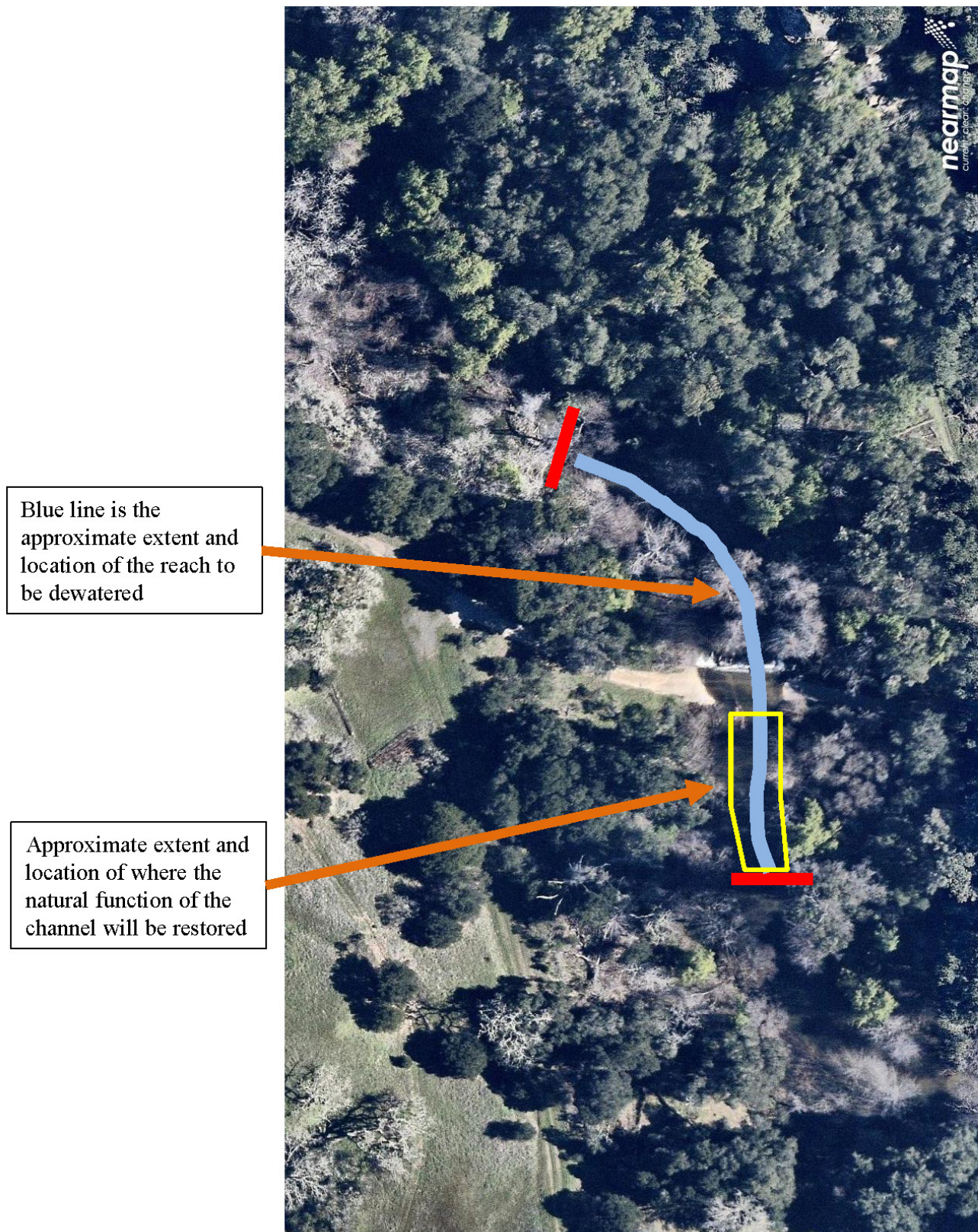
San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

Figure 3 Low Flow Crossing Modification Project - site



Aerial view of project area (1 Feb 2016; NearMap)

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

Figure 4 Low Flow Crossing Modification - site conditions



Low Flow Crossing 22 April 2005 (reach immediately upstream from crossing)



Low Flow Crossing 25 September 2014 (reach immediately upstream from crossing)

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

Figure 5 Low Flow Crossing Modification - site conditions



Low Flow Crossing 22 April 2005 (reach immediately downstream from crossing)



Low Flow Crossing 25 September 2014 (reach immediately downstream from crossing)

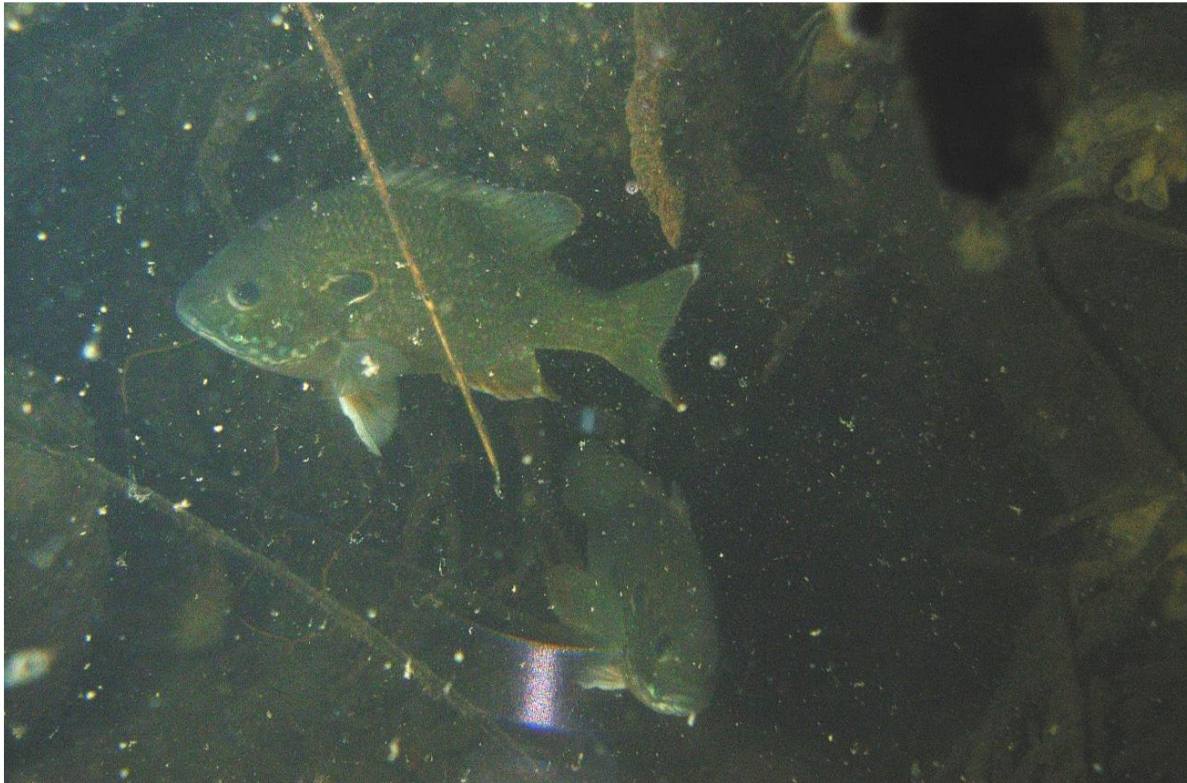
San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

Figure 6 Low Flow Crossing Modification - site conditions



Pool immediately downstream from the low flow crossing 7 Aug 2006



Pool upstream from Low Flow Crossing 28 Sept 2006

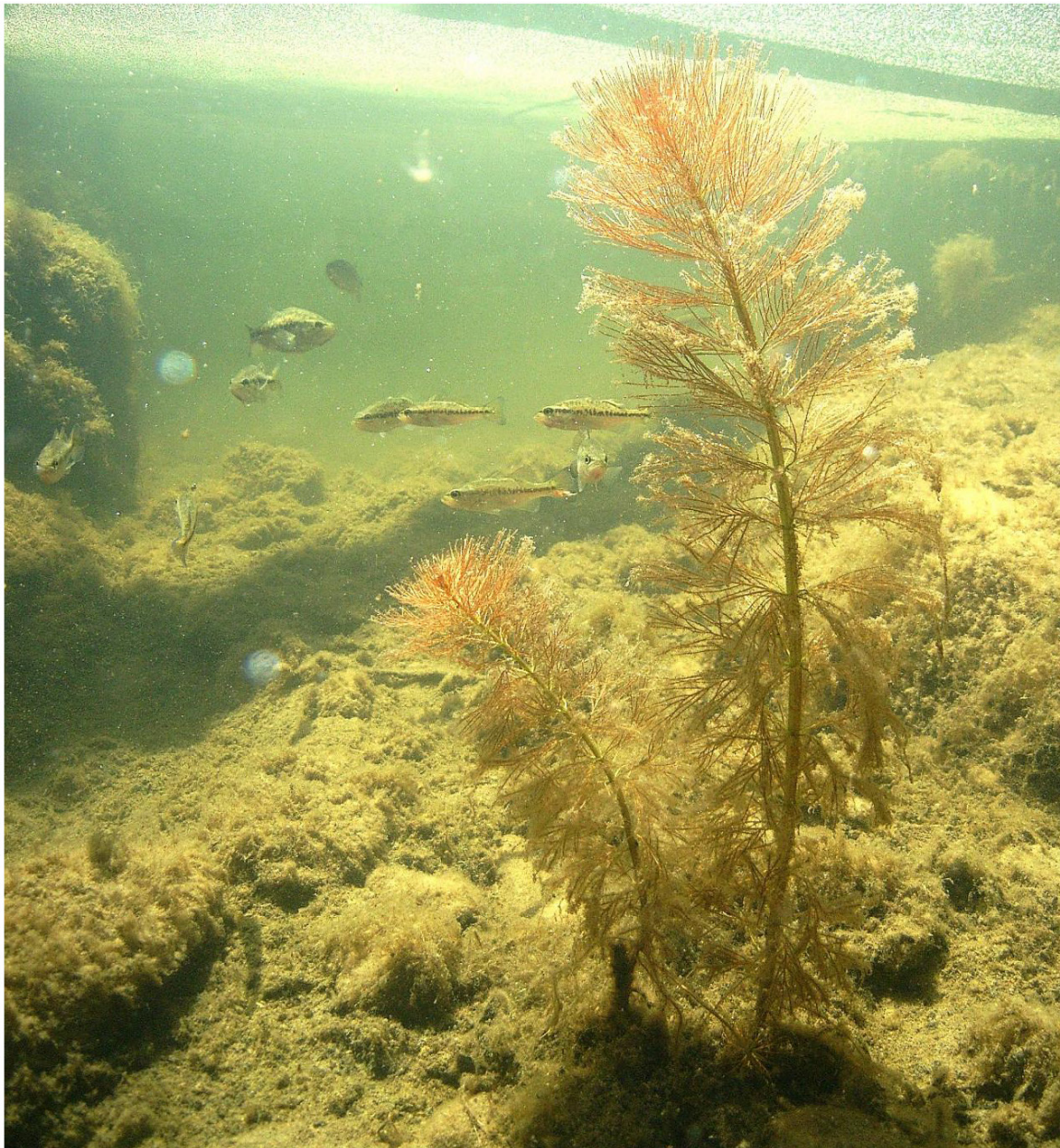
San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

Figure 7 Low Flow Crossing Modification - site conditions



Pool upstream from Low Flow Crossing 18 August 2006

9 List of preparers

This document was prepared by Alan E. Launer, Stanford University (cv attached).

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

ALAN EUGENE LAUNER

Land Use and Environmental Planning
Stanford University
3160 Porter Drive
Palo Alto, CA 94304
(650) 714-4807
fax (650) 725-8598
aelauner@stanford.edu

1881 Appletree Lane
Mountain View, CA 94040
(650) 964-5454
(650) 714-4807 (cell)
aelauner@stanford.edu

EDUCATION

- 1982-1989 HARVARD UNIVERSITY
DEPARTMENT OF ORGANISMIC AND EVOLUTIONARY BIOLOGY
Ph.D. (1989) and A.M. (1986) degrees in biology, with emphasis on functional morphology, ontogeny, and ecology of centrarchid fishes.
- 1977-1982 STANFORD UNIVERSITY
DEPARTMENT OF BIOLOGICAL SCIENCES
M.S. (1982) and B.S. (1982) degrees in biology, with emphasis on population biology and evolutionary ecology of *Euphydryas* butterflies.

PROFESSIONAL APPOINTMENTS AND POSITIONS

- 1991-present STANFORD UNIVERSITY
Land, Buildings, and Real Estate
Conservation Program Manager (formerly called **Campus Biologist**). Provide University with technical support on conservation issues concerning preservation of biotic diversity, conduct surveys, inventories, and monitoring for plant and animal species of conservation concern on Stanford lands, develop and implement University-wide conservation plans (including Stanford's HCP and California Tiger Salamander Management Agreement), develop appropriate mitigation for University projects, hire, train, and supervise program personnel, write technical reports, participate in University committees and meetings, represent the University at meeting with the public and wildlife conservation agencies.
- 1989-present **Independent Consultant**. Conduct surveys and inventories for plant and animal species of conservation concern, develop habitat management plans, provide recommendations for mitigation, hire, train, and supervise field assistants, write technical reports, and present results and recommendations in public and private forums. Recent activities include working for Santa Clara County (via Jones and Stokes) on the south Santa Clara County HCP, conducting field work and analyses on the callippe silverspot butterfly in Pleasanton (for Robert Harris Associates), reviewing materials and preparing conservation alternatives for Delta smelt conservation plans (for Nossaman, Guthner, Knox & Elliott), reviewing materials and contributing the Sharp Park Golf Course conservation program (for San Francisco Parks and Recreation Department).
- 1995-2012 STANFORD UNIVERSITY
1991-1993 PROGRAM IN HUMAN BIOLOGY
Instructor/lecturer. Developed and taught upper-level undergraduate course in conservation biology (Conservation Biology, listed in Biological Sciences as Biology 144 and in Human Biology as Human Biology 112).

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

1994-2006	STANFORD UNIVERSITY CENTER FOR CONSERVATION BIOLOGY, DEPARTMENT OF BIOLOGICAL SCIENCES Research Associate. Conducted research in conservation biology. Responsibilities included design and completion of field and laboratory projects, writing technical reports, hiring, training, and supervision of research assistants, preparation and submission of grant proposals, and writing of manuscripts for peer-reviewed journals. Also obtained permits for Center work on protected organisms and access to reserves, and advised graduate and undergraduate research.
1989-1994	STANFORD UNIVERSITY CENTER FOR CONSERVATION BIOLOGY, DEPARTMENT OF BIOLOGICAL SCIENCES Postdoctoral Fellow. Conducted research in conservation biology. Responsibilities included design and completion of field and laboratory projects, hiring and supervision of research assistants, and writing of manuscripts for peer-reviewed journals.
1987-1988 1982-1985	HARVARD UNIVERSITY DEPARTMENT OF ORGANISMIC AND EVOLUTIONARY BIOLOGY Teaching Fellow. Conducted laboratory and discussion sections, and supervised undergraduate research projects for courses in introductory biology, ichthyology, evolutionary biology, and ethology.
1986	NORTHEASTERN UNIVERSITY MARINE SCIENCE CENTER Lecturer. Designed and taught summer-session course in ichthyology.
1984-1986	HARVARD UNIVERSITY DEPARTMENT OF ORGANISMIC AND EVOLUTIONARY BIOLOGY Tutor. Designed and taught seminar course in ecological morphology and evolution.
1981, 1988	STANFORD UNIVERSITY DEPARTMENT OF BIOLOGICAL SCIENCES Teaching Assistant. Conducted discussion sections for courses in introductory biology and evolutionary ecology.
1978-1982	STANFORD UNIVERSITY DEPARTMENT OF BIOLOGICAL SCIENCES Research Assistant. Conducted research on the population biology and community ecology of <i>Euphydryas</i> butterflies and <i>Anolis</i> lizards. Field work was conducted throughout the western United States and in the Lesser Antilles.

FELLOWSHIPS, HONORS, and COMMITTEES

2004	Scientific Advisory Committee, City of Santa Cruz Habitat Conservation Plan
2001-2003	Scientific Advisory Committee, East Contra Costa County Habitat Conservation Plan
1998-1999	Board of Directors, Coyote Creek Riparian Station.
1990-1994	Stanford University Postdoctoral Fellowship.
1987	Certificate of Distinction in Teaching, Harvard University Committee on Undergraduate Education.
1984-1989	Harvard University Graduate Fellowship.
1982-1984	National Institutes of Health Musculo-Skeletal Training Grant Fellowship.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

1984

Harvard University Richmond Fund Graduate Research Grant Award.

PUBLICATIONS

- Iwasa, Y., F. J. Odendaal, D. D. Murphy, P. R. Ehrlich, and A. E. Launer. 1983. Emergence patterns in male butterflies: a hypothesis and a test. *Theoretical Population Biology* 23: 363-379.
- Murphy, D. D., A. E. Launer, and P. R. Ehrlich. 1983. The role of adult feeding in egg production and population dynamics of the checkerspot butterfly *Euphydryas editha*. *Oecologia* 56: 257-263.
- Ehrlich, P. R., A. E. Launer, and D. D. Murphy. 1984. Can sex ratio be defined or determined? The case of a population of checkerspot butterflies. *American Naturalist* 124: 527-539.
- Launer, A. E. 1989. Ontogenetic changes in the kinematics of prey capture in centrarchid fishes. Doctoral dissertation, Harvard University.
- Launer, A. E., D. D. Murphy, J. M. Hoekstra, and H. R. Sparrow. 1992. The endangered Myrtle's silverspot butterfly (*Speyeria zerene myrtilae*, Nymphalidae): present status and initial conservation planning. *Journal of Research on the Lepidoptera* 31: 132-146.
- Fleishman, E., J. F. Baughman, A. E. Launer, and P. R. Ehrlich. 1993. The effect of fluorescent pigments on butterfly copulation. *Ecological Entomology* 18: 165-167.
- Launer, A. E., D. D. Murphy, C. L. Boggs, J. F. Baughman, S. B. Weiss, and P. R. Ehrlich. 1993. Puddling behavior by Bay checkerspot butterflies (*Euphydryas editha bayensis*). *Journal of Research on the Lepidoptera* 32: 45-52.
- Launer, A. E. and D. D. Murphy. 1994. Umbrella species and the conservation of habitat fragments: a case of a threatened butterfly and a vanishing grassland ecosystem. *Biological Conservation* 69: 145-153.
- Fleishman, E., A. E. Launer, K. R. Switky, and S. B. Weiss. 1994. Multi-level monitoring of the endangered plant *Cordylanthus palmatus* at the Springtown Alkali Sink. Western Wetlands: Selected Proceedings of the 1993 Conference of the Society of Wetland Scientists, Western Chapter. Pages 20 to 32.
- Launer, A. E., and D. D. Murphy. 1994. The decline of Myrtle's silverspot butterfly (*Speyeria zerene myrtilae*). *Tideline* 14: 1-3.
- Sisk, T. D., A. E. Launer, K. R. Switky, and P. R. Ehrlich. 1994. Identifying extinction threats. *BioScience* 44: 592-604.
- Sisk, T. D., A. E. Launer, K. R. Switky, and P. R. Ehrlich. 1995. Reassessing threats to biodiversity: two replies. *BioScience* 45: 380.
- Hoekstra, J. M., R. Bell, A. E. Launer, and D. D. Murphy. 1995. Soil arthropod abundance in Coast redwood forests: effect of selective timber harvest. *Environmental Entomology* 24: 246-252.
- Sisk, T. D., A. E. Launer, K. R. Switky, and P. R. Ehrlich. 1996. Identifying extinction threats. Pages 53 to 68 *in: Ecosystem Management. Selected Readings*. F. B. Samson and F. L. Knopf, editors, Springer-Verlag New York, Inc., New York. (Reprinted from *BioScience* 44: 592-604.)
- Austin, G. T., N. M. Haddad, C. Mendez, T. D. Sisk, D. D. Murphy, A. E. Launer, and P. R. Ehrlich. 1996. Annotated checklist of the butterflies (Lepidoptera) of Tikal National Park and vicinity (Peten, Guatemala). *Tropical Lepidoptera* 7: 21-37.
- Blair, R. B. and A. E. Launer. 1997. Butterfly diversity and human land use: species assemblages along an urban gradient. *Biological Conservation* 80: 113-125.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

Austin, G. T., C. Mendez, and A. E. Launer. 1998. A preliminary checklist of Guatemala butterflies: Hesperidae (Lepidoptera: Hesperioidea). *Tropical Lepidoptera* 9 (Supplement 2): 8-19.

Fleishman, E., G. H. Wolff, C. L. Boggs, P. R. Ehrlich, A. E. Launer, J. O. Niles, and T. H. Ricketts. 1999. Conservation in practice: overcoming obstacles to implementation. *Conservation Biology* 13: 450-452.

Johnson, P. T. J., K. B. Lunde, E. G. Ritchie, and A. E. Launer. 1999. Trematode infection causes severe limb abnormalities and reduced survivorship in frogs. *Science* 284: 802-804.

Fleishman, E., A. E. Launer, S. B. Weiss, J. M. Reed, C.L. Boggs, D. D. Murphy and P. R. Ehrlich. 2001. Effects of microclimate and oviposition timing on prediapause larval survival of the Bay checkerspot butterfly, *Euphydryas editha bayensis* (Lepidoptera: Nymphalidae). *Journal of Research on the Lepidoptera* 36: 31-44.

Fleishman, E., A. E. Launer, K. R. Switky, U. Yandell, J. Heywood, and D. D. Murphy. 2001. Rules and exceptions in conservation genetics: genetic assessment of the endangered plant *Cordylanthus palmatus* and its implications to management planning. *Biological Conservation* 98: 45-53.

Fellers, G. M., A. Launer, G. Rathbun, S. Bobzien, J. Alvarez, D. Sterner, R. Seymour, M. Westphal. 2001. Overwintering tadpoles in the California red-legged frog (*Rana aurora draytonii*). *Herpetological Review* 32:156-157.

Johnson, P. T. J., K. B. Lunde, E. G. Ritchie, J. A. Reaser, and A. E. Launer. 2001. Morphological abnormality patterns in a California amphibian community. *Herpetologica* 57: 336-352.

Hartel, K. E., D. B. Halliwell, and A. E. Launer. 2002. Inland Fishes of Massachusetts. Massachusetts Audubon Society Press.

Hellman, J. J., S. B. Weiss, J. F. McLaughlin, C. L. Boggs, P. R. Ehrlich, A. E. Launer, D. D. Murphy. 2003. Do hypotheses from short-term studies hold in the long-term? An empirical test. *Ecological Entomology* 28: 74-84.

Austin, G. T., D. D. Murphy, J. F. Baughman, A. E. Launer, and E. Fleishman. 2003. Hybridization of checkerspot butterflies in the Great Basin. *Journal of the Lepidopterists' Society* 57:176-192.

Hellman, J. J., S. B. Weiss, J. F. McLaughlin, P. R. Ehrlich, D. D. Murphy, and A. E. Launer. 2004. Structure and dynamics of *Euphydryas editha* populations. Chapter 3 in: On the wings of checkerspots. A model system for population biology. Edited by P. R. Ehrlich and I. Hanski, Oxford University Press.

Ayres, D. R., E. Fleishman, A. Launer, A. K. Lee, and D. Zippen. 2015. Genetic structure and demography of *Chloropyron palmatum*, and endangered annual plant. *Madrono* 62: 139-149.

More than 100 technical reports on the status of species of conservation concern at proposed development sites, on potential impacts of development on threatened and endangered species, on potential mitigation options, on development, management and implementation of monitoring activities, and on reserve design and management. Reports have focused on invertebrates, lower vertebrates, and plants of the San Francisco Bay area. Reports have been prepared for Stanford University, U.S. Fish and Wildlife Service, U.S. Park Service, California Department of Fish and Game, San Mateo County, Santa Clara County, Mid-Peninsula Regional Open Space District, and The Nature Conservancy, major corporations (including Waste Management Inc., Shea Homes, Pebble Beach Company, Marin Coast Golf Ranch Associates, Cerro Plata Development, and Hix Rubenstein Companies), and consulting firms (including Thomas Reid Associates, H. T. Harvey and Associates, Harding Lawson Associates, Zander Associates, L.S.A. Associates, Inc., CH2MHILL, Jones and Stokes, and Nolte Associates).

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: D

File Numbers: PLN2017-00113

PLN2017-00113

TECHNICAL CONSTRUCTION SPECIFICATIONS
for the
LOW-FLOW CROSSING MODIFICATION PROJECT
SAN FRANCISQUITO CREEK

County of San Mateo

Issued for Review
Not for Construction

RECEIVED
MAR 22 2017
San Mateo County
Planning Division

February 13, 2017



**Balance
Hydrologics, Inc.**

800 Bancroft Way, Suite 101, Berkeley, California 94710
510-704-1000 510-704-1001(fax) www.balancehydro.com

In Collaboration With:

LTD Engineering, Inc.

1050 Northgate Drive, Suite 315
San Rafael, CA 94903

Tel: 415.446.7402
Fax: 415.446.7419
gdearth@LTDengineering.com



**VAZIRI
STRUCTURAL
ENGINEERING**

905 FOURTH STREET
SAN RAFAEL, CA 94901
P. 415.453.0733
F. 415.453.0785

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

SECTION 00 01 10

TABLE OF CONTENTS

VOLUME I - BIDDING DOCUMENTS AND SPECIFICATIONS

DIVISION 00 - PROCUREMENT AND CONTRACTING DOCUMENTS

00 01 10 Table of Contents

DIVISION 01 - GENERAL REQUIREMENTS

01 35 44 Environmental Requirements

01 57 36 Temporary Creek Diversion

01 90 00 Mobilization and Demobilization

DIVISION 03 - CONCRETE

03 30 00 Concrete

DIVISION 31 - EARTHWORK

31 00 00 Earthwork

31 13 13 Tree Protection and Removal

31 23 19 Dewatering

31 25 00 Erosion Control

DIVISION 35 - STRUCTURES

35 42 00 Bioengineered Bank Protection (in process)

END OF SECTION 00 01 10

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

SECTION 01 35 44

ENVIRONMENTAL REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Contractor shall be responsible for maintaining compliance with applicable Federal, State, and Local environmental regulations in its execution of the Work.
2. Contractor is responsible for adhering to the requirements of the permits for the project.
3. Implement the required environmental plans, procedures, and controls described herein during performance of the Work.
4. Meet with the Project Manager prior to commencement of the Work to review the project environmental requirements as applicable to the Contractor's procedures and to develop mutual understandings relative to compliance with the environmental protection requirements and administration of the Contractor's environmental pollution control programs.

B. Site Activities

1. No debris, soil, silt, sand, bark, slash, sawdust, asphalt, rubbish, paint, oil, cement or concrete or washings thereof, oil or petroleum products, or other organic or earthen materials from construction activities shall be allowed to enter into or be placed where it may be washed by rainfall or runoff outside the construction limits. When operations are completed, excess materials or debris shall be removed from the work area by legal means and at the cost of the Contractor.
2. Excess material shall be disposed of in locations approved by the Project Manager consistent with all applicable legal requirements. For materials disposed offsite, the Contractor shall obtain disposal facility permits as needed. Recycled materials shall be recycled offsite as per State and Local regulations.
3. Do not create a nuisance or pollution as defined in the California Water Code. Do not cause a violation of any applicable water quality standards for receiving

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

- waters adopted by the Regional Board or the State Water Resources Control Board, as required by the Clean Water Act.
4. Clean up all spills and immediately notify the Project Manager in the event of a spill.
 5. Stationary equipment such as motors, pumps, and generators, shall be equipped with drip pans.
 6. Divert or otherwise control surface water and waters flowing from existing projects, structures, or surrounding areas from coming onto the work areas. The method of diversions or control shall be adequate to ensure the safety of stored materials and of personnel using these areas. Following completion of Work, ditches, dikes, or other ground alterations made by the Contractor shall be removed and the ground surfaces shall be returned to their former condition or as near as practicable in the opinion of the Project Manager.
 7. Maintain construction sites to ensure that drainage from these sites will minimize erosion of stockpiled or stored materials and the adjacent native soil material. The Contractor shall replace materials lost due to erosion at no additional cost and be responsible for remediating any impacts at or outside the project site from eroded materials.
 8. Furnish all labor, equipment, and means required and shall carry out effective measures wherever, and as often as necessary, to prevent Contractor's operations from causing visible dust emissions to leave the work areas. These measures shall include, but are not limited to, providing additional watering equipment, reducing vehicle speeds on haul roads, restricting traffic on haul roads, covering haul vehicles, and applying a Project Manager-approved, environmentally safe, dust palliative to well-traveled haul roads. The Contractor shall be responsible for damage resulting from dust originating from its operations. The dust abatement measures shall be continued during all grading and earthwork construction activities. Water the site in the morning and evening, and clean vehicles leaving the site as necessary to prevent the transportation of dust and dirt onto public roads. Dust control involving water shall be done in such a manner as to minimize runoff from the site.
 9. Furnish all labor, equipment and means required to prevent excessive noise from its Work activities. Comply with all local noise ordinances.
 10. All construction equipment shall be properly serviced and maintained in good operating condition to reduce emissions. Contractor shall make copies of equipment service logs available upon request.
 11. Any chemical or hazardous material used in the performance of the Work shall be handled, stored, applied, and disposed of consistent with all applicable Federal, State, and Local laws and regulations.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

12. Contaminated materials excavated from the construction area shall be disposed of consistent with all applicable Local, State, and Federal laws and regulations.

C. Related Sections

1. 01 57 36 Temporary Creek Diversion
2. 03 30 00 Concrete
3. 31 00 00 Earthwork
4. 31 13 13 Tree Protection and Removal
5. 31 23 19 Dewatering

1.02 DEFINITIONS

- A. Hazardous waste: A waste or combination of wastes as defined in 40 CFR 261.3, or regulated as hazardous waste in California pursuant to Chapter 11, Division 4.5, Title 22, California Code of Regulations, and Chapter 6.5, Division 20, California Health and Safety Code, or those substances defined as hazardous wastes in 49 CFR 171.8.

1.03 SUBMITTALS

- A. The Contractor shall submit an Access, Staging, and Material Handling Plan. See Section 01 90 00 Mobilization and Demobilization.

PART 2 - PRODUCTS

2.01 PRESERVATION FENCING

- A. Preservation fencing material shall be brightly colored (clearly visible) mesh, at least 48 inches high, and securely fastened to metal posts.

PART 3 - EXECUTION

3.01 PRESERVATION FENCING

- A. Temporary preservation fencing shall be provided around areas not to be disturbed including construction limits of disturbance, trees and vegetation requiring protection, completed construction as work is progressing, and other items as directed by the Project Manager.
- B. Install fencing to protect large areas and other vegetation as a group rather than individual trees where feasible. Protective fencing shall be placed around the perimeter of the dripline at minimum.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

- C. Preservation fencing shall be furnished, constructed, maintained, and later removed as specified in these Technical Specifications and as directed by the Project Manager. Preservation fencing that is damaged from any cause during the progress of the work shall be repaired or replaced by the Contractor at the Contractor's expense.
- D. When no longer required for the work as determined by the Project Manager, preservation fencing shall be removed. Removed facilities shall become the property of the Contractor and shall be removed from the site of the work, except as otherwise provided in this Section.
- E. Holes, trenches and other soil disturbance caused by the removal of preservation fencing shall be backfilled and permanently stabilized.

3.02 WASTE DISPOSAL

- A. Transport materials in accordance with all Local, State, and Federal laws, rules, and regulations.

3.03 DUST CONTROL

- A. The Contractor shall provide dust control at all times, including holidays and weekends, as required to abate dust nuisance on and about the site which is a result of construction activities. Dust control shall be by means of sprinkled water or by other approved methods. Chemicals, oil, or similar palliative shall not be used.
- B. Quantities and equipment for dust control shall be sufficient to effectively prevent dust nuisance on and about the jobsite; and when weather conditions warrant.
- C. The Project Manager shall have authority to order dust control work whenever conditions warrant, and there shall be no additional cost to the Owner therefor. Dust control shall be effectively maintained whether or not the Project Manager orders such work.
- D. Complaints from the public shall be reported to the Project Manager and shall be acted on immediately.
- E. Where earthwork operations are in progress, keep exposed earth surfaces dampened continuously. Also, keep dirt access and roads dampened continuously.
- F. If portions of the site are temporarily inactive or abandoned for whatever reason, provide dust control and abatement continuously during such periods of inactivity.
- G. Where dust resulting from construction activities has collected on public sidewalks and streets, hose down such sidewalks and streets to abate flying dust particles. Clean all sidewalks and streets from accumulated dirt and dust.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

3.04 SOUND CONTROL

- A. Comply with all local sound control and noise level rules, regulations and ordinances which apply to any work performed pursuant to the contract. Contractor is responsible for taking appropriate measures, including muffling of equipment, selecting quieter equipment, modifying work operations, and other mitigations as needed to bring construction noise into compliance.
- B. Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler.

3.05 CLEAN UP

- A. Contractor shall restore site to pre-project conditions or better.
- B. No hazardous waste, refuse, equipment, fuels, or construction materials to be left on site at completion of construction.
- C. Contractor shall remove Preservation Fencing and all temporary erosion control measures at completion of project.
- D. See Section 01 90 00 Mobilization and Demobilization for additional requirements.

END OF SECTION 01 35 44

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

SECTION 01 57 36

TEMPORARY CREEK DIVERSION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. The work of this section consists of providing all necessary labor, tools, equipment, and incidentals to divert creek flow as needed to complete the work described in these Technical Specifications and developed in the Diversion and Dewatering Plan. The Contractor shall be responsible for implementing the creek diversion and/or dewatering work, including, but not limited to, fish screens, cofferdams, pumps, and piping as needed over the duration of the project.
- B. Project Manager shall approve the Diversion and Dewatering Plan prior to installation.
- C. San Francisquito Creek at the site will likely be dry at time of construction. However, as a first order of work Contractor shall coordinate with Project Manager to assess whether creek diversion is necessary. If creek diversion is deemed necessary, all such work shall comply with these Technical Specifications.
- D. The diversion systems shall be furnished and installed, maintained, and later removed as detailed in the approved Diversion and Dewatering Plan, as specified herein, and as directed by the Engineer.
- E. The work of this section shall comply with all environmental and permitting requirements as referenced herein, or elsewhere in these Technical Specifications.

1.02 DEFINITIONS

- A. "Diverted Water" shall mean water pumped or diverted by gravity means from the creek upstream of the required cofferdam as necessary to comply with permits and allow the work described in the Technical Specifications to be completed.
- B. "Sump Water" shall mean water that is collected and pumped from low points within the limit of grading for creek and structural work. Collection, handling, and disposal of sump water is not included in this Section, see Section 31 23 19 - Dewatering.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

1.03 RELATED SECTIONS

- A. Related Work Specified Elsewhere: As applicable, related work specified elsewhere may include, but is not limited to, the following:
 - 1. 01 35 44 Environmental Requirements
 - 2. 31 23 19 Dewatering

1.04 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM D3786 Standard Test Method for Bursting Strength of Textile Fabrics
- B. The Contractor shall be responsible for assuring that all required regulatory agency permits have been approved by the respective agencies. The Contractor shall be responsible for understanding and complying with all permit requirements, including, but not limited to, the permits referenced herein.
 - 1. United States Army Corps of Engineers (USACE) Permit
 - 2. California Department of Fish and Wildlife (CDFW), Lake and Streambed Alteration Agreement
 - 3. Regional Water Quality Control Board (RWQCB), 401 Water Quality Certification

1.05 SUBMITTALS

- A. At the request of the Project Manager, due to changed hydrologic conditions that present likely runoff or high groundwater in otherwise typical dry conditions, the Contractor shall submit a Diversion and Dewatering Plan to the Project Manager. The plan shall clearly describe the schedule, sequencing, methods, and equipment for the installation, operation, and removal of all creek diversion systems.
- B. Diversion and Dewatering Plan shall be submitted by Contractor to Project Manager within 5 days of request for plan by Project Manager, as driven by changing field conditions that present concerns for water on site during construction.
- C. No work related to creek diversion or dewatering shall be allowed without prior acceptance of the Diversion and Dewatering Plan by the Project Manager.
- D. The Diversion and Dewatering Plan shall include, but not be limited to, the following detailed information on diversion, at a minimum:

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

Diversion (as requested by Project Manager)

1. Coordination of the work with biological screening and fish relocation requirements and activities. The Diversion and Dewatering Plan schedule shall provide details confirming that installation of the creek diversion equipment will not commence until biological screening and fish relocation has been completed.
2. All proposed equipment that will be used including screens, pumps, piping, couplings, valves, and other incidental materials subject to the requirements specified herein. Calculations shall be provided demonstrating that the proposed system will convey the flows specified herein.
3. Measures that will be taken to comply with all water-quality related permit conditions that may apply from regulatory agency permits.
4. Measures that will be taken to comply with Owner requirements related to noise reduction and control during installation, operation, and removal of the diversion systems.
5. Contingency measures to be activated in the event of rainfall in the creek watershed.
6. Methods and sequencing of work for rewatering of the creek and removal of the diversion systems once all other work within the channel has been completed.

PART 2 - PRODUCTS

2.01 PUMP

- A. The pump (or pumps) and pumping apparatus used for the temporary creek diversion shall be of the submersible type with sufficient flow capacity as determined by Engineer at time of request for Diversion and Dewatering Plan. It shall be the Contractor's responsibility to provide power to operate the creek diversion systems, including the pumping equipment, as needed to assure that the diversion operates 24 hours per day, every day, from the time diversion implementation is deemed necessary to final completion of that work. The Contractor shall provide back-up power as needed to assure 24-hour diversion operation. All equipment, including any generators used for primary or back-up power supply, shall be operated in compliance with all County noise reduction requirements.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

2.02 GRAVELBAGS

- A. Gravelbag fabric for use in constructing the cofferdams shall be woven polypropylene, polyethylene, or polyimide with a minimum unit weight of 0.25 pound/square yard. The fabric shall have a mullen burst strength of at least 300 psi, per ASTM Designation: D3786 and an ultraviolet (UV) ability exceeding 70 percent.
- B. Gravelbag fill material shall be non-cohesive gravel and sand, free from deleterious material, silt, clay or fines.

2.03 IMPERMEABLE PLASTIC SHEETING

- A. Impermeable plastic sheeting shall be suitable for use as protective liner and shall be commercial quality polyethylene with a minimum thickness of 0.25 mm. All plastic sheeting shall be free of cracks, cleavages, or other defects adversely affecting the waterproof characteristics of the material.

2.04 PIPES AND FITTINGS

- A. Pipes, couplings, valves, and other fittings shall be of the size needed to effectively convey the maximum diversion capacity as determined by Engineer at time of request for Diversion and Dewatering Plan. The material shall be selected for flexibility and durability to allow for the occasional relocation of the diversion piping during construction activities.

2.05 FISH SCREEN

- A. Fish screen material shall be woven wire mesh with a maximum opening not to exceed 3/32 inches, measured diagonally, and total area not less than 50 square feet.

PART 3 - EXECUTION

3.01 SITE EXAMINATION

- A. Contractor shall visit the worksite and become aware of any and all existing conditions that may affect installation, operation, and removal of the temporary creek diversion systems.

3.02 ENVIRONMENTAL COORDINATION

- A. The Contractor shall comply with all regulatory agency permit requirements and the provisions included in Section 01 35 44 Environmental Requirements.
- B. Creek diversion work within the banks of the creek shall not commence until the Contractor has been notified by the Project Manager that all biological screening and fish relocation activities have been completed.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

3.03 INSTALLATION OF DIVERSION SYSTEM

- A. The temporary creek diversion shall be installed as a first order of work prior to any construction activities within the banks of the creek.
- B. Installation, operation, and removal of the temporary creek diversion shall be restricted to the period as defined by the regulatory permit requirements.
- C. The temporary creek diversion shall include a fish screen and cofferdam at the upstream end of the work and an energy dissipater at the downstream end of the work. The fish screen shall be constructed using screen material conforming to the specifications herein and shall provide a complete barrier to fish passage at all times the creek diversion system is operating. The cofferdam shall be constructed using gravel bags and plastic sheeting, or equivalent non-sedimenting materials. Alternative cofferdam construction materials and methods may be used only with prior approval by the Engineer.
- D. The location of the fish screen and cofferdam, if required by Project Manager, to be determined by Project Manager. Contractor shall be responsible for confirming the extent of the creek work with the Engineer and shall adjust the locations of the upstream and downstream limits of diversion, including fish screen and cofferdam, as needed to accommodate that work and as directed by the Engineer. The preferred configuration shall utilize the downstream bedrock ledge identified on the Drawings as the downstream limit in lieu of a second cofferdam.
- E. Diverted water shall be returned to the creek downstream of the bedrock ledge in a manner that limits discharge velocity and the potential for erosion. The diversion piping outfall and energy dissipation provisions shall be inspected and approved by the Engineer prior to operation of the diversion system.
- F. Diversion system components shall be installed and maintained during the period of creek diversion such that all regulatory permit requirements are met.

3.04 OPERATION OF DIVERSION SYSTEM

- A. The Engineer and Project Manager shall be notified immediately if creek flows exceed the capacity of the diversion system or if rain is forecast within the creek watershed during diversion system operation.
- B. If during the progress of the work it becomes necessary to reposition or relocate portions of the temporary creek diversion system, the work shall be done at Contractor's expense and no additional compensation shall be provided therefore.
- C. Any portion of the temporary creek diversion system that is damaged from any cause during the progress of the work shall be repaired or replaced by Contractor at Contractor's expense.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

3.05 REMOVAL OF DIVERSION SYSTEM

- A. When work within the channel banks has been completed, the diversion system shall be removed beginning with the fish screen and then the upstream cofferdam. All diversion equipment shall be removed from the site at the Contractor's expense.

END OF SECTION 01 57 36

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

SECTION 01 90 00

MOBILIZATION AND DEMOBILIZATION

PART 1 – GENERAL

1.01 SCOPE

- A. Mobilization shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; the establishment of temporary facilities necessary for work on the project; and all other work and operations that must be performed or costs incurred before work begins on the various Contract items on the project site.
- B. Preservation Fencing shall be installed as described by Section 01 35 44 Environmental Requirements.
- C. Access includes crossing an existing stream bank. Contractor is responsible for protecting the stream bank and restoring the existing grade and pre-project condition at the completion of construction. A temporary ramp of gravel on the access route with a minimum of 1-foot of gravel cover on the stream bank on slope may be required.
- D. Gravelbag berms shall be installed by contractor at the upstream and downstream limits of project as shown on the Drawings.

1.02 RELATED SECTIONS

- A. 01 35 44 Environmental Requirements
- B. 01 55 26 Traffic Regulation
- C. 01 57 36 Temporary Creek Diversion
- D. 03 30 00 Concrete
- E. 31 00 00 Earthwork
- F. 31 23 19 Dewatering

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

1.03 SUBMITTALS

- A. Contractor shall submit Access, Staging, and Material Handling Plan to Project Manager within one week of Notice to Proceed. Mobilization shall not occur until a satisfactory Plan is accepted and approved by the Project Manager.
- B. Contractor shall submit an Access, Staging, and Material Handling Plan that shall present, at a minimum:
 - 1. Access: Expected activities and equipment associated with ingress and egress points.
 - 2. Staging: Locations where equipment will be staged, temporarily stored, and maintained.
 - 3. Materials: Locations within the project limits where materials will be stored and staged, inclusive of excavated material for salvage, excavated material for offsite disposal, and imported material.
 - 4. Expected schedule and associated phasing of staging and access areas.
 - 5. Coordination with the Diversion and Dewatering Plan, if required by Project Manager (see Sections 01 57 36 and 31 23 19).
 - 6. Sequencing of channel grading activities and concrete work.
 - 7. Means and methods for the location and protection of the 12-inch diameter water line.
 - 8. Specific means and methods for excavating, trenching, drilling of piers, and handling of concrete related to construction of the new crossing.
 - 9. Specific measures to be taken to protect trees that are to be preserved and assure that excavation and fill activities do not harm such trees.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

3.01 MOBILIZATION

- A. Before the Contractor begins work, the Contractor (including but not limited to any subcontractors and project foremen) shall be required to schedule and attend a one-day meeting at the project site with the Owners, the Project Manager, the Engineer or Engineer's Representative, and others as necessary to review and

BALANCE HYDROLOGICS, INC.

01 90 00 Mobilization and Demobilization
01 90 00 - 2

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

discuss the overall implementation of the project including: design objectives, environmental permit limitations, endangered species issues, archaeological concerns, emergency contact information and protocol, contract management and chain of command, project construction documents, implementation schedule (including key milestones), and any addenda.

- B. The Contractor shall confine all storage of materials, preparatory work, equipment, and vehicle parking to the staging areas shown on the Drawings. The Contractor shall supply all vehicles with a minimum of one fire extinguisher, one shovel, and a spill clean-up kit. Appropriate precautions shall be taken by the Contractor to minimize fire at the project site at all times.

3.02 SITE ACCESS AND STAGING AREAS

- A. The work site shall be accessed from Sand Hill Road as shown in the Drawings and as confirmed in the field by the Project Manager. The Contractor shall be responsible for providing suitable access to the site along the identified access routes.
- B. Vehicular trips on Sand Hill Road shall be limited to the maximum extent practicable.
- C. Staging areas shall be located and confined to the areas identified in the Drawings and confirmed in the field by the Project Manager.
- D. Personal vehicles shall be parked in the staging area. Construction vehicles while not in use shall be parked in the staging area.

3.04 PROTECTIONS FOR TREES AND VEGETATION

- A. Trees specified for removal will be marked for removal by the Project Manager; all other trees and riparian species will be left undisturbed.

3.05 DEMOBILIZATION

- A. Demobilization tasks shall consist of work and operations at the conclusion of construction, including, but not limited to necessary activities for the removal of personnel, equipment, supplies, and incidentals from the project site; removal of temporary facilities and materials; and all other work and operations that must be performed or costs incurred to conclude work on the various Contract items for the project.

3.06 CONSTRUCTION ACCESS ROUTE DECOMMISSIONING

- A. Construction access route decommissioning shall be as shown on the Drawings and as described in 31 25 00 Erosion Control.
- B. All fences and gates temporarily removed to develop access and staging shall be

BALANCE HYDROLOGICS, INC.

01 90 00 Mobilization and Demobilization
01 90 00 - 3

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

restored to original alignment and condition comparable to pre-project conditions.
Contractor shall be responsible for any damages and repairs to restore fences
altered or damaged by construction.

END OF SECTION 01 90 00

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

SECTION 03 30 00

CONCRETE

PART 1 – GENERAL

1.01 SCOPE

- A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures, and finishes.

1.02 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section, including the following:
 - 1. 01 35 44 Environmental Requirements
 - 2. 31 00 00 Earthwork
 - 3. 31 23 19 Dewatering

1.03 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.

1.04 SUBMITTALS

- A. Product Data: Contractor shall submit specifications for rebar and epoxy no less than 7 days prior to use. Engineer or Engineer's Representative shall approve rebar and epoxy prior to delivery and use on site and shall approve materials upon arrival.
- B. Design Mixtures: For concrete mixture, submit plant specification to Engineer no less than 7 days prior to planned use. Engineer shall approve design mixture prior to use by Contractor.
- C. Steel Reinforcement Shop Drawings: Details of fabrication, bending, and placement, prepared according to ACI 315, "Details and Detailing of Concrete Reinforcement." Include material, grade, bar schedules, stirrup spacing, bent bar

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

diagrams, arrangement, and supports of concrete reinforcement.

- D. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
1. Cementitious materials and aggregates.
 2. Steel reinforcement and reinforcement accessories.
 3. Admixtures.
 4. Curing materials.

1.05 REFERENCED STANDARDS

- A. ASTM C94/C94M Standard Specification for Ready-Mixed Concrete
- B. ASTM A615/A615M Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
- C. ASTM C150 Standard Specification for Portland Cement
- D. ASTM C618 Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
- E. ASTM C33 Standard Specification for Concrete Aggregates
- F. ASTM D1752 Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed concrete work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 1. Manufacturer must be certified according to the National Ready Mixed Concrete Association's Certification of Ready Mixed Concrete Production Facilities.
- C. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

- D. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301, "Specification for Structural Concrete."
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- E. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
 - 1. Class A, 1/8 inch for smooth-formed finished surfaces exposed to view.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 - PRODUCTS

2.01 FORMING MATERIALS

- A. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- B. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- C. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
- D. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

2.02 STEEL REINFORCEMENT

- A. Reinforcing bars for hoops and longitudinal bars: ASTM A 615/A 615M, Grade 60, deformed, #4 rebar.
- B. Embedded rod bars: ASTM A 615/A 615M, Grade 60, deformed, #6 rebar.

2.03 REINFORCEMENT ACCESSORIES

- A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire,

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete.

2.04 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 - 1. Portland Cement: ASTM C 150, Type II
 - a. Fly Ash: ASTM C 618, Class F.
- B. Normal-Weight Aggregates: ASTM C 33, coarse aggregate or better, graded. Provide aggregates from a single source.
 - 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M.

2.05 ADMIXTURES

- A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.
- B. Air-Entraining Admixture: ASTM C 260.

2.06 CURING AND SEALING MATERIALS

- A. Unitex 12-34 NSF curing, sealing, hardening and dustproofing compound manufactured by Unitex, Kansas City, MO 816-231-7700.

2.07 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1752, cork or self-expanding cork.
- B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2.08 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, as follows:

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

1. Proportion normal-weight concrete according to ACI 211.1 and ACI 301.
- B. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- C. Proportion concrete mix as follows:
 1. Compressive Strength (28 Days): 4000 psi
 2. Maximum Slump: 4 inches.
- D. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
 1. Fly Ash: 25 percent.
- E. Maximum Water-Cementitious Materials Ratio: 0.50
- F. Air Content: Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content of 2 to 4 percent, unless otherwise indicated.
- G. Admixtures: Use admixtures according to manufacturer's written instructions.
 1. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.

2.09 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and furnish batch ticket information.

2.10 EPOXY FOR EMBEDDED RODS

- A. Epoxy shall be Hilti HIT-ICE injectable mortar, or approved equal.

PART 3 - EXECUTION

3.01 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Construct forms tight enough to prevent loss of concrete mortar.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

- D. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces.
- E. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- F. Chamfer exterior corners and edges of all permanently exposed concrete.
- G. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- H. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- I. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement

3.02 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete.
 - I. Install embedded rods and anchor bolts, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

3.03 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

3.04 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

impaired, at locations indicated or as approved by Engineer.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.

3.05 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement, unless approved by Engineer.
- C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- D. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 1. When average high and low temperature is expected to fall below 40 degrees F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

- E. Hot-Weather Placement: Comply with ACI 301 and as follows:
1. Maintain concrete temperature below 90 degrees F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.06 FINISHING FORMED SURFACES

- A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
1. Apply smooth-formed finish to concrete surfaces on baffles and sills, unless otherwise noted on Drawings.

3.07 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces by the following method:
1. Curing and Sealing Compound: Apply uniformly to slabs or beams in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.08 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement. Sampling and testing for quality control may include those specified in this Section.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mix exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
 2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
 3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C 173, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
 4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
 5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of four standard cylinder specimens for each composite sample.
 6. Compressive-Strength Tests: ASTM C 39; test two laboratory-cured specimens at 7 days and two at 28 days.
- C. Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- D. Test results shall be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.
- F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by Engineer.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

END OF SECTION 03 30 00

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

SECTION 31 00 00

EARTHWORK

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. The work of this section consists of providing all necessary labor, tools, equipment, and incidentals for excavation and placement of diverse types of fill to construct the roughened channel in order to complete the work described in the Technical Specifications and shown on the Drawings.
- B. The work of this section shall comply with all environmental and permitting requirements as referenced herein, elsewhere in the Technical Specifications, and on the Drawings.

1.02 RELATED SECTIONS

- A. 01 35 44 Environmental Requirements
- B. 01 90 00 Mobilization and Demobilization
- C. 35 42 00 Bioengineered Bank Protection

1.03 DEFINITIONS

- A. “Unsuitable material” shall mean excavated material or material below the natural ground surface in embankment areas or below sub-grade elevation in excavated areas, which is unsuitable for its planned use. Unsuitable material is further defined as material determined to be:
 - 1. Of such nature as to be incapable of being compacted to specified density using ordinary methods at optimum moisture content; or
 - 2. Too wet to be properly compacted and circumstances prevent suitable drying prior to incorporation into the work; or
 - 3. Otherwise unsuitable for the planned use.
 - 4. The presence of excessive moisture in a material is not, by itself, sufficient cause for determining that the material is unsuitable. The existence of

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

unsuitable material may be indicated in the Drawings or may be determined by the Engineer's Representative during the progress of the work.

- B. "Salvaged Native Bed Material" shall mean excavated native bed material approved by Engineer or Engineer's Representative to be used as channel fill, as shown on the Drawings.
- C. "Excavation" shall mean removal of material encountered above subgrade elevations and to lines and dimensions indicated on the Drawings.
- D. "Authorized Additional Excavation" shall mean excavation below subgrade elevations or beyond indicated lines and dimensions as directed by the Engineer's Representative. Authorized additional excavation and replacement material will be paid for according to Contract provisions for Extra Work.
- E. "Bulk Excavation" shall mean excavation of a broad nature that is not trenching. Generally, more than 10 feet in width and more than 10 feet in length.
- F. "Unauthorized Excavation" shall mean excavation below subgrade elevations or beyond indicated lines and dimensions shown on the Drawings without direction by the Engineer's Representative. Unauthorized excavation, as well as remedial work directed by the Engineer's Representative, shall be without additional compensation.
- G. "Rock excavation" shall mean removal of solid material which by actual demonstration cannot, in the opinion of the Engineer's Representative, be reasonably loosened or ripped by power equipment equivalent to a CAT 350 Trackhoe Excavator, or similar, and that must be systematically drilled or broken with power-operated hammers or other such equipment or removal of solid rock boulders greater than 54 cubic feet in volume.
- H. "Structures" shall mean buildings, footings, foundations, columns, retaining and/or seat walls, slabs, tanks, curbs, underground utility structures, or other man-made stationary features constructed above or below the ground surface.
- I. "Subgrade" shall mean surface or elevation remaining after completing excavation, or top surface of an embankment fill or backfill immediately below subbase, base, topsoil, or other subsequent fill materials.
- J. "Utilities" shall mean on-site pipes, conduits, ducts, and cables, as well as underground services within buildings.
- K. "Relative compaction" shall mean the ratio, expressed as a percentage, of the in-place dry density of material as compacted in the field to the maximum dry density of the same material as determined by laboratory test ASTM D1557.
- L. "Optimum moisture content" shall mean the water content at which a soil can be compacted to a maximum dry unit weight by a given compactive effort.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

- M. "Relative density" shall mean the mass per unit volume as specified in ASTM D4253 and ASTM D4254, as applicable to the soil and test method employed.
- N. "Fill" shall mean any fill material, including native bed material.
- O. Soil Classification: Soil classification is based on the Unified Soil Classification System given in ASTM D2487. Group symbols, when used, conform to the symbols of ASTM D2487.
- P. Earthwork Terminology: Terms used in this Section and not defined herein shall be interpreted in accordance with the definitions given in ASTM D653.

1.04 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM C136 Test Method for Sieve Analysis of Fine and Coarse Aggregates
 - 2. ASTM D422 Method for Particle-Size Analysis of Soils
 - 3. ASTM D653 Terminology Related to Soil, Rods, and Contained Fluids
 - 4. ASTM D1557 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.54-kg) Rammer and 18-in. (457-mm) Drop
 - 5. ASTM D2487 Test Method for Classification of Soils for Engineering Purposes
 - 6. ASTM D2974 Test Method for Moisture, Ash, and Organic Matter of Peat and Other Organic Materials
 - 7. ASTM D4253 Test Methods for Maximum Index Density of Soils Using a Vibratory Table
 - 8. ASTM D4254 Test Methods for Minimum Index Density of Soils and Calculation of Relative Density
- B. State of California, Department of Transportation (CalTrans), Standard Test Methods:
 - 1. Calif. Test 217 Method of Test for Sand Equivalent

1.05 CLASSIFICATION OF EARTHWORK

- A. For specification purposes, earthwork shall be classified as follows:
 - 1. Excavation: All excavation involved in grading and construction of the

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

roughened channel.

2. Backfill: Excavated material used for grading and construction of the roughened channel.

1.06 SUBMITTALS

- A. General: Submit under the provisions of Section 00 11 00, Summary of Work.
- B. The Contractor shall submit an Access, Staging, and Material Handling Plan (see 01 90 00 Mobilization and Demobilization) that clearly describes the schedule, sequencing, methods, and equipment for all excavation and fill placement activities shown on the Drawings and described in the Technical Specifications.

1.07 REGULATORY REQUIREMENTS

- A. Regulatory requirements that govern the work of this Section include, but are not limited to, the following governing codes:
 1. California Code of Regulations, Title 8, Chapter 4, Subchapter 4 — Construction Safety Orders, and Subchapter 19 — Trench Construction Safety Orders.
 2. California Code of Regulations, Title 24, Part 2, California Building Code, Chapter 33 and Appendix Chapter 33, and Structural Chapters 18 and 18A.

1.08 QUALITY CONTROL

- A. Quality Control: The Contractor shall provide proper quality control measures to assure compliance with specified requirements.
- B. Tolerances:
 1. Construct finished surfaces to plus or minus 3-inches of the elevations indicated and as acceptable to the Engineer's Representative.
 2. Complete slopes to plus or minus 6 inches of the slope line indicated and as acceptable to the Engineer's Representative. Do not encroach on roadbeds or features to remain.

1.09 SITE CONDITIONS

- A. Unfavorable Weather Conditions:
 1. Excavating, filling, and grading work shall not be performed during weather conditions which might damage or be detrimental to the condition of existing ground, in-progress work, or completed work. When the work is interrupted by rain or snow; excavating, filling, and grading work shall not resume until the site and soil condition (moisture content) are suitable for compaction.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

2. Sub grade shall be free from mud, snow, ice, and deleterious material when work is resumed.
- B. Prevention of Erosion: Comply with requirements specified in Section 01 35 44 Environmental Requirements and the following:
 1. Prevent erosion of stockpiles, ditches, embankments, filled, and graded areas until such time as permanent drainage and erosion control measures have been installed.
 2. Perform protective grading to provide positive drainage and to minimize ponding of surface water.
 3. No earthwork shall occur on this project outside project schedule without written approval of the Project Manager.

1.10 EXCAVATION SAFETY

- A. Install and maintain shoring, sheeting, bracing, and sloping necessary to support the sides of excavations, to keep and to prevent any movement, which may damage adjacent facilities, or endanger life and health. Install and maintain shoring, sheeting, bracing, and sloping as required by OSHA and other applicable governmental regulations and agencies.
- B. The Contractor shall be solely responsible for making all excavations in a safe manner. Provide appropriate measures to retain excavation side slopes and prevent rock falls to ensure that persons working in or near the excavation are protected.

PART 2 – PRODUCTS

2.01 EARTHWORK MATERIALS - GENERAL REQUIREMENTS

- A. Material used for fill shall be an inert, inorganic soil, sand, gravel, and cobbles, free from deleterious substances, and of such quality that it will compact and fill voids thoroughly. Excavated on-site material will be considered suitable for fill, if it is free from trash and debris and other deleterious substances and conforms to the requirements specified herein.
- B. Excavated material that is suitable for fill shall be conditioned for reuse and properly stockpiled for later filling operations. Excavated materials shall be deemed suitable if materials conform to the specifications herein and are accepted by the Engineer or Engineer's Representative. Deleterious material shall be removed from the site and disposed of as specified elsewhere in this Section.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

PART 3 – EXECUTION

3.01 STAKING AND GRADES

- A. Lay out the work, establish all necessary markers, bench marks, grading stakes, and other stakes as required, in accordance with the requirements specified in Section 01 71 23 Layout and Staking.

3.02 EARTHWORK GENERAL REQUIREMENTS

- A. Dust Control: Refer to Section 01 35 44 Environmental Requirements for dust control requirements.
- B. Erosion Protection: Prevent erosion of the site at all times.
- C. Construction Traffic: Disperse travel paths of traffic and construction equipment over entire width of compacted surfaces so as to aid in obtaining uniform compaction. Protect exposed soil layers with high moisture content from excessive wheel loads.
- D. On-Site Excavation: Do not excavate or remove any material from the project site or right-of-way which is not within the designated excavation limits, as indicated by the slope and grade lines, and defined in the Drawings, without written authorization from the Engineer's Representative.
- E. Stockpiling of Material:
 - 1. Excavate and separately stockpile suitable material for channel bed material and topsoil, as indicated, during the progress of the excavation work. Save sufficient suitable excavated material, if available, for later use.
 - 2. Store materials from required excavations that are suitable for fill as excavated, in stockpiles segregated by type.
 - 3. Establish excavated material stockpiles on site only in locations where they will not interfere with the progress of the work. Offsite stockpiling, if necessary, shall be the responsibility of the Contractor.
- F. Disposal of Native Surplus Material:
 - 1. Surplus native material shall be disposed of at a location approved by the Project Manager.
 - 2. Delivery to the disposal site shall be the Contractor's responsibility.
- G. Maintenance of Excavations, Slopes, and Embankments:
 - 1. Excavate and remove material outside the limits of the excavation which is unstable and constitutes potential slides, and material which comes into

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

excavations for any reason.

2. Maintain slopes and embankments until substantial completion and acceptance of the work. Promptly repair slides, slipouts, washouts, settlements, and subsidences that occur for any reason, and refinish the slope or embankment to the indicated lines and grades.

3.03 EXCAVATION

A. General Excavation Requirements:

1. It is the responsibility of the Contractor to identify field-verified locations of existing utilities and provide all safety measures necessary to work under and around existing utilities prior to commencing excavation.
2. Native Bed material shall be salvaged and stockpiled in sufficient quantities to meet the demand for placement of native bed material to achieve the finished grades as shown on Drawings.
3. Perform excavation as indicated and required for constructing the roughened channel.
4. Comply with applicable requirements of CCR, Title 8, Trench Construction Safety Orders.
5. The bottoms of excavations shall be level, firm, undisturbed earth, clean and free from loose material, debris, and foreign matter.
6. Limits of excavations shall allow for adequate working space and as required for safety of personnel.
7. Remove unstable bottom material. Remove debris, and compressible soils from the bottom of excavation to a minimum depth of 12 inches. Remove loose and unsound material.
8. Except as otherwise indicated, preserve the material below and beyond the lines of excavations. Where an excavation is carried below the indicated grade, backfill to the indicated grade as herein specified.
9. Excavations for convenience of the Contractor must be approved in advance by the Engineer or Engineer's Representative.
10. Place excavated material at a sufficient distance from edge of excavation so as not to cause cave-ins or bank slides, but in no case closer than 3 feet from the edge of excavations.
11. Excavated material that is suitable for salvage shall be conditioned for re-use and properly stockpiled for later placement as herein specified.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

12. Boulders encountered during excavation shall be properly stockpiled as specified herein for reuse contingent upon the specification in Section 35 42 00 Bioengineered Bank Protection and approval by the Engineer's Representative. Unsuitable boulders for reuse shall be disposed of as specified elsewhere in this Section.
13. Boulders too large to be removed may be broken by mechanical means into smaller fragments for removal or treated as bedrock as described elsewhere in this Section.
14. Nothing in this Section shall be construed to allow the use of explosives for excavation or removal of boulders or bedrock.

3.04 SUBGRADE INSPECTION

- A. Notify the Engineer or Engineer's Representative when excavations have reached required subgrade.
- B. If the Engineer or Engineer's Representative determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill material as directed by Engineer or Engineer's Representative. Authorized additional excavation and replacement material will be paid for according to Contract provisions for Extra Work.

3.05 GENERAL FILL REQUIREMENTS

- A. Use materials removed from site excavations, if such material meets specified requirements and is acceptable to the Engineer or Engineer's Representative.
- B. Place fill in layers not to exceed twelve (12) inches of loose material and compact each layer before next layer is placed.
- C. Place fill material in such a manner that unbalanced horizontal loads shall not be applied to existing or newly placed structures or portions of structures, utilities, or pipelines.

3.06 GENERAL COMPACTION REQUIREMENTS

- A. The Contractor is responsible for achievement of proper compaction during fill placement.
- B. Do not use compaction equipment and methods that produce excessive horizontal or vertical earth pressures on structures. Excessive horizontal earth pressures are those in excess of at-rest earth pressures. Excessive vertical earth pressures are those in excess of overburden pressures.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

3.07 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace fill material to depth as directed by Engineer's Representative; reshape and recompact.
- C. Where settling occurs before project completion, remove finished surfacing, backfill with additional fill material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

END OF SECTION 31 00 00

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

SECTION 31 13 13

TREE PROTECTION AND REMOVAL

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section specifies minimum requirements for protection and maintenance of existing trees, shrubs, and other plant materials indicated to remain on the Project Site from damage as a result of the Contractor's operations.
- B. The Contractor shall ensure all labor, equipment, and materials are provided for temporary tree and plant protection during the work including, but not limited to:
 - 1. Marking of clearing limits.
 - 2. Protective signage.
 - 3. Protection fencing.
 - 4. Tree and root pruning.
- C. Related Sections:
 - 1. 01 35 44 Environmental Requirements
 - 2. 01 90 00 Mobilization and Demobilization
- D. Definitions:
 - 1. Landscape Requiring Protection and Maintenance: All existing trees and plants located on the project site and not identified for Contractor's lay down or parking use, including trees with root zones extending to or within the project site.
 - 2. Critical Root Zone (CRZ): The area equal to one (1) foot radius for every inch diameter from a tree measured at 4 feet above grade.
 - 3. Dripline: The dripline of a tree is described as the area on the ground beneath the tree's canopy.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

1.02 CONTRACTOR RESPONSIBILITY

- A. The Contractor shall be responsible for all damage and/or disturbance within the CRZ of trees indicated to remain including, but not limited to, cutting, breaking or skinning of roots, skinning or bruising of bark, compaction of root zones and breaking of branches. The Contractor shall assume all trees and plants within the project site shall be protected unless designated to be removed by Project Manager.
1. Damage and/or disturbance which, in the Project Manager's sole judgment, can be remedied by corrective maintenance shall be immediately repaired by the Contractor upon written notice by the Project Manager.
 2. Trees or shrubs which are injured or irreparably damaged in usefulness or appearance shall, at the Project Manager's sole discretion, be replaced by the Contractor with new trees or shrubs of the same size and type.
 - a. Trees which fail to fully foliate in the spring following completion of construction operations may be presumed to have been injured or irreparably damaged due to construction operations.
- B. Damaged trees or shrubs which require removal and/or replacement due to injury or damage by construction operations shall be removed to a depth of two (2) feet below grade and include the refilling and repair of the ground surface, with such costs to be borne by the Contractor.
1. The location of a replaced tree or shrub is at the discretion of the Project Manager.
- C. Protection and maintenance shall include, but not be limited to, replacement of damaged protection fencing, aeration of compacted soils, control of temporary irrigation water runoff, and pruning and treatment of damaged roots.
- D. Site damage and/or disturbance caused by the Contractor outside the work limits shown on the Drawings shall be repaired or replaced and all costs for such repair shall be borne by the Contractor.
1. Repairs include, but are not limited to, pruning or removing damaged vegetation, replacement of damaged vegetation, and restoration of ground to its original condition.

PART 2 - PRODUCTS

2.01 PROTECTIVE SIGNAGE

- A. The Contractor shall post weather resistant 8 1/2" x 11" florescent green or yellow signage at all landscape preservation areas or features:

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

1. Post signage at all access points informing construction personnel that they are entering a site with "an environmentally protected area". Exact sign and language shall be developed in consultation with the Project Manager.
2. Install sign(s) on protection fencing at 50 foot intervals warning construction personnel to keep out of protective zones.

2.02 PROTECTION FENCING

- A. Tree and plant protection fencing shall comply with all requirements of the County.
- B. Protection fencing shall be equal to the following:
 1. Fencing material shall be wire mesh or orange high-visibility plastic (ESA).
 2. Height of fencing shall be 48 inches, unless otherwise indicated.

2.03 FENCE POSTS

- A. Posts must be steel
 1. Have a "U," "T," "L," or other cross sectional shape that can resist failure from lateral loads.
 2. Be pointed on the end to be driven into the ground.
 3. Weigh at least 0.75-pound per foot.
 4. Be at least 6 feet long.
 5. Have a safety cap attached to the exposed end. The safety cap must be yellow, orange or red plastic and fit snugly to the metal post.

PART 3 - EXECUTION

3.01 PRE-INSTALLATION MEETING

- A. Prior to the start of site work including the arrival of temporary facilities and equipment, on-site materials, construction parking, and the commencement of any site clearing, the Contractor shall arrange an on-site pre-installation meeting with the Project Manager to identify and stake out all areas of trees and plants that are to be protected or removed. The Contractor shall be responsible for all damage to landscape features that result from the failure to schedule the pre-installation meeting or failure to comply with other provision of the contract documents.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

3.02 PROTECTION OF EXISTING TREES AND SHRUBS

- A. Trees indicated to remain within the project site shall have protection fencing that shall be maintained by the Contractor in good condition until substantial completion of the work.
- B. Protection fencing shall be located as directed by Project Manager.
- C. When requested by the Contractor and approved by the Project Manager, perform heavy equipment work from angles and directions that minimize compaction to tree roots in the protection area.
 - 1. The Contractor shall tie back all flexible limbs and overhead branches which may be damaged by the passage or activity of equipment.
 - 2. Materials shall not be stored and equipment shall not be operated under the branches of existing trees which are to remain, except as approved by the Engineer.

3.03 INSTALLATION OF TREE PROTECTION FENCING

- A. Install posts a minimum of two (2) feet below grade and spaced ten (10) feet on center maximum.
 - 1. Provide diagonal bracing to posts at corners of enclosures and whenever needed to ensure rigidity of the fencing.
- B. Install fencing tight to grade at the bottom edge and stretched uniformly between posts.
- C. Take care not to damage roots or to compact soil inside protected areas during placement of posts. Do not use heavy equipment for this operation.

3.04 USE OF AREA ADJACENT TO PROTECTION FENCING

- A. Do not store materials potentially harmful to tree roots within twenty (20) feet of protection fencing. Potentially harmful materials include, but are not limited to, petroleum products, cement and concrete materials, cement additives, lime, paints and coatings, waterproofing products, concrete forms coatings, detergents, acids, and cleaning agents.

3.05 ROOT PRUNING

- A. Root pruning is the physical cutting of tree roots to minimize root damage and promote healing. The Contractor shall not use any method which tears roots or disturbs the soil beyond the grading limit. Tree roots shall be clean cut (not broken) and tree sealant shall be applied.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

1. Root prune using a sharpened spade for all roots smaller than one-inch diameter.
 2. Root prune using an ax or chainsaw for all roots greater than one-inch diameter.
 3. Do not use a backhoe bucket or any other excavating machine to root prune.
- B. When construction is in close proximity to existing trees to remain, and roots are encountered, root pruning shall be performed as early as possible before grading and trenching operations.

3.06 PRUNING OF EXISTING TREES

- A. Limbs and branches that have been broken shall be cut off cleanly above the nearest crotch in accordance with good horticultural practice. Cut limbs and branches greater than one-half inch diameter.
- B. Tree limbs or branches which interfere with the work may be removed with approval of the Engineer. Cuts larger than 1-1/2 inches in diameter shall be coated with an approved sealing compound.

END OF SECTION 31 13 13

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

SECTION 31 23 19

DEWATERING

PART 1 – GENERAL

1.01 SCOPE

- A. The creek is typically dry during the time of planned construction, but dewatering will likely be required to complete the excavations and structural work. As a first order of work, Contractor shall coordinate with Project Manager to assess the extent to which dewatering is necessary. If dewatering is deemed necessary, all such work shall comply with these Technical Specifications.

1.02 SECTION INCLUDES

- A. The work of this section consists of providing all necessary labor, tools, equipment, and incidentals for extracting, containing, and discharging groundwater that accumulates in excavations as needed to complete the work described in the Technical Specifications.
- B. This Section also includes designing, furnishing, installing, operating, and maintaining a temporary dewatering control system as needed to assure that the discharge of extracted groundwater complies with all regulatory agency permits.

1.03 DEFINITIONS

- A. “Sump Water” shall mean water that is collected and pumped from low points within the limit of grading for creek work as necessary to comply with permits and allow the work shown on the Drawings and described in the Technical Specifications to be completed.
- B. “Diverted Water” shall mean water pumped or diverted by gravity means from the creek upstream of any required fish screen and cofferdam and is not included in this Section, see Section 01 57 36, Temporary Creek Diversion.

1.04 RELATED SECTIONS

- A. Related Work Specified Elsewhere: As applicable, related work specified elsewhere may include, but is not limited to, the following:
 - 1. 01 35 44 Environmental Requirements

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

2. 01 57 36 Temporary Creek Diversion
3. 31 00 00 Earthwork
4. 32 42 00 Bioengineered Bank Protection

1.05 REFERENCES

- A. The Contractor shall be responsible for assuring that all required regulatory agency permits have been approved by the respective agencies. The Contractor shall be responsible for understanding and complying with all permit requirements, including, but not limited to the permits referenced herein.
 1. United States Army Corps of Engineers (USACE) Permit
 2. California Department of Fish and Wildlife (CDFW), Lake and Streambed Alteration Agreement
 3. Regional Water Quality Control Board (RWQCB), 401 Water Quality Certification
 4. Local grading permits secured for the project.

1.06 SUBMITTALS

- A. If dewatering is requested by the Project Manager, the Contractor shall submit a Diversion and Dewatering Plan, as listed in Section 01 57 36 Temporary Creek Diversion, that clearly describes the schedule, sequencing, methods, and equipment for the installation, operation, and removal of all dewatering systems.
- B. The Diversion and Dewatering Plan shall include following dewatering elements, at a minimum:
 1. The proposed type of dewatering system.
 2. Arrangement, location, and depths of system components.
 3. Complete description of equipment and instrumentation to be used, with installation, operation and maintenance procedures.
 4. Design calculations demonstrating adequacy of the proposed system and equipment, which may include site-specific field testing to determine soil permeabilities to be used for design of the dewatering system.
 5. Methods of disposal of sump water.
 6. Measures that will be taken to comply with all water-quality related permit conditions that may apply.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

7. Measures that will be taken to comply with County requirements related to noise reduction and control during installation, operation, and removal of the dewatering systems.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. The Contractor shall furnish all labor, materials, tools, equipment, and services as required for providing the necessary dewatering work and provide back-up equipment as necessary for replacement and for unanticipated emergencies.

2.02 PUMPS

- A. The pumps and pumping apparatus used for the dewatering shall be of the submersible type with sufficient capacity to control sump water levels as described herein. It shall be the Contractor's responsibility to provide power to operate the dewatering systems, including the pumping equipment, as needed to assure that dewatering is effective during all work within the banks of the creek. The Contractor shall provide back-up power as needed to assure that power interruptions do not lead to damage to finished or in-process work or delays in completing the work. All equipment, including any generators used for primary or back-up power supply, shall be operated in compliance with all County noise reduction requirements.

PART 3 - EXECUTION

3.01 DEWATERING

- A. Except as otherwise noted herein, dewatering shall be performed to accomplish a lowering of measured static ground water level to an elevation which is suitable for construction of the creek channel modifications and the construction of structures below grade. Dewatering shall also be performed to contain seeps or artesian conditions during construction activities.
- B. The Contractor shall remove all water that accumulates in all excavations during the progress of work so that all work can be done in the dry, unless otherwise approved by the Engineer.
- C. The Contractor shall, at all times, have on the project site sufficient pumping equipment for immediate use, including standby pumps for use in case other pumps become inoperable. Water shall be disposed of in accordance with the detailed requirements specified herein and so as to cause no injury to personnel or the public, damage to public or private property, or menace to the public health.
- D. The preferred method of dewatering shall use submersible pumps installed in shallow sumps at low points within the excavation area.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

- E. Groundwater pumping shall not remove fines from below grade. Sumps shall be constructed and filter(s) shall be provided to prevent such pumping of fines. If any dewatering pumps fines, pumping shall be terminated and a new sump shall be properly constructed at a different location with a revised design which eliminates the pumping of fines.

3.02 CONTAINMENT OF EXTRACTED GROUNDWATER

- A. The Contractor shall, upon extraction, provide for the containment and storage of all groundwater extracted in the process of construction such that extracted groundwater is only discharged to the creek downstream of the excavation area if it meets the criteria and requirements of all regulatory agency permits. Extracted groundwater not meeting such criteria and requirements shall be stored in a container(s). Containers for construction dewatering shall be complete with baffles to filter silt prior to discharge of water to the creek.
- B. The Contractor shall contain and store the water on-site and in such a manner that it shall not interfere with the Contractor's existing or continued construction operations.

3.03 DISCHARGE OF EXTRACTED GROUNDWATER

- A. The Contractor shall not discharge any sump water to the creek that exceeds water quality discharge requirements set forth in the regulatory agency permits or described herein.
- B. The preferred method of extracted groundwater disposal shall be discharge to open space areas on adjacent lands of the Owner, with appropriate containment to assure that all the discharged sump water infiltrates into the soil with no overland flow outside the containment area. Discharge shall be in compliance with project permits and conditions of per Section 01 35 44 Environmental Requirements.
- C. The Contractor shall provide piping, couplings, valves and other equipment as needed to convey sump water to the discharge point and shall provide an outfall configuration that prevents erosion. The sump water shall be released in a manner that will not impact the Contractor's operations.

3.04 REMOVAL OF DIVERSION SYSTEM

- A. When work within the channel banks has been completed, the diversion system shall be removed completely. If any adjacent land areas are used for disposal of groundwater, they shall be restored to their condition prior to the beginning of construction activities.

END OF SECTION 31 23 19

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

SECTION 31 25 00

EROSION CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The work of this section consists of placement of erosion control blankets to protect newly excavated soil slopes or soil slopes disturbed during construction.
- B. This section also provides specifications for installation of fiber rolls, seeding, and application of straw mulch.

PART 2 - PRODUCTS

2.01 EROSION CONTROL BLANKET

- A. Erosion control blanket shall be C125BN as manufactured by North American Green or approved equivalent.

2.02 ANCHORS

- A. U-shaped wire staples or equivalent shall be used to anchor the rolled erosion control blankets to the ground surface. Wire staples should be a minimum of 6 inches long.

2.03 FIBER ROLLS

- A. Fiber rolls shall be made of 100 percent natural materials. They shall be remanufactured rice or wheat straw, wood excelsior, or coconut fiber rolls encapsulated within a biodegradable, organic netting. Contractor shall not use plastic monofilament erosion control netting. Each roll shall be 8 inches minimum in diameter. The netting shall have a minimum durability of one year after installation. The netting shall be secured tightly at each end of the individual rolls.
- B. Wood stakes shall be hardwood and a minimum of 1-inch square by 24 inches long.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

- C. Fiber roll fabric and stakes are available from local vendors.

2.04 STRAW MULCH

- A. Straw shall be certified weed free. Straw shall be wheat, rice, or barley derived from irrigated cropland. Straw pieces shall be at least 4 inches long, preferably 6 inches long or longer. Straw shall not contain glass, plastic, metal, rocks, or other inorganic material. Straw shall not have been previously used for any other use.
- B. Contractor shall provide proof that the straw meets this specification to the Engineer prior to application.

2.05 SEED

- A. Seed shall be a fresh, clean, new crop mixed by dealer and packaged in dealer's unopened container with original label. Containers opened prior to inspection or without a label or tag will not be accepted. Each seed bag shall be delivered to project site sealed and clearly marked as to the botanical name, common name, source, minimum percent purity, minimum percent germination, weed seed, inert material, and pounds pure live seed of the seed mix, dealer's guarantee, and date of test.
- B. All seed shall comply with the California Seed Law. Commercially obtained seed shall be labeled under the California Food and Agricultural Code, and by the vendors supplying the seed.
- C. Seed shall have been tested for purity and germination not more than fifteen (15) months prior to the application of the seed.
- D. Seed shall be of San Mateo County origin, as provided by vendor. If a particular species is not available from San Mateo County, available seed stock from adjacent counties may be substituted, upon approval from the Engineer. Contractor shall coordinate with the Engineer thirty (30) working days prior to seeding to obtain these approvals. Seed may be available from Pacific Coast Seed, 533 Hawthorn Place, Livermore, CA (925) 373-4417, Hedgerow Farms, 21740 County Road 88, Winters, CA (530) 662- 6847, or equal.
- E. Contractor shall procure seed of the species and proportions presented in the following table:

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

Table 1. Riparian Seed Mix

SCIENTIFIC NAME	COMMON NAME	POUNDS OF PURE LIVE SEED/ACRE
<i>Bromus carinatus</i>	California brome	8.0
<i>Elymus glaucus</i>	blue wild rye	8.0
<i>Eschscholzia californica</i>	California poppy	2.0
<i>Festuca microstachys</i>	small fescue	8.0
<i>Stipa pulchra</i>	purple needlegrass	6.0

PART 3 - EXECUTION

3.01 SEED

- A. Seed Application: Apply the seed mix evenly and at the rates specified in the Table 1 above.
- B. Hand rake all seed into soil immediately after application. Rake seed bed lightly to cover seed with 1/8-inch to 1/4-inch layer of soil. Seed cover shall not exceed 1/4 inch.
- C. After the site has been seeded, straw mulch shall be applied over all seeded areas, with the exception of those receiving erosion control blanket, as shown on Drawings, using a mechanical blower or by hand labor at a rate of 800 lbs/acre (ac). Application shall start on the windward side of the target area. Straw shall be applied to cover areas of similar slope uniformly and assure that sunlight is not completely excluded from penetrating to the ground surface (~ 70-80 percent coverage of the soil surface).

3.02 EROSION CONTROL BLANKET INSTALLATION

- A. Install erosion control blankets only after finish grading and broadcast seeding has been completed.
- B. Install and anchor erosion control blankets at the locations indicated in the Drawings and per manufacturer's recommendations.
- C. Fabric shall be installed vertically down the slope with a minimum 3-inch overlap between blankets.
- D. Fabric shall be stapled per the manufacturer's recommendations.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

3.03 FIBER ROLL INSTALLATION

- A. Timing: Fiber rolls shall be installed prior to seeding and approved by the Engineer, unless the fiber rolls are installed on top of erosion control blankets.
- B. Layout: Fiber rolls shall be installed in locations shown on Drawings.
- C. Fiber rolls shall be installed according to Caltrans Standard Specifications, Section 21 and Construction Site Best Management Practices Manual, Detail SC-5 Fiber Rolls.

END OF SECTION 31 25 00

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: E

File Numbers: PLN2017-00113

PLN2017-00113

RECEIVED

MAR 22 2017

San Mateo County
Planning Division

BALANCE HYDROLOGICS, Inc.

Memorandum

To: Tom Zigterman and Rachel Bejerano
From: Jonathan Owens, Krysia Skorko, and Edward D. Ballman, P.E.
Date: Revised February 14, 2017

Subject: Low-Flow Crossing Modification, Design Basis Memo

1 Overview

1.1 PURPOSE OF THIS MEMORANDUM

The purpose of this memo is to explain the proposed design and the technical analyses supporting the design and construction of modifications of the low-flow crossing on Stanford property in the County of San Mateo. In the event that the design is refined in future iterations, this memo will be updated and reissued.

1.2 SUMMARY

An existing concrete road crossing across San Francisquito Creek, downstream of its confluence with Bear Creek, is currently used for dry-season fire-truck access by the Woodside Fire Department, and also for road access by researchers at Stanford University's Jasper Ridge Biological Preserve. The crossing is located approximately 900 feet southeast of the intersection of Sand Hill Road and Whiskey Hill Road and is just to the south of the SLSC National Accelerator Laboratory facility.

Stanford is proposing to modify the crossing to create a "vented ford" with free flow of low-flow water under the driving surface. High flows will still overtop the ford. The vented ford will consist of 3 pre-cast box culverts, whose total width will approximate the active channel width of the creek; the design is for each of the three openings to be approximately 10 feet wide.

The proposed project design meets state and federal velocity and depth guidelines for fish passage. The deep bottom of the culverts will allow a natural creek bed to form and evolve. Approximately half of the culvert depth is expected to be filled with creek bed material.

1.3 PROJECT GOALS AND OBJECTIVES

Goals

- To enhance fish-passage in San Francisquito Creek.
- To maintain the structure's function as a low-flow crossing for emergency and maintenance vehicles.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

Objectives

- To modify the existing road crossing structure to a vented ford crossing.
- To construct a pool/glide/ riffle system under the crossing with a natural bottom.
- To create a design that is stable at high flows, passable to fish at low flows, and minimizes disruption from wood and debris jams.

1.4 DATA/REPORTS REVIEWED

- U.S. Department of Agriculture, Forest Service, National Technology and Development Program, 2006, Low-Water Crossings: Geomorphic, Biological, and Engineering Design Considerations, Appendix A, Case Study 19.
- Balance Hydrologics San Francisquito at Piers Lane gaging reports, Water Years 2002 to 2015.
- State of California, Resources Agency, Department of Fish and Game, 2002, Culvert Criteria for Fish Passage. Revised May 2002.
- State of California, Resources Agency, Department of Fish and Game, 2004, California Salmonid Stream Habitat Restoration Manual, "Part XI Riparian Habitat Restoration".
- Woodside Fire Protection District, 2000. Design Guideline for Fire Department bridge access (water tender). June 1, 2000.
- Woodside Fire Protection District. Roadway/Access Fire Department Submittal Requirements.

1.5 LIST OF FIGURES AND TABLES

Figure 1 – San Francisquito Creek Low-Flow Crossing Location Map

Figure 2a and 2b – Longitudinal Thalweg Profile (Existing) at Jasper Ridge Low-Flow Crossing, February 2015

Figure 3 – Daily Mean Streamflow Water Years 2002 to 2015: San Francisquito Creek at Piers Lane (SFPL)

Figure 4 – Location of Project Site Relative to Stream Confluences and Gaging Stations

Figure 5 – Annual Peak Flows Over Period of Record at USGS gage: San Francisquito Creek at Stanford Golf Course, and Calculated Peak Flows at Project Site

Figure 6 – Ranked Daily Mean Streamflow (Water Years 2002 to 2015): San Francisquito Creek at Piers Lane

Figure 7 – Cross-Section Profile (Existing) at Jasper Ridge Low-Flow Crossing

Figure 8 – HEC-RAS Model Results Showing the Longitudinal Profile of Water Surfaces for Proposed Conditions at 283, 61, and 25 cfs

Figure 9 – Longitudinal Thalweg Profile (Proposed) at Jasper Ridge Low-Flow Crossing

Figure 10 – Example of a Vented Ford with Multiple Box Culverts and Grates with Debris Lifters

Table 1 – CDFW Fish Passage Flow Criteria

Table 2 – CDFW Velocity and Depth Fish Passage Criteria

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

Table 3 – HEC-RAS results – Low Sediment Level
Table 4 – HEC-RAS results – High Sediment Level

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

2 Background

2.1 ALTERNATIVES CONSIDERED

Several road crossing design approaches were considered and evaluated. Designs that have not been moved forward due to functionality limitations, cost, or other reasons, include:

- Several variations of at-grade crossings,
- A high bridge above storm levels,
- Bottomless and arch culverts with drilled-pier supports,
- Placing small pipe culverts through the crossing,
- Cutting a narrow notch through the crossing, and
- Combinations of various numbers of culverts and culvert widths.

The selected design described herein originally was proposed by NOAA Fisheries staff during a site visit and discussion. Numerous design concepts and drafts have been shared among Agency and Stanford staff through the process of evaluating alternatives.

2.2 GEOMORPHIC SETTING

2.2.1 General reach geomorphology

The Jasper Ridge low-flow crossing on San Francisquito Creek is located about 500 feet downstream of the confluence of Bear (Gulch) Creek and Corte Madera Creek (Figure 1). At this location, San Francisquito Creek is a single-thread, meandering, pool-riffle channel.

Over geologic and/or historic time frames, the creek channel has likely gone through alternating episodes of aggradation and incision. Periods of aggradation have left behind alluvial terraces and floodplains. Currently there is exposed bedrock along the bed and banks in many locations. It is common for the lower 5 to 8 feet of one creek bank or the other to consist of exposed bedrock. In several locations downstream of the project site, there are bedrock ledges that fully cross the channel.

Roughly two miles downstream, the geomorphology and channel dimensions of the creek were characterized in detail for a separate, ongoing study. These observations and dimensions are applicable to channel reconstruction for the crossing, as visual inspection shows the channel at the site is geomorphically similar to the downstream reaches. Riffle characteristics are of particular importance to this project, and are as follows:

- Alluvial riffles are composed of cobbles and boulders with interstitial gravels.
- Overall creek slope is approximately 0.7 percent (pools and riffles combined).
- Measured reference riffles were observed to have a wide range of lengths; the shortest riffle was 49 feet long, and the longest was riffle was approximately 310 feet long.
- Slopes of reference riffles ranged from approximately 1.5% to 4.5%.
- Some of the riffles in this section of creek have full or partial bedrock control.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

2.2.2 Site Specific Geomorphology

A longitudinal profile of the current channel conditions was produced from total station survey data (see Figures 2a and 2b). Upstream of the crossing, there is a pool that is approximately 400 to 450 feet long, with a maximum depth of five feet. The size of this pool is partially controlled by backwater effects from the crossing structure. Approximately 100 feet upstream of the crossing, large boulders (which are currently submerged at low flow) line the pool bed. Modification of the low-flow crossing will be best achieved by reshaping of a short section of creek channel; the main reason for reshaping is the wedge of material just upstream of the crossing. Reshaping will be based on the characteristic geomorphology of the creek.

There is a smaller pool downstream of the crossing, with a pool tail-out consisting of a cobble riffle (approximately 30 feet downstream of the crossing); the tail out riffle may be susceptible to erosion, based on the presence of a small knick point that may be working its way up the riffle. A longer pool, edged by bedrock on the right bank (looking downstream) lies downstream of the cobble riffle. Roughly 180 feet downstream of the crossing, the next riffle is formed by bedrock, so no downcutting is expected below that elevation (see Figures 2a and 2b).

On a follow-up visit, “active channel width” was also measured. The active channel width is an important consideration in crossing design. According to the California Salmonid Stream Habitat Restoration Manual (CDFW, 2004), the active-channel is defined as a short-term geomorphic feature formed by prevailing stream discharges. Active channel width is narrower than the bankfull channel and is defined by a break in bank slope that also typically is where the cleanly scoured substrate of the stream ends and terrestrial vegetation begins. Other identifying factors include a natural line impressed on the bank, shelving or terracing, changes in soil character, and the presence of deposited organic debris and litter (CDFW, 2004). These features were used to identify and measure active channel widths in San Francisquito Creek (see Appendix A for photographs of field measurements). The importance of the active channel width is as a guideline for the combined width of the culverts. If the span of the crossing is wide enough, then the channel will better be able to evolve and adjust form.

Active channel width immediately upstream and downstream of the project site varies between 20 to 30.5 feet (5 measurements) and averages 25 feet (Appendix A, Table A-1).

2.3 HYDROLOGY AND FISH-PASSAGE CRITERIA

2.3.1 Hydrology

The most applicable gage to the project site on San Francisquito Creek is at the Balance Hydrologics “SFPL” gaging station (San Francisquito Creek at Piers Lane). This gage is located approximately 3.7 miles downstream of the project site. Gaging data is recorded at 15-minute intervals and tabulated daily averages (Brown, Owens, and Hecht, 2015). This station has been operated by Balance, for Stanford from Water Year 2002 to present; the hydrograph for the period of record is shown in Figure 3.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

Searsville Dam and Reservoir are a short distance upstream on the Corte Madera Creek tributary. The reservoir does not have operable gates, and therefore is not used for flood-control purposes. USGS gage (station number 11164500, San Francisquito Creek at Stanford Golf Course) is located 4.5 miles downstream of the project site (Figure 4). The USGS station has been operative since 1931, except for a hiatus in monitoring from 1942 to 1950. These peak flow data are used to describe the high-flow magnitude and frequency for the site (Figure 5), and have been incorporated into watershed-scale hydraulic models, described in Section 2.4 of this report. The peak flows are lower at the project site than at the USGS station, due to additional drainage area and tributaries between the two locations.

2.3.2 Fish-passage flow, velocity, and depth guidelines

Hydrology data from SFPL was used for fish-passage flow and depth-criteria calculations. The California Department of Fish and Wildlife has established criteria for the minimum water depth and maximum velocities for upper fish-passage flows. These criteria vary depending on the species of interest. A summary of criteria flows, velocities, depths and the maximum outlet drop for species of interest in San Francisquito Creek (adult steelheads, adult rainbow trout, and juvenile salmonids), are shown in Tables 1 and 2.

Table 1. CDFW Fish Passage Flow Criteria

Criteria type	Species	Percentile Flow	Flow from SFPL record (cfs)	Alternative Minimum Flow (cfs)
Upper Passage Flow (Qhp)	Adult Steelhead	Q-1% [1]	283	
	Adult Rainbow Trout	Q-5%	61	
	Juvenile Salmonids	Q-10%	25	
Lower Passage Flow (Qlp)	Adult Steelhead	Q-50%	0.78	3
	Adult Rainbow Trout	Q-90%	0.12	2
	Juvenile Salmonids	Q-95%	0.04	1

Table 2. CDFW Velocity and Depth Fish Passage Criteria

Adult Steelhead			
Minimum Water Depth	1	ft	
Maximum Water Velocity	5	ft/s	
Maximum Outlet Drop	1	ft	
Adult Rainbow Trout			
Minimum Water Depth	0.67	ft	
Maximum Water Velocity	4	ft/s	
Maximum Outlet Drop	1	ft	
Juvenile Salmonids			
Minimum Water Depth	0.5	ft	

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

Maximum Water Velocity	1	ft/s
Maximum Outlet Drop	0.5	ft

The percentile flow (Q-%) is defined by the discharge (Q) that is exceeded for a certain percentage of the time. For example, the Q-1% represents a discharge that is exceeded 1% of the time. These flows were calculated from the SFPL record of daily mean flow. Flows from Water Year 2002 to Water Year 2015 (4,996 days of data) were plotted cumulatively (Figure 6) to determine the flow in cfs that corresponds to the percentile flow (Q-%). In this plot, for example, the Q-1% is 283 cfs. This is the upper level of flow that would be required to pass through the culverts to meet adult steelhead passage criteria. Velocities and water depths during upper passage flows (Q-1%, Q-5%, and Q-10%) were calculated using a 1-dimensional HEC-RAS model, described in Section 2.4 of this report.

2.4 HYDRAULIC MODELING

2.4.1 Watershed-scale HEC-RAS model

Balance used a watershed-scale HEC-RAS model for evaluating various parameters along the San Francisquito Creek system. Figure 7 shows the water surface elevations from the model at this cross-section for the peak of the 20-year and 100-year design-storms (note that the SCVWD design storm is under review by the SCVWD, and may be changed in the future). This figure illustrates that large-storm water-surface elevations can be expected to be 8 to 10 feet above the road crossing; this is corroborated by our observations of high-water marks at the site from December 2012. Even in a normal year, we expect the crossing to be inundated many times and at a substantial depth.

High-water marks at the site also highlight that this creek carries a large amount of wood during storms, and thus the attention in the design to sloping wing walls and pier extensions on the upstream side of the crossing.

2.4.2 Local Fish-Passage Model (HEC-RAS)

Model objectives

One objective in designing the crossing is to have free flow of the creek under the crossing for flows when fish are likely to be moving. To define this flow level, we evaluated various passage flow levels in section 2.3. We then use the hydraulic model of the creek sections to calculate the water surface at the crossing when flow is at the upper passage limit. The model results also allow us to check that the water velocity and depth are within the guidelines listed in Table 2. We also used the predicted water surface that corresponds to 283 cfs (the upper passage limit for steelhead in Table 1) as guidance in selecting the minimum elevation for the top of the culverts (e.g. higher than the flow level).

Model Construction

Cross-sections upstream and downstream of the crossing were surveyed with auto-level survey equipment. The cross-sectional profiles were used as input data for a 1-dimensional HEC-RAS hydraulic model of the channel and crossing.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

This HEC-RAS model was constructed using the surveyed cross-section data for input topography. Eleven total cross-sections were used; seven upstream cross-sections extend roughly 120 feet upstream of the crossing, and four cross-sections are downstream of the crossing, extending to about 200 feet downstream of the crossing. Cross-sections that describe the geometry of riffles that control water level were prioritized; other sections cross through pools or describe the sections of reach adjacent to the structure. Overbank areas were assigned a Manning's n value of 0.08, while the main channel was assigned a value of either 0.04 or 0.05, depending on location.

The model extends approximately 200 feet downstream to the aforementioned bedrock riffle; the downstream boundary condition used was normal depth for the slope of the riffle.

The structure modeled is composed of a 1-foot thick driving surface supported by three 10-foot wide culverts. After several iterations, we adjusted the soffit height to 263.5 feet, and the driving-surface elevation of 265 feet, which is 1.5 feet above the current elevation of the curb on the structure.

Input flows were selected to reflect the upper passage flows from Table 1: 283 cfs, 61 cfs, and 25 cfs. 1 cfs is the default passage flow for juvenile salmonids, however, the model was not run at the 1-cfs flow, as the required topographic resolution was not sufficient for such a low flow.

The sediment level was set at 259 feet under the crossing, which is our best estimate (and design elevation) of an equilibrium bed elevation after the center of the crossing will be removed. As a sensitivity check, we performed a second set of model runs with the sediment level 1 foot higher under the crossing.

Model Results

The modeled water surface elevation for 283 cfs is 263.4 to 263.5 feet, under the crossing (Table 3). This result was iterated back into the model to select the culvert soffit elevation of the crossing, so that flows in the fish-passage range are not impacted by the roadway of the structure.

The main questions we ask of the model results are:

- For each of the input flows, do velocity and depth within the structure meet the criteria for fish passage?
- Does 1 foot more sediment beneath the structure have an effect on either water surface levels or fish passage criteria?

Based on the model results, velocities for the various passage flows are all lower than the maximum allowable velocities (Tables 3 and 4).

The predicted flow depths are all greater than the minimum guidelines (Table 3).

There is no "outlet drop" with the modified stream crossing structure at any of these flow levels, although at 283 cfs, there is a small difference in water surface elevation from the upstream to downstream ends of the culverts (Table 3).

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

Figure 8 displays the longitudinal profile of the water surface elevation (blue lines) for each of the three flows, with and without accumulated sediment, respectively. These plots show that because the structure is backwatered by the downstream riffle/ pool tail out, an extra 1 foot of sediment does not have an impact on water surface levels under the crossing.

Table 3. HEC-RAS results – Low Sediment Level

Scenario 1: Three 10-foot culverts, sediment elevation inside culverts at 259 feet.

Elevation of soffit = 263.5 feet

Manning's n = 0.08 for overbank, 0.04 to 0.05 for channel

Flow = 283 ft/s			
	Upstream edge of culvert	Downstream edge of culvert	Target
Average velocity (ft/s)	2.47	2.43	< 5
Max channel depth (ft)	4.47	4.43	> 1
WSE (ft)	263.47	263.43	<263.5
Flow = 61 ft/s			
	Upstream edge of culvert	Downstream edge of culvert	Target
Average velocity (ft/s)	0.9	0.87	< 4
Max channel depth (ft)	2.78	2.78	> 0.67
WSE (ft)	261.78	261.78	> 259.67
Flow = 25 ft/s			
	Upstream edge of culvert	Downstream edge of culvert	Target
Average velocity (ft/s)	0.47	0.44	< 1
Max channel depth (ft)	2.26	2.26	> 0.5
WSE (ft)	261.26	261.26	> 259.5

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

Table 4. HEC-RAS results – High Sediment Level

Scenario 2: Three 10-foot culverts, sediment elevation inside culverts at 260 feet.

Elevation of soffit = 263.5 feet

Manning's n = 0.08 for overbank, 0.04 to 0.05 for channel

Flow = 283 ft/s

	Upstream edge of culvert	Downstream edge of culvert	Target
Average velocity (ft/s)	3.22	3.21	< 5
Max channel depth (ft)	3.47	3.4	> 1
WSE (ft)	263.48	263.41	< 263.5

Flow = 61 ft/s

	Upstream edge of culvert	Downstream edge of culvert	Target
Average velocity (ft/s)	1.46	1.41	< 4
Max channel depth (ft)	1.81	1.79	> 0.67
WSE (ft)	261.82	261.8	>260.67

Flow = 25 ft/s

	Upstream edge of culvert	Downstream edge of culvert	Target
Average velocity (ft/s)	0.91	0.86	< 1
Max channel depth (ft)	1.28	1.27	> 0.5
WSE (ft)	261.29	261.28	>260.5

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

3 PROPOSED DESIGN

3.1 DESIGN ELEMENTS

Please see the accompanying plan set for the most up-to date version of the proposed modifications to the low-flow crossing. If there is a discrepancy, the plan set takes precedence over this memo.

The design involves cutting a 36-foot wide notch in the existing concrete ford structure and pouring foundations, piers, and cross pieces for three 10-foot by 10-foot box culverts (Figures 9a and 9b). Concrete debris will be removed from the site.

The width of culverts was guided by measurements of active channel width (CDFG 2004) upstream and downstream of the project site (see Appendix A) and the modeling discussed above. The average active channel width that Balance staff measured upstream and downstream of the project site was 25 feet. The maximum of the 5 measured locations was 30.5 feet wide. The three, 10-foot-wide culverts will provide 30 feet of flow width, with an edge-to-edge total width of approximately 34 feet (counting the 4 intermediate culvert sides).

Figure 10 shows an example of a similar structure described in the USDA Forest Service's Low Water Crossing Design Consideration Manual (2006).

The extension of upstream wing walls (and/or angled metal beams) will be angled to deflect and lift debris over the top of the crossing, to reduce the frequency and severity of wood and debris jams (see Figure 10 for example).

Fish-passage guidelines for culverts were used to calculate the elevation of the driving surface, based on non-pressurized flow conditions up to the upper passage limit for adult steelhead (estimated as 283 cfs in Section 2). The driving surface of the new vented ford will be at elevation 265 feet, approximately 1 to 2 feet higher than the driving surface of the existing crossing (elevation ranging from 263 to 264 feet).

During normal years, we expect the top of the crossing to be overtopped several times. The 2-year recurrence flow at this location is approximately 1,400 cfs.

3.2 DESIGN LAYOUT

3.2.1 Crossing Design

The box culverts will be placed to a depth sufficient to provide stability during high flows and anticipated crossing loadings. The base of the culverts will be placed at the elevation of the bedrock, based on the geotechnical report (Cornerstone, 2016). Wing walls will be used at the upstream and downstream ends of the culverts. The culverts will be backfilled with channel bed material to an elevation of approximately 259 feet (approximately half full).

3.2.2 Channel Design

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

This section of channel is expected to be relatively stable during high flows, and over the long term, due to the bedrock riffle that is approximately 200 feet downstream of the crossing. That riffle crest is at an elevation of 259.1 feet. Following the modification of the crossing, backwatering will be reduced in the upstream creek segment. The upstream pool will shrink in length, and at least initially, in depth, because the new low-flow hydraulic control will be the natural creek bed approximately 110 feet upstream of the crossing (Figures 2b and 9b). The channel in this location is roughly 2.2 feet lower than the crest of the old crossing, so we expect the baseflow level of the pool to also be lowered by the same amount.

Downstream of this new hydraulic control for the upstream pool, we will reshape the creek channel to reflect the new crossing configuration (see Attachment 1). The wedge of sediment that has apparently accumulated just upstream of the crossing will be reshaped. The new thalweg of the proposed channel is shown in Figure 2b.

The current elevation of the driving surface of the crossing is between approximately 263 and 264 feet. Upstream of the crossing, backwatering from the structure has currently created a long pool (approximately 500 feet). Installing culverts is expected to lower the spilling elevation of this pool and may result in some channel modification upstream and downstream of the crossing over time. After the culverts are installed, the pool depth and length will be controlled by a boulder riffle that is approximately 110 feet upstream of the crossing. The current elevation of the submerged boulder riffle (260.8 feet) will reduce the pool to approximately 200 feet in length.

The reach upstream of this pool will experience shallower flow when the crossing is modified (transitioning from pool entry to riffle), but the current channel surface is likely similar to the pre-crossing channel bed. We expect that the post-crossing channel bed will be as stable as the pre-crossing channel bed, therefore this reach should not require special care.

Immediately downstream of the crossing, a plunge pool exists. The cobble riffle below the pool is at an elevation of 260.3 feet, and currently controls the depth of this pool. Once the new culverts are in place, the elevation difference between the upstream and downstream riffle will create a glide with a slope of 0.3%. Large-scale erosion is unlikely, due to the bedrock control at the next riffle downstream (elevation 259.1 feet).

While the exact textures of the bed and details of the geometry that would develop as a result from these construction options is not entirely known, the options described above are designed to be stable in high flows and appropriate for fish passage during low flows.

3.3 DESIGN CRITERIA

3.3.1 Key elevations for design

- The elevation of crossing driving surface will be raised to 265 feet.
- Approach ramp elevations should stay the same.
- Riffle elevations:

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

- Upstream of crossing = 260.8 feet
- Cobble riffle downstream of crossing = 260.3 feet
- Bedrock riffle downstream of crossing = 259.1 feet
- The elevation of the creek bed inside the culverts will adjust over time, and will likely fluctuate from storm to storm.
- The bedrock elevation under the crossing is 251 to 253 feet (based on geotechnical investigations).

3.3.2 Flood control and maintenance of water surface elevations

The design is for low flows to stay within culvert openings, and that high flows pass over the driving surface. Small changes in high-flow water levels are expected, but no structures are threatened by high water in the vicinity of the project site.

3.3.3 Fish-passage criteria

The California Department of Fish and Wildlife (CDFW) criteria for fish passage have been discussed in detail in section 2. The proposed vented-ford design meets these criteria for depth and velocity; there will be no outlet drop.

3.3.4 Fire Protection District criteria

The crossing will be out of service for fire protection during the construction period.

The Woodside Fire Protection District has guidelines for bridges, as well as roadways and driveways (Woodside Fire Protection District, 2000). A crossing must be able to support 50,000 pounds for one axle, or 70,000 pounds for two axles for a span longer than 17-feet 10-inches. The weight limit for the crossing must be signed. This one-way crossing would not need to support the weight of an addition passenger vehicle of 10,000 pounds.

3.4 DESIGN CONSTRAINTS

The main constraint for this design is the challenge of maintaining a road crossing for vehicles across a stream that supports steelhead; this design is proposed to maintain and improve both functions.

3.5 CONSTRUCTION

3.5.1 Diversion and dewatering

The channel in the vicinity of the project must be dewatered during construction. This will entail constructing an upstream temporary cofferdam, fish screen, and a bypass for baseflow (and in case of precipitation events). The existing bedrock ledge approximately 140 feet downstream of the crossing will provide the downstream control for diversion activities; a second, downstream

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

cofferdam will not be needed. Flow diverted around the active construction limit will be returned to the creek at the downstream riffle.

The extent of dewatering necessary to install the box culverts will depend upon the groundwater level at the time of construction and the depth that will be used for placing the culverts. Neither is known exactly at this time, but any and all water taken from excavations within the channel shall be pumped to a dispersal location on Stanford property. No water removed from excavations will be discharged directly into the creek. The approximate locations for these diversion and dewatering elements are shown on sheet C-2 of Attachment 1, the 90% Construction Drawings.

3.5.2 Staging and access

Sheets C-1 and C-2 of Attachment 1 show the locations for the staging of construction equipment and materials. Any temporary staging of materials outside of these areas will occur only during their use or installation.

Access for large equipment and materials will be from the north and west side of the channel. Therefore, activities will need to be sequenced such that most work on the southside of the creek is completed either before the center of the crossing is removed or after the culverts and decking are in place. There will also be construction-phase access from the center of the channel upstream of the crossing. Road access to the other side of the creek may also be able to be provided through JRPB.

3.5.3 Removal of existing crossing

While the proposed box culverts have a span of 36 feet, the design necessitates the removal of 65 feet of roadway. All concrete between the saw-cut lines shown on Sheet C-2 of Attachment 1 shall be removed. The one exception to this is the historic concrete foundation on the left bank downstream of the crossing that is called out for preservation. The equipment used for this demolition will likely include diesel, gasoline and electric powered equipment such as excavators, trucks, bobcats, saws, and hammers, as well as hand tools. All removed concrete shall be hauled offsite.

An existing 12-inch diameter water line is located within the project limits, downstream of both the existing and proposed crossing. The exact horizontal and vertical location of the pipe will be identified as a first order of site excavation work, so that it can be properly protected as the other work proceeds. The intent is to leave the water line in place after confirming that the depth of the utility is sufficient to reduce the risk of scour.

3.5.4 Construction of new crossing

The construction of the new crossing (after site preparation, dewatering, and demolition) falls into four main phases:

- Excavation and placing culverts and wingwalls. Excavating down to the bedrock, and then placing bedding material (possibly concrete) on which the box culverts will be

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

placed; a concrete keyway or sill may be poured to anchor the culverts against sliding forces. Similar excavation and bedding will likely be used for the footings of the wingwalls. Wingwalls and footers may be precast or poured in place. They will be attached to the upstream and downstream edges of the culverts.

- Installation of roadway materials. Above the culverts, the roadway material will be concrete. Outside of the culverts, a new, stable roadway and curbs will be constructed to achieve a conform with the existing road at an appropriate slope. This work is described on sheets C-3 and C-4 in Attachment 1.
- Bio-engineered bank protection and rock slope protection. Sections of the bank disturbed during construction will be re-built using willow brush layering techniques shown on Sheet C-4 of Attachment 1. The anticipated extent of this work is shown on Sheet C-3. Some rock slope protection will likely be placed adjacent to the culvert wingwalls, on the upstream and downstream slopes of the roadway prism.
- Erosion control measures. After the crossing has been constructed and the banks have been stabilized with brush layering, all disturbed areas will be seeded with a native seed mix and fiber rolls will be placed as shown on Sheet C-6 of Attachment 1. The anticipated extent of this work is shown on C-6, but will extend as needed to ensure any disturbed areas are given protection from future erosion.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

4 References

- Brown, S., Owens, J., Hecht, B., 2015. Water Quality and Streamflow Monitoring of San Francisquito and Los Trancos Creeks at Piers Lane, and Bear Creek at Sand Hill Road, Water Year 2014, Long-term Monitoring and Assessment Program San Mateo and Santa Clara Counties, California. Consulting Report prepared by Balance Hydrologics for Stanford University Utilities Division and Jasper Ridge Biological Preserve. February 2015, 18pp.
- Clarkin, K. L., Keller, G., Warhol, T., Hixson, S. 2006. Low-water crossings: geomorphic, biological, and engineering design considerations. 0625-1808—SDTDC. San Dimas, CA: U.S. Department of Agriculture, Forest Service, National Technology and Development Program, San Dimas Technology and Development Center, 360 p.
- Cornerstone Earth Group. 2016. Geotechnical Investigation: San Francisquito Creek Low-Flow Crossing Modification. Consulting report by Maura F. Ruffatto, P.E. and Erin Steiner, P.E., G.E., September 9, 2016, 25p.
- State of California, Resources Agency, Department of Fish and Game, 2002. Culvert Criteria for Fish Passage, revised May 2002, Sacramento, CA, 17p.
- State of California, Resources Agency, Department of Fish and Game, 2004, California Salmonid Stream Habitat Restoration Manual, "Part XI Riparian Habitat Restoration", revised July 2010, 99p.
- Woodside Fire Protection District, 2000. Design Guideline for Fire Department bridge access (water tender). June 1, 2000.
- Woodside Fire Protection District. Roadway/Access Fire Department Submittal Requirements.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113



Balance
Hydrologics, Inc.

Figure 1. San Francisquito Creek Low-Flow Crossing Location Map.

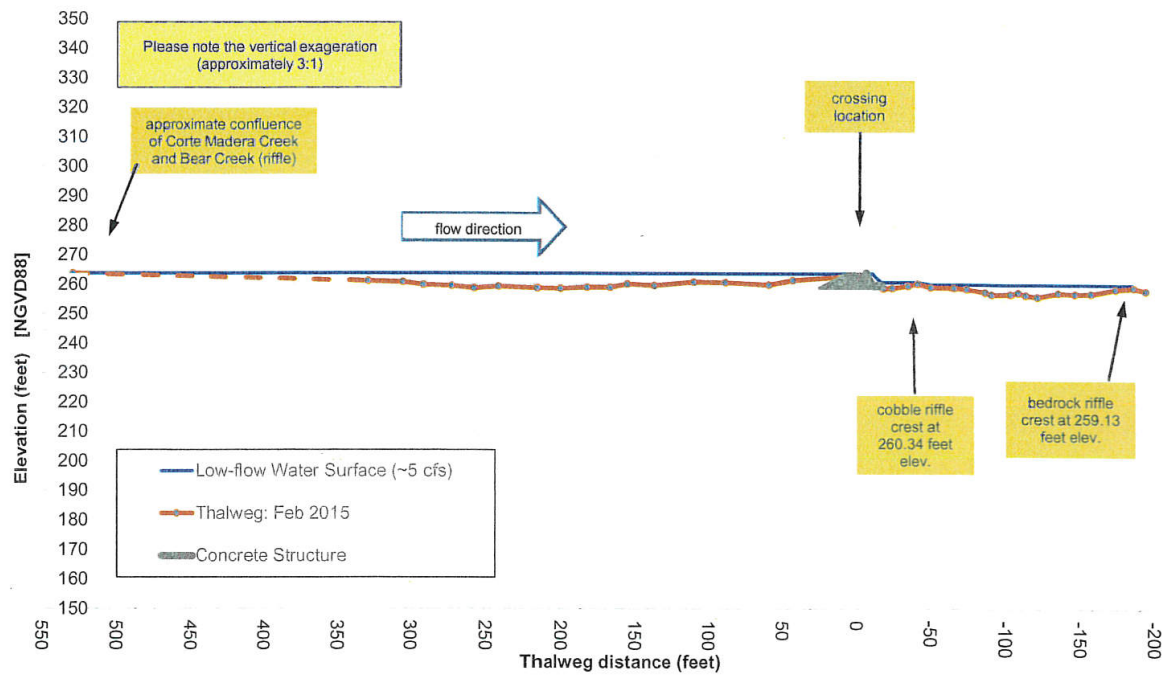
San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

preliminary and subject to revision



Balance
Hydrologics, Inc.

Figure 2a. Longitudinal Thalweg Profile (Existing) at Jasper Ridge Low-Flow Crossing, February 2015.

214217 Fig 2 Fig 9 cross sections and profile NAVD JO, 2a Long exist 1

©2016 Balance Hydrologics, Inc.

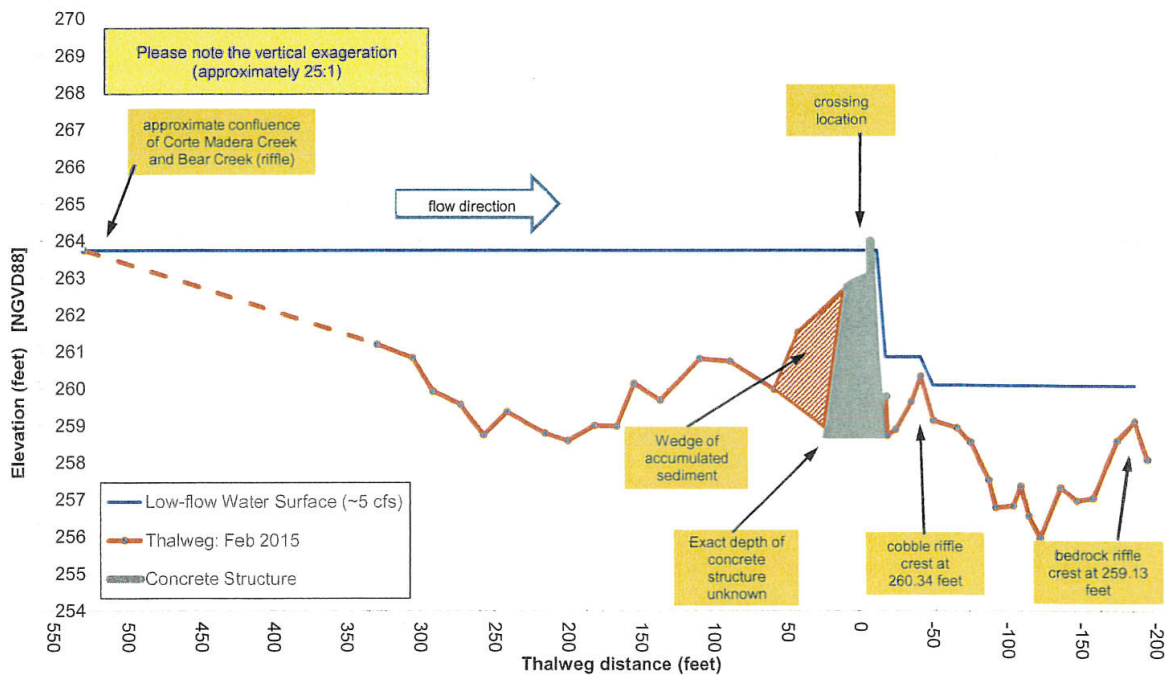
San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

preliminary and subject to revision



Balance
Hydrologics, Inc.

Figure 2b. Longitudinal Thalweg Profile (Existing) at Jasper Ridge Low-Flow Crossing, February 2015.

214217 Fig 2 Fig 9 cross sections and profile NAVD JO, 2b Long exist

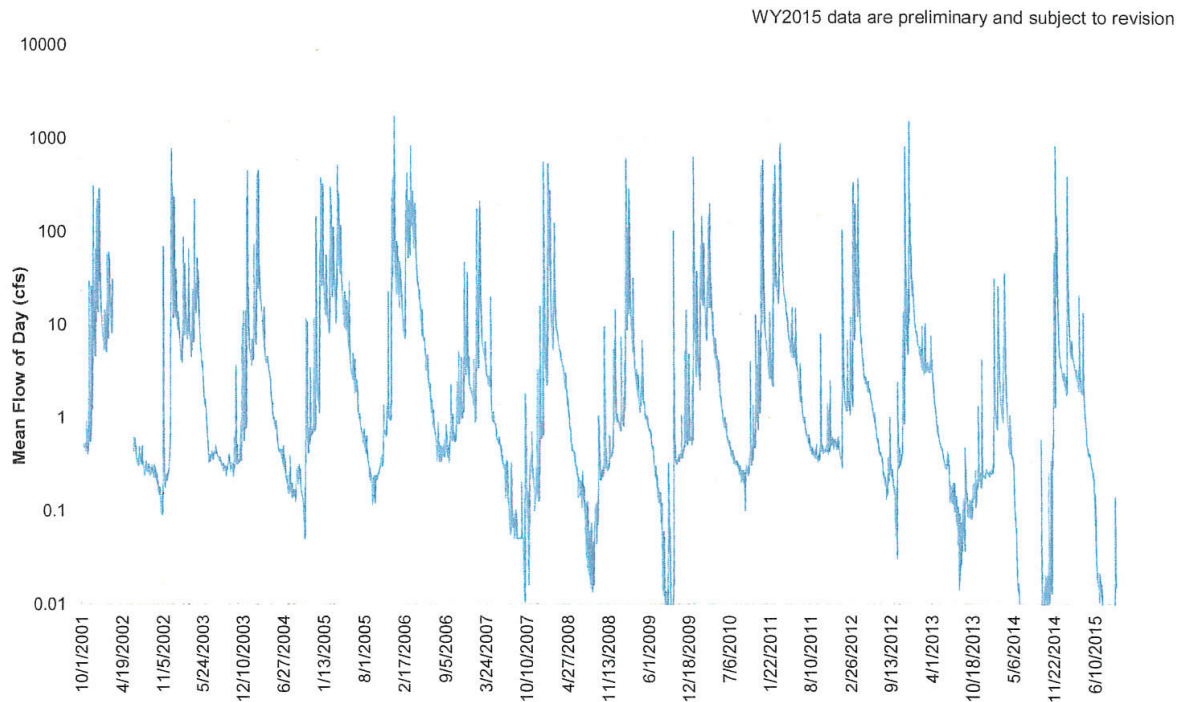
©2016 Balance Hydrologics, Inc.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113



Balance
Hydrologics, Inc.

Figure 3. Daily Mean Streamflow Water Years 2002 to 2015: San Francisquito Creek at Piers Lane (SFPL). Note that peak flow values would typically be much higher than the highest mean flow of the day (shown here), during storms. Summer baseflow values have ranged from approximately 0.5 to 0 cfs.

214217 Figures 3 5 6 Flow and culvert calcs , Fig 3 Chron

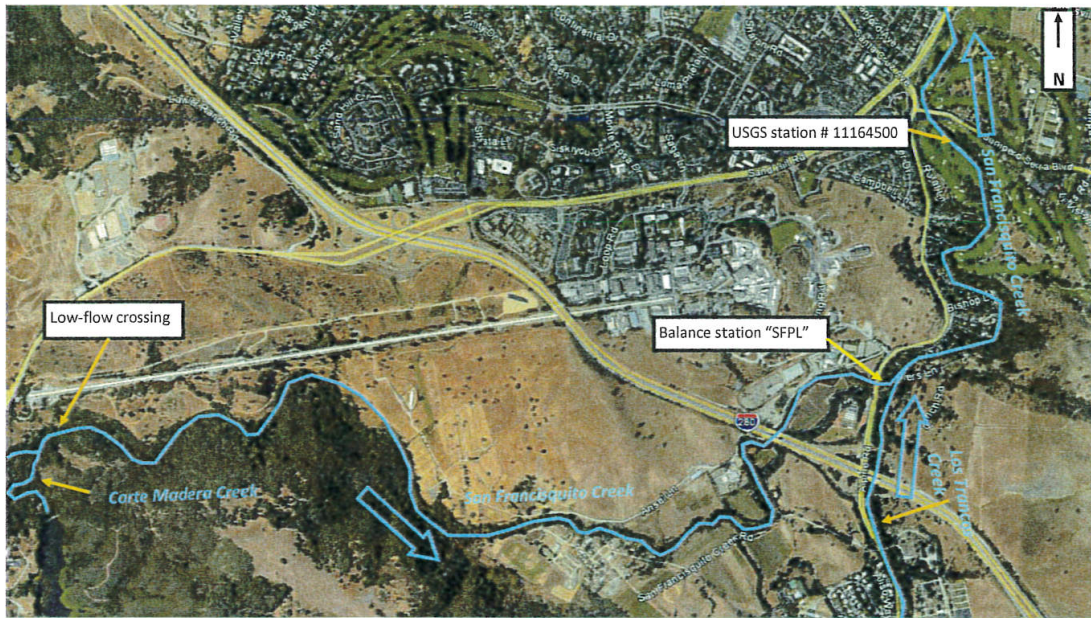
©2016 Balance Hydrologics, Inc.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113



Balance
Hydrologics, Inc.

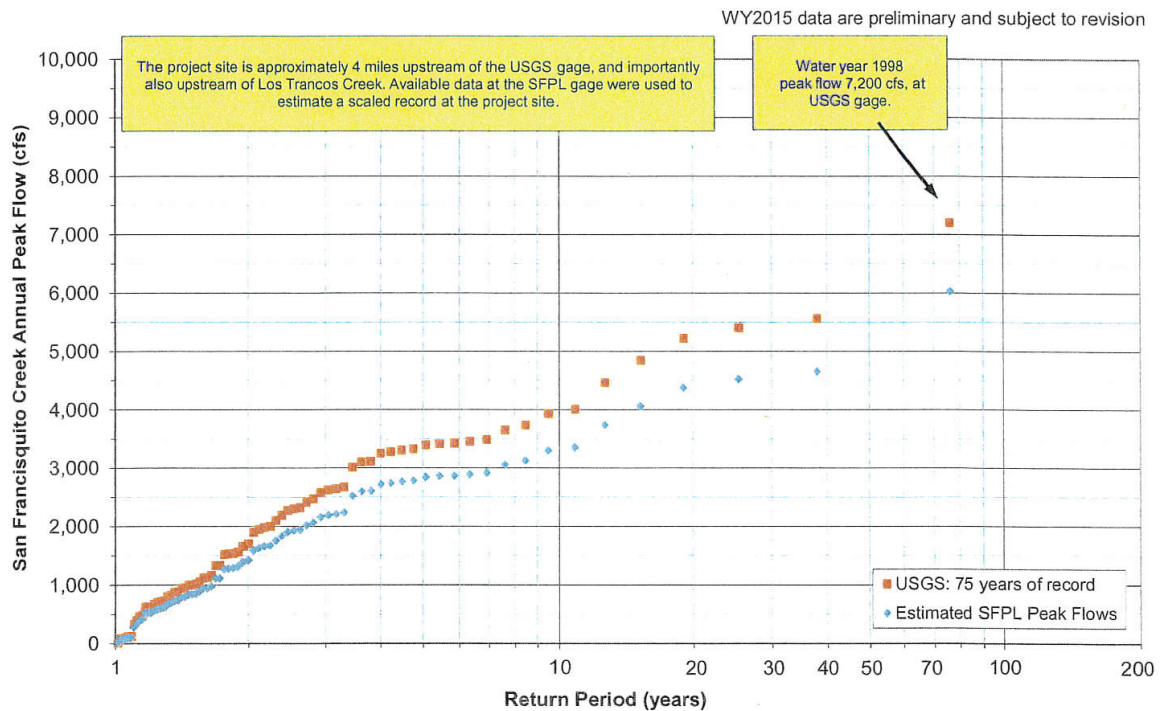
Figure 4. Location of Project Site Relative to Stream Confluences and Gaging Stations.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113



Balance
Hydrologics, Inc.

Figure 5. Annual Peak Flows Over Period of Record at USGS gage: San Francisquito Creek at Stanford Golf Course, and Calculated Peak Flows at Project Site.

USGS gage number 11164500. This record is used in the watershed-scale model to determine 20 and 100-year flooding levels at the crossing (see Figure 7).

214217 Figures 3 5 6 Flow and culvert calcs , Fig 5 100-yr flood

©2016 Balance Hydrologics, Inc.

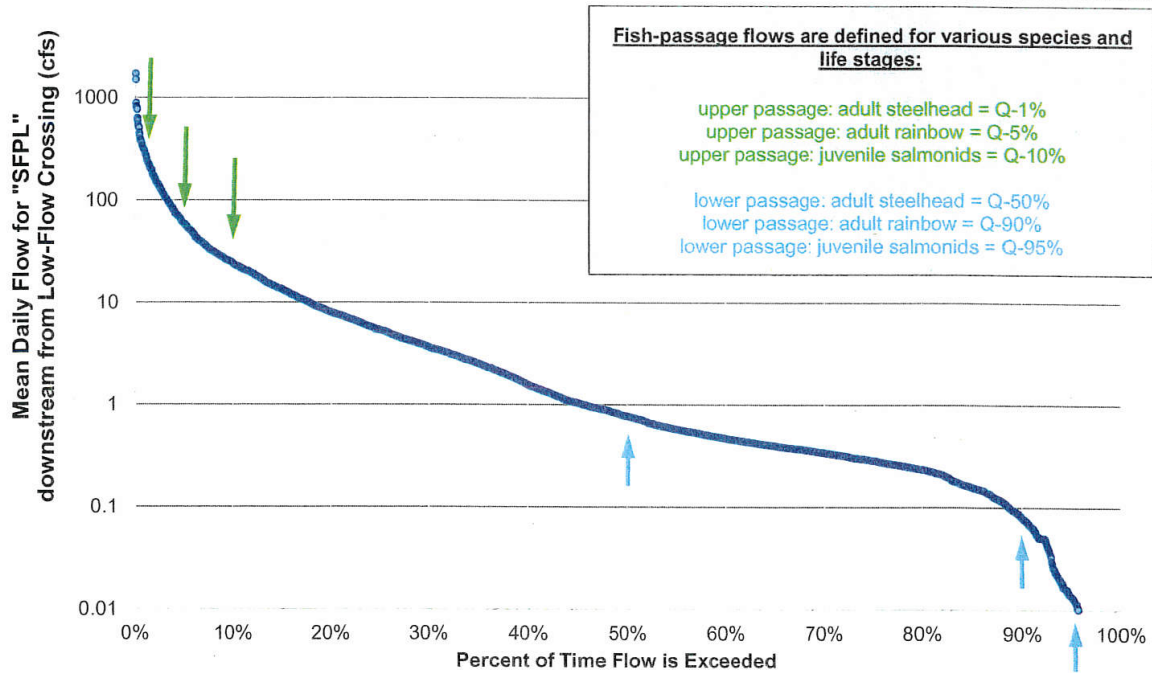
San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

WY2015 data are preliminary and subject to revision



Balance
Hydrologics, Inc.

Figure 6. Ranked Daily Mean Streamflow (Water Years 2002 to 2015): San Francisquito Creek at Piers Lane. This plot graphically shows how percentile flows are ranked, and then calculated. 4,996 days of data were used, from water years 2002 through 2015. This gaging station is approximately 3.7 miles downstream, so for higher flows, some accretion occurs from small tributaries. Therefore the upper-passage-limit values shown are probably slightly higher than at the project site.

214217 Figures 3 5 6 Flow and culvert calcs , Fig 6 Exceed

©2016 Balance Hydrologics, Inc.

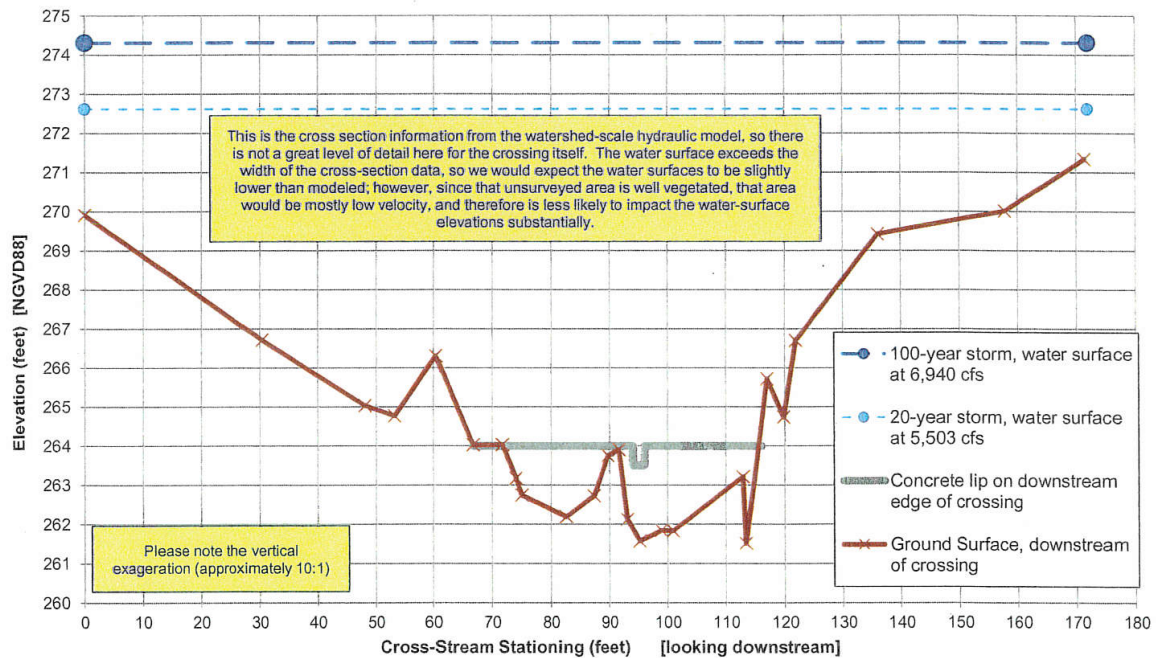
San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

preliminary and subject to revision



**Balance
Hydrologics, Inc.**

Figure 7. Cross-Section Profile (Existing) at Jasper Ridge Low-Flow Crossing. Large storm water surface elevations can be 8 to 10 feet above the surface of the road crossing. This matches with observed high-water marks at the site from December 2012 (similar to a 20-year storm). Note that these are design storms, which differ slightly from the historic record.

Fig 7 Cross Section 65300 Q100 Q20, Plot

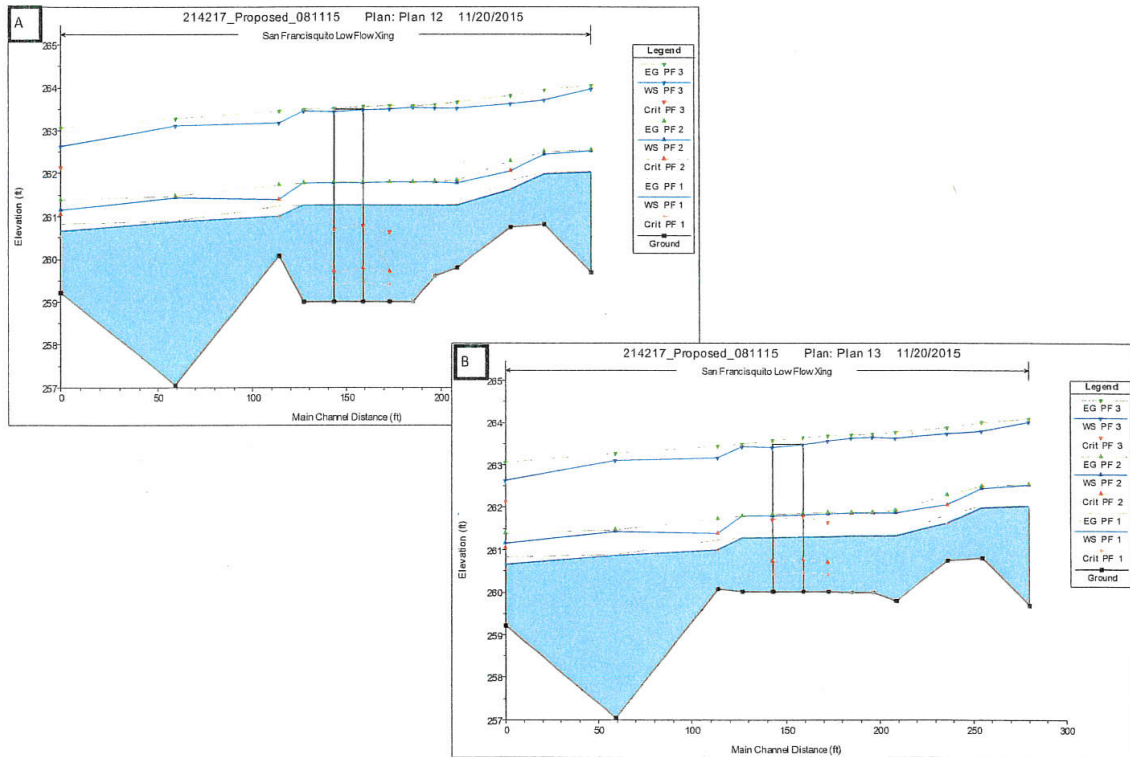
©2016 Balance Hydrologics, Inc.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113



Balance
Hydrologics, Inc.

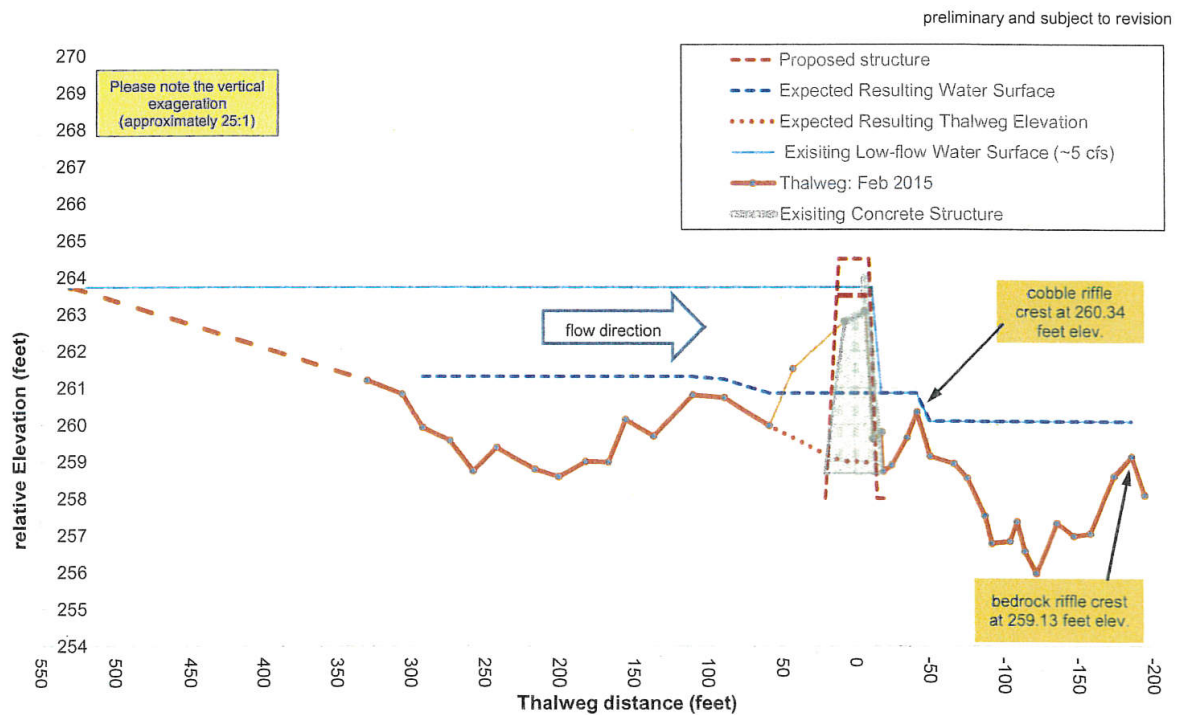
Figure 8. HEC-RAS Model Results Showing the Longitudinal Profile of Water Surfaces for Proposed Conditions at 283, 61, and 25 cfs. Plot A shows a scenario in which the sediment level is 259 feet below the structure, and plot B shows a sediment accumulation to 260 feet in elevation.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113



**Balance
Hydrologics, Inc.**

Figure 9. Longitudinal Thalweg Profile (Proposed) at Jasper Ridge Low-Flow Crossing. Flow less than 283 cfs will now go under the crossing. There are large boulders near station 100, upstream of the crossing, so we do not expect substantial downcutting there, and it will likely transition to being the crest of a riffle.

214217 Fig 2 Fig 9 cross sections and profile NAVD JO, 9 Long proposed culvert (2)

©2016 Balance Hydrologics, Inc.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113



**Balance
Hydrologics, Inc.**

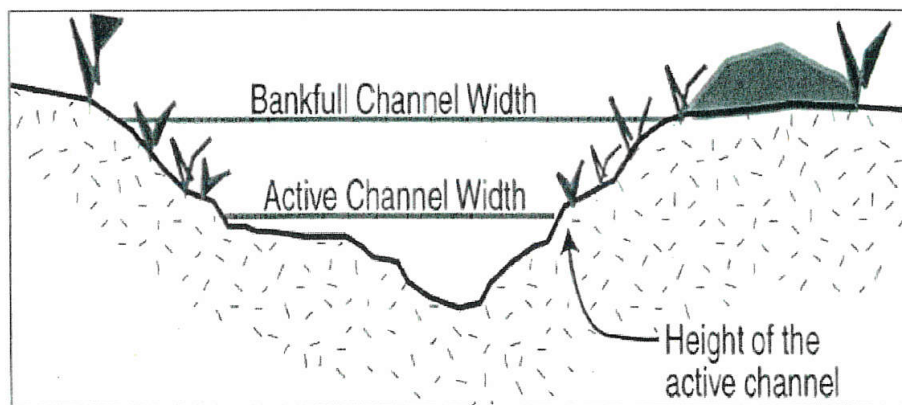
Figure 10. Example of a Vented Ford with Multiple Box Culverts and Grates with Debris Lifters. Example taken from the USDA Forest Service's Low-Water Crossings: Geomorphic, Biological, and Engineering Design Considerations, Appendix A, Case Study 19.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113



Balance
Hydrologics, Inc.

Appendix A Active channel widths.pptx

Figure A-1.

Schematic drawing defining active channel width, from the CDFW California Salmonid Stream Habitat Restoration Manual.

Source: CDFW California Salmonid Stream Habitat Restoration Manual

© 2015 Balance Hydrologics, Inc.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

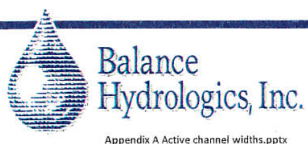


Figure A-2.

Photograph illustrating the bankfull channel margin and the active channel margin.

Source: CDFW California Salmonid Stream Habitat Restoration Manual

© 2015 Balance Hydrologics, Inc.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113



Balance
Hydrologics, Inc.

Appendix A Active channel widths.pptx

Figure A-3.

Section 1, active channel width measurement, San Francisquito Creek. This section is located ~330 feet upstream of the crossing. The active channel width is 30.5 feet.

© 2015 Balance Hydrologics, Inc.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

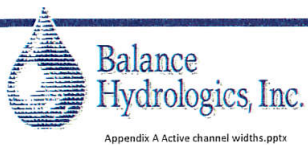


Figure A-4. Section 2, active channel width measurement, San Francisquito Creek. This section is located ~300 feet upstream of the crossing. The active channel width is 20 feet.

© 2015 Balance Hydrologics, Inc.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

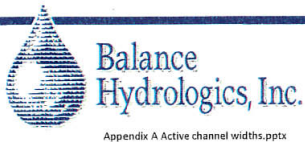


Figure A-5.

Section 3, active channel width measurement, San Francisquito Creek. This section is located ~270 feet upstream of the crossing. The active channel width is 25 feet.

© 2015 Balance Hydrologics, Inc.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

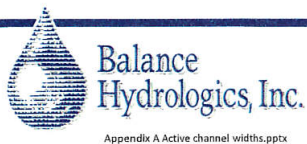


Figure A-6.

Section 4, active channel width measurement, San Francisquito Creek. This section is located ~280 feet downstream of the crossing. The active channel width is 22 feet.

© 2015 Balance Hydrologics, Inc.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113



Figure A-7.

Section 5, active channel width measurement, San Francisquito Creek. This section is located ~320 feet downstream of the crossing. The active channel width is 29 feet.

© 2015 Balance Hydrologics, Inc.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

preliminary and subject to revision

**Table A-1. Active channel widths of San Francisquito Creek:
upstream and downstream of Jasper Ridge low-flow crossing**

Section	Location	Width (ft)	Channel Description	Substrate
1	~330 ft u/s	30.5	upstream, straight	alluvial gravel
2	~300 ft u/s	20	upstream, straight	alluvial gravel
3	~270 ft u/s	25	upstream, start of deep part of pool	alluvial gravel
4	~280 ft d/s	22	downstream, slight meander	alluvial, plus bedrock boulders
5	~320 ft d/s	29	downstream, start of 2-part channel with center bar	alluvial gravel
average		25.3		

Notes:

Measurements performed September 16, 2015; there was no flow and the creek channel was mostly dry.

Observer was Jonathan Owens.

See photograph Figures

Sections were far enough upstream or downstream to avoid major effects of the crossing on the channel geometry, especially the ponding upstream of the crossing (but sections also needed to be downstream of the confluence).

Sections measured were generally straight sections rather than curving pool sections (because the crossing is located in a section between meander bends)

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: F

File Numbers: PLN2017-00113

NOTICE OF EXEMPTION

To: Office of Planning and Research
Post Office Box 3044
Sacramento, California 95812-3044

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

Project Title: San Francisquito Creek Low Flow Crossing Modification

Specific Project Location: San Francisquito Creek, 250 feet downstream of the Bear and Corte Madera creek confluence, Jasper Ridge Biological Preserve

Project Location - City and County: Stanford, County of San Mateo

Description of Project: The project is limited to the modification of a low-flow crossing to improve fish passage at the creek crossing while maintaining the structure's function as a low-flow vehicle crossing for dry-season firetruck access and Stanford University researchers. A "vented ford" will be installed at the crossing which will allow free flow of water under the driving surface to facilitate fish passage. The vented ford will consist of four 7-foot wide bottomless culverts, whose total width will approximate the active channel width of the creek channel. The bottomless culverts will allow a natural creek bed to form and evolve below the crossing, which is anticipated to allow a pool/glide/riffle complex to develop in that creek reach. The project has been designed so that flow under the reconstructed crossing will meet State and federal velocity and depth guidelines in fish passage guidance documents. Issuance of a Lake and Streambed Alteration Agreement Number 1600-2015-0447-R3 is pursuant to Section 1602 Fish and Game Code, to the Permittee, Leland Stanford Junior University.

Name of Lead Agency Approving Project: California Department of Fish and Wildlife

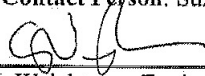
Name of Applicant, Person, or Agency Carrying Out Project: Tom Zigterman, Leland Stanford Junior University

Applicant Address: 327 Bonair Siding, Stanford, California 94305-7272

Exempt Status - Class and Guidelines Section: Class 33 - Section 15333;

Reasons Why Project is Exempt: Project entails modification of a crossing to improve fish passage.

Lead Agency Contact Person: Suzanne DeLeón, Environmental Scientist (831) 440-9433

Signature:  **Date:** September 22, 2016

Name: Craig J. Weightman, Environmental Program Manager

☒ Signed by Lead Agency

Date received for filing at OPR: _____

☐ Signed by Applicant

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: G

File Numbers: PLN2017-00113



State of California – The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558
(707) 944-5500
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director



September 22, 2016

Tom W. Zigterman
Leland Stanford Junior University
327 Bonair Siding
Stanford, California 94305

Subject: Final Lake or Streambed Alteration Agreement
Notification No. 1600-2015-0447-R3
San Francisco Creek Low Flow Crossing Modification

Dear Mr. Zigterman:

Enclosed is the final Streambed Alteration Agreement ("Agreement") for the San Francisco Creek Low Flow Crossing Modification project ("Project"). Before the Department may issue an Agreement, it must comply with the California Environmental Quality Act ("CEQA"). In this case, the Department, acting as a lead agency, determined your project is exempt from CEQA and filed a notice of exemption ("NOE") on September 22, 2016.

Under CEQA, filing a NOE starts a 35-day period within which a party may challenge the filing agency's approval of the project. You may begin your project before the 35-day period expires if you have obtained all necessary local, state, and federal permits or other authorizations. However, if you elect to do so, it will be at your own risk.

If you have any questions regarding this matter, please contact Suzanne DeLeón, Environmental Scientist at (831) 440-9433 or suzanne.deleon@wildlife.ca.gov.

Sincerely,

Craig J. Weightman
Environmental Program Manager
Bay Delta Region

cc: Brian Wines; brian.wines@waterboards.ca.gov
Lieutenant Ober, CDFW

Conserving California's Wildlife Since 1870

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

BAY DELTA REGION
7329 SILVERADO TRAIL
NAPA, CALIFORNIA 94558
(707) 944-5500
WWW.WILDLIFE.CA.GOV



STREAMBED ALTERATION AGREEMENT

NOTIFICATION NO. 1600-2015-0447-R3
San Francisquito Creek

LELAND STANFORD JUNIOR UNIVERSITY
SAN FRANCISQUITO CREEK - LOW FLOW CROSSING MODIFICATION

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (CDFW) and Leland Stanford Junior University (Permittee) as represented by Tom W. Zigterman.

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified CDFW on December 18, 2015, that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1603, CDFW has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project in accordance with the Agreement.

PROJECT LOCATION

The Project is located on San Francisquito Creek, tributary to San Francisco Bay, approximately 250 feet downstream of the Bear and Corte Madera creek confluence in the Jasper Ridge Biological Preserve, at Stanford, in the County of San Mateo, State of California; Latitude 37.410714, Longitude -122.237850 and Assessor's Parcel Numbers 074-490-060 and 074-490-020.

PROJECT DESCRIPTION

The project is limited to the modification of a low-flow crossing to improve fish passage at the creek crossing while maintaining the structure's function as a low-flow vehicle crossing for dry-season firetruck access by Woodside Fire Department and Stanford

Ver. 02/16/2010

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

University researchers. The new crossing is designed to be stable at high flows and passable to fish at low flows.

A "vented ford" will be installed at the crossing which will allow free flow of water under the driving surface to facilitate fish passage. The vented ford will consist of four 7-foot wide bottomless culverts, whose total width will approximate the active channel width of the creek channel. The bottomless culverts will allow a natural creek bed to form and evolve below the crossing, which is anticipated to allow a pool/glide/ riffle complex to develop in that creek reach. The project has been designed so that flow under the reconstructed crossing will meet State and federal velocity and depth guidelines in fish passage guidance documents.

To construct the new crossing, a 33-foot wide notch will be cut in the concrete structure of the existing crossing and existing concrete apron on the downstream side of the crossing will be removed. Foundations, piers, and cross pieces for the four bottomless culverts will be constructed of poured-in-place concrete within the notch in the existing structure. The base of the piers will be placed deep enough for stability during high flows. The foundation design may need to be adapted depending on if- or at what depth- bedrock may be encountered during excavation. Concrete debris from creating the notch will be contained and removed from the project site.

The new driving surface over the crossing will be constructed of removable steel grates. Cross pieces on the upstream and downstream faces of the crossing will tie the tops of the piers together. The extension of upstream wing walls and piers will be angled to deflect and lift debris over the top of the crossing to reduce the severity and occurrence of wood and debris jams. Removable grates will facilitate the removable of potential wood and debris jams. The driving surface of the new vented ford will be approximately 0.5 to 1.5 feet higher (elevation 264.5 feet) than the driving surface of the existing crossing (elevation ranging from 263 to 264 feet).

To match the higher grade of the new crossing, new concrete driving surfaces will be added to the approaches to the crossing. Approximately 65 feet of the existing roadway approaching the crossing will need to be removed in order to achieve the elevations of the new crossing. All concrete will be removed except the existing concrete foundation on the left bank downstream of the crossing. The equipment used for this demolition will likely include gasoline and electrically powered equipment such as saws, hammers, and excavators, as well as hand tools. All removed concrete will be hauled offsite to an approved disposal site.

At the edges of the crossing, rock protection will be used to create a smooth transition between the wingwalls and edge of the channel bank. There will also be rock protection on the downstream side of the north approach, for the same purpose. Willows and alders that need to be removed from within access limits shall be reused onsite as elements in the bio-engineering of the creek banks using brush layering techniques.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

Approximately 250 linear feet of San Francisquito Creek will be dewatered for project construction. A fish screen will be installed about 100 linear feet upstream from the crossing and a gravel-bag and plastic-sheet cofferdam will be installed about 20 feet downstream from the fish screen cofferdam. The length of the cofferdam will be about 35 feet across the creek. A diversion pump placed between the fish screen and coffer dam will direct flow to a diversion pipe that will outfall downstream of the crossing onto gravel bags past a bedrock ledge located about 140 feet downstream of the crossing. Dewatering pump(s) may be needed during construction of the crossing. If water from this area is turbid, it will be pumped to an upland infiltration/dispersal area away from the creek channel. The location of this infiltration/dispersal area will be determined in cooperation with Jasper Ridge staff to avoid affecting sensitive and/or research areas.

Access for large equipment and materials will be from the north and west side of the channel, therefore, activities will need to be sequenced such that most work on the south side of the creek is completed either before the center of the crossing is removed or after the culverts and decking are in place. There will also be construction-phase access from the center of the channel upstream of the crossing. Road access to the other side of the creek may also be able to be provided through the Jasper Ridge Biological Preserve.

After the crossing has been constructed and the banks have been stabilized with brush layering, all disturbed areas will be seeded with a native seed mix and fiber rolls will be placed. Following the modification of the crossing, backwatering will be reduced in the upstream creek segment. The upstream pool will shrink in length and, at least initially, in depth, because the new hydraulic control will be the natural creek bed approximately 110 feet upstream of the crossing. The approximately 80 linear-foot long wedge of sediment that has accumulated just upstream of the crossing will be reshaped into a more natural channel shape.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include:

- California red-legged frog (*Rana draytonii*) (CRLF), listed as threatened under the federal Endangered Species Act (ESA) and designated as a state Species of Special Concern (SSC);
- Steelhead (*Onchorhynchus mykiss*), listed as threatened under ESA and a SSC;
- San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) (SFDW) a SSC;
- Western pond turtle (*Actinemys marmorata*), a SSC;
- Nesting and foraging birds;
- Native fish species including California roach (*Lavinia symmetricus*), Sacramento sucker (*Catostomus occidentalis*) threespine stickleback (*Gasterosteus aculeatus*) and prickly sculpin (*Cottus asper*);
- Native amphibian species;

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

- 150 feet of temporary impacts to riparian vegetation.

The adverse effects the project could have on the fish or wildlife resources identified above without implementation of the Measures to Protect Fish and Wildlife Resources specified below, include:

- Potential increase in turbidity from construction activities;
- Reduction in water quality during construction;
- Disruption to nesting and foraging birds and other wildlife;
- Impediment to migration of aquatic species and take of individual species;
- Relocation of stream channel;
- Short-term release of contaminants incidental from construction;
- Long-term release of contaminants;
- Temporary loss of riparian habitat.

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

Permittee shall meet each administrative requirement described below.

- 1.1 Notification of Work Initiation/Completion. Permittee shall notify CDFW 48 hours prior to the initiation of construction and 48 hours following completion of work.
- 1.2 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to CDFW personnel, or personnel from another state, federal, or local agency upon request.
- 1.3 Providing Agreement to Persons at Project Site. Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons who will be working on the project at the project site on behalf of Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.
- 1.4 Notification of Conflicting Provisions. Permittee shall notify CDFW if Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, CDFW shall contact Permittee to resolve any conflict.
- 1.5 Project Site Entry. Permittee agrees that CDFW personnel may enter the project site at any time to verify compliance with the Agreement.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

- 1.6 CDFW-Approved Qualified Biologist(s) and Biological Monitor(s). Within a minimum of 30 days prior to initiating species surveys within the project area, Permittee shall submit to CDFW for written approval, the names and resumes of all qualified biologists and biological monitors involved in conducting surveys and/or monitoring work.

A qualified biologist is an individual who shall have a minimum of five years of academic training and professional experience in biological sciences and related resource management activities with a minimum of two seasonal years conducting surveys for each species that may be present within the project area.

A biological monitor is an individual who shall have academic and professional experience in biological sciences and related resource management activities as it pertains to this project, experience with construction-level biological monitoring, be able to recognize species that may be present within the project area, and be familiar with the habits and behavior of those species.

- 1.7 Unauthorized Take. This Agreement does not authorize the take, including incidental take, of any state or federally listed threatened or endangered listed species, or of species that are otherwise protected under FGC. Permittee may be required, as prescribed in the ESA and CESA, to obtain take coverage for federal and state listed species prior to commencement of the project. Any unauthorized take of listed species may result in prosecution and nullification of this Agreement.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below.

Work Periods

- 2.1 Work Period. To avoid or minimize adverse impacts to fish and wildlife and their habitats, work within the creek and riparian zone shall be limited to June 15 to October 31.

- 2.1.1 Work Period Modification. If Permittee needs more time to complete project activities, work may be authorized outside of the work period as stated in Measure 2.1 and extended on a day-to-day basis by CDFW representative, Suzanne Deleon, at suzanne.deleon@wildlife.ca.gov, (831) 440-9433, or if unavailable, through contact with the CDFW Bay Delta Regional Office by mail, phone (707-944-5500) or fax (707-944-5553). Permittee shall submit a written request for a work period variance to CDFW for approval at least seven (7) calendar days prior to October 31. The work period variance request shall: 1) describe the extent of work

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

already completed; 2) detail the activities that remain to be completed; 3) detail the time required to complete each of the remaining activities; and 4) provide photographs of both the current work completed and the proposed site for continued work. Work period variances are issued at the discretion of CDFW. CDFW will review the written request to work outside of the established work period and may require additional measures to protect fish and wildlife resources as a condition for granting the variance. Any additional measures shall be made part of this Agreement.

Construction Measures

- 2.2 Work Period in Dry Weather Only. Work within the stream zone shall be restricted to periods of low rainfall (less than ¼" per 24 hour period) and dry weather as allowed during the work period specified in Measure 2.1. No work shall occur during a dry out period of 24 hours after the wet weather referenced above.
- 2.3 Weather Forecast. Precipitation forecasts shall be considered when planning construction activities. Permittee shall monitor the 72-hour forecast from the National Weather Service (<http://www.nws.noaa.gov>). When there is a forecast of more than 40% chance of rain, or at the onset of unanticipated precipitation, the Permittee shall remove all equipment and shall implement erosion and sediment control measures and all project activities shall cease.
- 2.4 No Equipment in Channel. No equipment shall be operated in wetted portions of the creek, including but not limited to ponded, flowing or wetland areas, at any time except as may be necessary to construct a dewatering system or divert water flow around the work site with the prior written permission of CDFW.
- 2.5 Washing of Equipment. In order to prevent the movement of invasive plant and animal species, fungi, and other biotic agents from external ecological regions, the equipment used shall be washed prior to entry and staging onto construction sites.
- 2.6 Decontamination of Clothing and Equipment. Any equipment that will enter the water or wetland areas during construction shall be decontaminated before and after construction to prevent the spread of aquatic diseases, such as ranavirus, and invasive aquatic species, such as quagga mussel. Workers shall also decontaminate waders, boots and other clothing that will come in direct contact with the water. Decontamination of clothing and equipment shall be done through one or more of the following methods:
 - Drying equipment in an upland location following last aquatic use. If average daytime temperatures exceed 80° F, drying times shall be at least 7 days. If average daytime temperatures are below 80° F, drying times shall be at least 30 days;

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

- Scalding water wash (at least 140° F) with varying high and low pressure spray to dislodge pathogens, vegetation, and contaminated sediment;
- Freezing at a temperature of less than 32° F for more than 72 hours; and/or
- Soaking in a hospital-grade disinfectant solution for at least two minutes (or longer, based on product directions). To avoid harm to non-target species, disinfected clothing and equipment shall be thoroughly rinsed in a water bath before entering the stream.

Repeat decontamination is required only if the equipment/clothing is removed from the site, used within a different waterbody, and returned to the project site. Decontamination shall take place in an upland location, and any chemicals used during decontamination shall be prevented from entering water bodies or stormwater drains.

Rock Slope Protection

- 2.7 **Rock Slope Protection (RSP).** Un-grouted RSP materials shall consist of clean rock, competent for the application, sized and properly installed to resist washout. RSP slopes and footing trenches shall feature an underlayment of appropriate grade geo-textile fabric, on slopes less than 1:1, or gravel blanket, on slopes greater than 1:1. Rocks shall be of such shape as to form a stable protection structure of the required section. Rounded boulders or cobbles shall not be used on prepared ground surfaces having slopes steeper than two to one (2:1). Angular shapes may be used on any planned slope. Flat or needle shapes shall not be accepted unless the thickness of the individual pieces is greater than 1/3 the length.

Wildlife Protection Measures

- 2.8 **Education Session before Commencement of Work.** Prior to any project or construction activities, the biological monitor or qualified biologist shall conduct an education session on species that may be present at the project work site. The training shall consist of basic identification of the species, their basic habits, how they may be encountered in the work area, and procedures to follow when they are encountered. Any personnel joining the work crew later shall receive the same training before beginning work. The penalties for non-compliance of conditions in this Agreement shall be relayed to all project personnel.
- 2.9 **Designation of Work Area.** Prior to project activities, a biological monitor or qualified biologist shall clearly mark/flag or erect temporary construction fencing to designate the work area and to delineate any sensitive areas and trees that shall be avoided. Flagging and or temporary construction fencing shall be removed immediately after the completion of construction work.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

- 2.10 Pre-Construction Surveys. Within 48 hours prior to construction work within the project area, the CDFW-approved qualified biologist shall conduct pre-construction surveys for presence of CRLF and other special-status fish and wildlife species within the work area. Surveys shall be conducted at the appropriate time of day and in suitable habitat for each species. If any special-status species, other than steelhead, are found, the qualified biologist shall contact the CDFW within 24 hours per contact instructions in Measure 2.1.1. CDFW reserves the right provide additional measures to this Agreement designed to protect special-status species.
- 2.11 Nesting Bird Survey. If project occurs during the nesting season of raptors and migratory birds, a focused survey for active nests of such birds shall be conducted by the CDFW-approved qualified biologist within 15 days prior to the beginning of project-related activities. Surveys shall be conducted in all suitable habitat located at project work sites and in staging and storage areas. The minimum survey radii surrounding the work area shall be the following: i) 250 feet for passerines; ii) 500 feet for small raptors such as accipiters; iii) 1,000 feet for larger raptors such as buteos. The bird survey methodology and the results of the survey shall be submitted to CDFW prior to commencement of project activities.
- Nesting seasons are typically defined as followed: i) March 15 to August 30 for smaller bird species such as passerines; ii) February 15 to September 15 for raptors.
- 2.12 Active Nests. If active nests are found, Permittee shall consult with CDFW and the U.S. Fish and Wildlife Service (USFWS) regarding appropriate action to comply with the Migratory Bird Treaty Act of 1918 and the FGC. If a lapse in project-related work of 15 days or longer occurs, another focused survey shall be conducted before project work is reinitiated. If active nests are found, Permittee shall consult with CDFW and the USFWS prior to resumption of project activities or to discuss buffer distances.
- 2.13 Active Nest Buffers. Active nest sites shall be designated as Environmental Sensitive Areas (ESAS) and protected (while occupied) during project activities with the establishment of a fence barrier surrounding the nest site. The typical minimum distances of the protective buffers surrounding each identified ESAS are the following: i) 1,000 feet for large raptors such as buteos; ii) 500 feet for small raptors such as accipiters; iii) 250 feet for passerines. A biological monitor or qualified biologist shall monitor the behavior of the birds (adults and young, when present) at the nest site to ensure that they are not disturbed by project-related activities. Nest monitoring shall continue during project-related construction work until the young have fully fledged, are no longer being fed by the parents and have left the nest site, as determined by a biological monitor.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

- 2.14 Nesting Habitat Removal or Modification. No vegetation shall be disturbed, trimmed or pruned that contains active bird nests until all eggs have hatched, and young have fully fledged (are no longer being fed by the adults, and have completely left the nest site). No habitat modification shall occur within the ESAS-fenced nest zone even if the nest continues to be active beyond the typical nesting season for the species (refer to Measure 2.11), until the young have fully fledged and will no longer be adversely affected by the project.
- 2.15 Qualified Biologist On-site. a CDFW-approved biological monitor and/or qualified biologist shall be present on the project site while all project activities are being conducted.
- 2.16 Relocation of Fish and Amphibians. Prior to the work within the creek, the qualified biologist shall capture and relocate fish and amphibian species if necessary. Handling and relocation of CRLF and listed salmonids shall occur only if the qualified biologist has been permitted by the USFWS and NOAA Fisheries and approved by CDFW for this specific project. Measures shall be taken to minimize harm and mortality to listed salmonids resulting from fish relocation and dewatering activities. Capture methods may include, fish landing nets, dip nets, buckets and by hand.
- 2.17 Check for Aquatic Life. The qualified biologist shall check daily for aquatic life in the netted area. All reasonable efforts shall be made to capture and move all aquatic life observed in the netted area.
- 2.18 Release Locations Criteria. Prior to capturing fish, the most appropriate release location(s) shall be determined, using the following criteria:
- 2.18.1 Temperature. Water temperature shall be similar as the capture location.
- 2.18.2 Habitat. There shall be ample pool and cover habitat for the captured fish.
- 2.18.3 Exclusion from Work Site. There shall be low likelihood for the fish to reenter the work site or become impinged on the exclusion net or screen.
- 2.19 Wet Hands and Nets. Handling of salmonids shall be minimized. However, when handling is necessary, Permittee shall always wet hands or nets prior to touching fish.
- 2.20 Proper Holding Technique. Permittee shall temporarily hold fish in cool, shaded, aerated water in a flow-through live car. Permittee shall protect fish from jostling and noise and do not remove fish from this container until time of release.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

- 2.21 Water Temperatures and Water Changes. Permittee shall measure air and water temperatures periodically. A thermometer shall be placed in holding containers and, if necessary, periodically conduct partial water changes to maintain a stable water temperature. If water temperature reaches or exceeds 18 °C, fish shall be released and rescue operations ceased.
- 2.22 Relocate Fish During Cool Temperatures. Permittee shall conduct relocation activities in the morning when the temperatures are cooler.
- 2.23 No Overcrowding. Overcrowding in containers shall be avoided by having at least two containers and segregating young-of-year (YOY) fish from larger age-classes to avoid predation. Larger amphibians, such as Pacific giant salamanders, shall be placed in the container with larger fish. If fish are abundant, the capturing of fish and amphibians shall cease periodically and shall be released at the predetermined locations.
- 2.24 Additional Measures to Prevent Injury and Mortality to Salmonids. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in *Part IX, pages 52 and 53 of the Salmonid Habitat Restoration Manual*. This document can be found at: <http://www.dfg.ca.gov/fish/resources/habitatmanual.asp>
- 2.25 Rescued Fish Records. A record shall be maintained of all fish rescued and moved. The record shall include the date of capture and relocation, the method of capture, the location of the relocation site in relation to the project site, and the number and species of fish captured and relocated. The record shall be provided to DFG within two weeks of the completion of the work season or project, whichever comes first.
- 2.26 WPT Avoidance. In the event WPT are found in the project area, Permittee shall exercise measures to avoid direct injury to them as well as avoid areas where they are observed. If a WPT is observed, it shall be left alone to move out of the area on its own. If it does not move on its own, it can be relocated to at least a 250-foot distance away from the project location. Relocation areas shall be of suitable habitat, on shallow banks with slow moving water and shall be far enough away so as not to be affected by project activities.
- 2.27 Vegetation Removal. Disturbance or removal of vegetation shall not exceed the minimum necessary to complete the work. Precautions shall be taken to avoid other damage to vegetation by people or equipment. Vegetation outside the project work area shall not be removed or damaged without prior consultation and written approval from a CDFW representative.
- 2.28 Stop Work Authority. The biological monitor or qualified biologist shall have the responsibility and authority of stopping the project if any crews or personnel are not complying with the provisions outlined in this Agreement.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

Silt Control Measures

- 2.29 Silt Curtain or Sediment Barrier. Silt control measures shall be utilized throughout all phases of the project where silt and/or earthen fill threaten to enter Waters of the State. The silt prevention device shall not be placed where it will trap steelhead or other fish, amphibians or reptiles between the work site and silt prevention device. The sediment barrier or silt filtering devices shall be maintained throughout all phases of work activities.
- 2.30 Silt Control Effectiveness. Silt control structures shall be monitored daily for effectiveness and shall be repaired or replaced as needed. Passage of sediment beyond the sediment barrier is prohibited. If the sediment barrier fails to retain sediment, construction activities shall cease and corrective measures shall be employed.
- 2.31 Turbidity Monitoring. Permittee shall monitor turbidity levels up and downstream of the project site before and during project activities. The following standards shall be met:
- 2.32 Turbidity Monitoring. Permittee shall monitor turbidity levels 100 feet up and downstream the project site when dewatering of the creek is necessary. The Permittee shall keep a log of the data and the following standards shall be met:
- Permittee shall monitor turbidity levels 100 feet up and downstream of the project site before dewatering activities and then every two hours during dewatering and re-watering activities.
 - If the turbidity reading downstream of the project site is greater than 30 nephelometric turbidity units (NTUs) above turbidity at the upstream site, Permittee shall modify Best Management Practices (BMPs) or activities (for e.g. decrease amount of people in water or fix siltation devices and continue to monitor every two hours.
 - If turbidity continues to exceed the background for 4 hours, Permittee shall stop work, modify BMPs and wait to resume work until background turbidity levels are achieved.
 - If turbidity levels are greater than 50 NTUs above upstream turbidity site, Permittee shall stop work immediately, modify BMPs and wait to resume work until background turbidity levels are achieved. The CDFW may take enforcement action if appropriate turbidity and siltation control measures are not deployed.
- 2.33 Turbidity Log. Permittee shall keep a log of recorded turbidity data with turbidity readings, location of readings and time of each reading.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

- 2.34 Cease Project for Elevation of Turbidity Levels. Upon CDFW determination that turbidity/siltation levels resulting from project related activities constitute a threat to aquatic life, activities associated with the turbidity/siltation shall be halted until effective CDFW-approved control devices are installed or abatement procedures are initiated. CDFW may take enforcement action if

Equipment and Vehicles

- 2.35 Staging and Storage Areas. Building materials and/or construction equipment shall not be stockpiled or stored where they could be washed into the water or where they will cover aquatic or riparian vegetation.
- 2.36 Equipment over Drip-pans. Staging and storage areas for equipment, materials, fuels, lubricants and solvents shall be located away from the wetted areas. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the creek shall be positioned over drip-pans.
- 2.37 Maintenance of Vehicles. Any equipment or vehicles driven and/or operated adjacent to the creek areas shall be checked and maintained daily to prevent leaks of materials that if introduced to water could be deleterious to aquatic life, wildlife or riparian habitat. Vehicles must be moved away 150 feet from the stream prior to refueling and lubrication.

Toxic or Hazardous Materials

- 2.38 Concrete – Primary Containment. Permittee shall install the necessary containment structures to control the placement of wet concrete and to prevent it from entering into the stream channel outside of those structures. No concrete shall be poured within the high flow line if the 15-day weather forecast indicates any chance of rain.
- 2.39 Concrete – Designated Monitor. At all times when Permittee is pouring or working with wet concrete, there shall be a designated monitor to inspect the containment structures and ensure that no concrete or other debris enters into the channel outside of those structures. Runoff from the concrete shall not be allowed to enter the stream channel at any time.
- 2.40 Isolate Poured Concrete for 30 Days. If feasible, poured concrete shall be excluded from the wetted channel for a period of 30 days after it is poured. During that time the poured concrete shall be kept moist, and runoff from the concrete shall not be allowed to enter a live stream. If the 30-day curing period is infeasible, the Permittee shall institute a minimum 7-day curing period and apply a non-toxic sealant designed for use in aquatic environments. The sealant shall be allowed to cure for a minimum of 72 hours and until the sealant is dry.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

- 2.41 Concrete Curing Alternative. If rain does occur after pouring or concrete cannot be excluded from the wetted channel for a period of 30 days, the Permittee shall monitor the pH of any water that has come into contact with the poured concrete. If this water has a pH of 9.0 or greater, the water shall be pumped to a tanker truck or to a lined off-channel basin and allowed to evaporate or be transported to an appropriate facility for disposal. During the pH monitoring period, all water that has come in contact with poured concrete shall be isolated and not allowed to enter the water or otherwise come in contact with fish and other aquatic resources. The water shall be retested until pH values become less than 9.0. Once this has been determined, the area no longer needs to be isolated. Results of pH monitoring shall be made available to CDFW upon request. A non-toxic substance that can buffer the pH shall be made available on site to use if any contamination to water occurs.
- 2.42 Hazardous Materials. Any hazardous or toxic materials that could be deleterious to aquatic life that could be washed into state waters or its tributaries shall be contained in water tight containers or removed from the project site.
- 2.43 Debris and Waste Disposal. Permittee/contractor shall not dump any litter or construction debris within the project area. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site.

Spills and Emergencies

- 2.44 Spill Containment. All activities performed in or near a stream shall have absorbent materials designated for spill containment and clean-up activities on-site for use in an accidental spill. The Permittee shall immediately notify the California Emergency Management Agency at 1-800-852-7550 and immediately initiate the clean-up activities. CDFW shall be notified by the Permittee and consulted regarding clean-up procedures.

3. Reporting Measures

Permittee shall meet each reporting requirement described below.

- 3.1 Species Survey Results. Permittee shall submit the sensitive species surveys methodologies and results to CDFW prior to commencement of project activities. Refer to Notification Number 1600-2015-0447-R3 when submitting the report to CDFW.
- 3.2 Fish Capture and Relocation Records. Permittee shall submit to CDFW within two weeks of completion of the project, a report on fish capture and relocation. Refer to Notification Number 1600-2015-0447-R3 when submitting the report to CDFW.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

- 3.3 Turbidity Monitoring Results. Permittee shall submit to CDFW the turbidity monitoring data log within two weeks of project completion. Refer to Notification Number 1600-2015-0447-R3 when submitting the report to CDFW.
- 3.4 As-built and Photo Monitoring Report. Permittee shall submit to CDFW the Water Board-requested as-built report and photographs of the immediate post-construction condition. Refer to Notification Number 1600-2015-0447-R3 when submitting the report to CDFW.
- 3.5 Notification to the California Natural Diversity Database (CNDDDB). If any listed, rare, or special status species are detected during project surveys or on or around the project site during project activities, Permittee shall submit CNDDDB Field Survey Forms to CDFW in the manner described at the CNDDDB website (http://www.wildlife.ca.gov/biogeodata/cnddb/submitting_data_to_cnddb.asp) within 14 working days of the sightings. Copies of such submittals shall also be submitted to the CDFW regional office as specified below.

CONTACT INFORMATION

Any communication that Permittee or CDFW submits to the other shall be in writing and any communication or documentation shall be delivered to the address below by U.S. mail, fax, or email, or to such other address as Permittee or CDFW specifies by written notice to the other.

To Permittee:

Tom W. Zigterman
Leland Stanford Junior University
327 Bonair Siding
Stanford, California 94305-7272
Phone (650) 725-3400
Fax (650)723-3191
twz@stanford.edu

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

To CDFW:

California Department of Fish and Wildlife
Bay Delta Region
7329 Silverado Trail
Napa, California 94558
Attn: Lake and Streambed Alteration Program – Suzanne DeLeón
Notification #1600-2015-0249-R3
Fax (707) 944-5553
Suzanne.deleon@wildlife.ca.gov

LIABILITY

Permittee shall be solely liable for any violations of the Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute CDFW's endorsement of, or require Permittee to proceed with the project. The decision to proceed with the project is Permittee's alone.

SUSPENSION AND REVOCATION

CDFW may suspend or revoke in its entirety the Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before CDFW suspends or revokes the Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before CDFW suspends or revokes the Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused CDFW to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes CDFW from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects CDFW's enforcement authority or that of its enforcement personnel.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

OTHER LEGAL OBLIGATIONS

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 et seq. (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in the Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

AMENDMENT

CDFW may amend the Agreement at any time during its term if CDFW determines the amendment is necessary to protect an existing fish or wildlife resource.

Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by CDFW and Permittee. To request an amendment, Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

TRANSFER AND ASSIGNMENT

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter CDFW approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

EXTENSIONS

In accordance with FGC section 1605(b), Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's term. To request an extension, Permittee shall submit to CDFW a completed CDFW "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5). CDFW shall process the extension request in accordance with FGC 1605(b) through (e).

If Permittee fails to submit a request to extend the Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (Fish & G. Code, § 1605, subd. (f)).

EFFECTIVE DATE

The Agreement becomes effective on the date of CDFW's signature, which shall be: 1) after Permittee's signature; 2) after CDFW complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC section 711.4 filing fee listed at http://www.wildlife.ca.gov/habcon/ceqa/ceqa_changes.html.

TERM

This Agreement shall expire on **December 31, 2020** unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

AUTHORITY

If the person signing the Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

AUTHORIZATION

This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project the Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify CDFW in accordance with FGC section 1602.

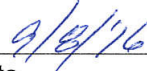
CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

FOR LELAND STANFORD JUNIOR UNIVERSITY

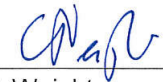


Tom W. Zigterman
Permittee



Date

FOR DEPARTMENT OF FISH AND WILDLIFE



Craig J. Weightman
Environmental Program Manager



Date

Prepared by: Suzanne DeLeón
Environmental Scientist

Date Sent: August 30, 2016

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

FOR DEPARTMENT USE ONLY				
Date Received	Amount Received	Amount Due	Date Complete	Notification No.
12/18/2015	\$1833.25	\$		1600-2015-0447-3



1870213
Stanford University

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND WILDLIFE

DeLeon
LT. OBER



NOTIFICATION OF LAKE OR STREAMBED ALTERATION

Complete EACH field, unless otherwise indicated, following the enclosed instructions and submit ALL required enclosures. Attach additional pages, if necessary.

1. APPLICANT PROPOSING PROJECT

Name	Tom W Zigterman, P.E., D.WRE			Fish & Wildlife
Business/Agency	Leland Stanford Junior University			DEC 18 2015
Street Address	327 Bonair Siding			
City, State, Zip	Stanford, CA 94305			Napa
Telephone	650-725-3400	Fax	650-723-3191	
Email	twz@stanford.edu			

2. CONTACT PERSON (Complete only if different from applicant)

Name			
Street Address			
City, State, Zip			
Telephone		Fax	
Email			

3. PROPERTY OWNER (Complete only if different from applicant)

Name			
Street Address			
City, State, Zip			
Telephone		Fax	
Email			

4. PROJECT NAME AND AGREEMENT TERM

A. Project Name		San Francisquito Creek - Low Flow Crossing Modification		
B. Agreement Term Requested		☒ Regular (5 years or less) ☐ Long-term (greater than 5 years)		
C. Project Term		D. Seasonal Work Period		E. Number of Work Days
Beginning (year)	Ending (year)	Start Date (month/day)	End Date (month/day)	
2016	2016	June 15	September 30	30

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

5. AGREEMENT TYPE

Check the applicable box. If box B, C, D, or E is checked, complete the specified attachment.	
A.	☒ Standard (Most construction projects, excluding the categories listed below)
B.	☐ Gravel/Sand/Rock Extraction (Attachment A) Mine I.D. Number: _____
C.	☐ Timber Harvesting (Attachment B) THP Number: _____
D.	☐ Water Diversion/Extraction/Impoundment (Attachment C) SWRCB Number: _____
E.	☐ Routine Maintenance (Attachment D)
F.	☐ CDFW Fisheries Restoration Grant Program (FRGP) FRGP Contract Number _____
G.	☐ Master
H.	☐ Master Timber Harvesting

6. FEES

Please see the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. Note: The Department may not process this notification until the correct fee has been received.			
A. Project		B. Project Cost	C. Project Fee
1	San Francisquito Creek - Low Flow Crossing Modification	\$250,000	\$1833.25
2			
3			
4			
5			
		D. Base Fee (if applicable)	
		E. TOTAL FEE ENCLOSED	\$1833.25

7. PRIOR NOTIFICATION OR ORDER

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, the Department for the project described in this notification?	
☐ Yes (Provide the information below) ☒ No	
Applicant: _____ Notification Number: _____ Date: _____	
B. Is this notification being submitted in response to an order, notice, or other directive ("order") by a court or administrative agency (including the Department)?	
☒ No ☐ Yes (Enclose a copy of the order, notice, or other directive. If the directive is not in writing, identify the person who directed the applicant to submit this notification and the agency he or she represents, and describe the circumstances relating to the order.)	
☐ Continued on additional page(s)	

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

8. PROJECT LOCATION

A. Address or description of project location. <i>(Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway)</i> The project is located along San Francisquito creek approximately 250 ft downstream of the Bear Creek and Corte Madera creek confluence, inside the Jasper Ridge Biological Preserve. See sheet C-1 for location map. Directions: From highway I-280 take the Sand Hill Road West exit (24); at 4001 Sandhill Road enter the Jasper Ridge Biological Preserve through the gate; take the left turn, continue past through the main building, and left again downhill and continue on the dirt road, past a bridge to the low flow crossing. Call applicant one work day prior, and then call (650) 826-2197 for access through Jasper Ridge Biological Preserve entry gate. ☐ Continued on additional page(s)				
B. River, stream, or lake affected by the project.		San Francisquito Creek		
C. What water body is the river, stream, or lake tributary to?		San Francisco Bay		
D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts?		☐ Yes ☒ No ☐ Unknown		
E. County		San Mateo		
F. USGS 7.5 Minute Quad Map Name	G. Township	H. Range	I. Section	J. ¼ Section
Palo Alto Quardangle	6 south	3 west		
☐ Continued on additional page(s)				
K. Meridian (check one)		☐ Humboldt ☒ Mt. Diablo ☐ San Bernardino		
L. Assessor's Parcel Number(s)				
074-490-060, 074-490-020				
☐ Continued on additional page(s)				
M. Coordinates (If available, provide at least latitude/longitude or UTM coordinates and check appropriate boxes)				
Latitude/Longitude	Latitude: Latitude 37.410714,		Longitude: Longitude -122.237850	
	☐ Degrees/Minutes/Seconds		☒ Decimal Degrees ☐ Decimal Minutes	
UTM	Easting:	Northing:	☐ Zone 10 ☐ Zone 11	
Datum used for Latitude/Longitude or UTM		☐ NAD 27 ☐ NAD 83 or WGS 84		

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

9. PROJECT CATEGORY AND WORK TYPE (Check each box that applies)

PROJECT CATEGORY	NEW CONSTRUCTION	REPLACE EXISTING STRUCTURE	REPAIR/MAINTAIN EXISTING STRUCTURE
Bank stabilization – bioengineering/recontouring	☐	☐	☐
Bank stabilization – rip-rap/retaining wall/gabion	☐	☐	☐
Boat dock/pier	☐	☐	☐
Boat ramp	☐	☐	☐
Bridge	☐	☐	☐
Channel clearing/vegetation management	☐	☐	☐
Culvert	☐	☐	☐
Debris basin	☐	☐	☐
Dam	☐	☐	☐
Diversion structure – weir or pump intake	☐	☐	☐
Filling of wetland, river, stream, or lake	☐	☐	☐
Geotechnical survey	☐	☐	☐
Habitat enhancement – revegetation/mitigation	☐	☐	☐
Levee	☐	☐	☐
Low water crossing	☐	☒	☐
Road/trail	☐	☐	☐
Sediment removal – pond, stream, or marina	☐	☐	☐
Storm drain outfall structure	☐	☐	☐
Temporary stream crossing	☐	☐	☐
Utility crossing : Horizontal Directional Drilling	☐	☐	☐
Jack/bore	☐	☐	☐
Open trench	☐	☐	☐
Other (specify):	☐	☐	☐

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

10. PROJECT DESCRIPTION

A. Describe the project in detail. Photographs of the project location and immediate surrounding area should be included.

- Include any structures (e.g., rip-rap, culverts, or channel clearing) that will be placed, built, or completed in or near the stream, river, or lake.
- Specify the type and volume of materials that will be used.
- If water will be diverted or drafted, specify the purpose or use.

Enclose diagrams, drawings, plans, and/or maps that provide all of the following: site specific construction details; the dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; an overview of the entire project area (i.e., "bird's-eye view") showing the location of each structure and/or activity, significant area features, and where the equipment/machinery will enter and exit the project area.

Access roads and staging areas will be on existing dirt roads and existing designated parking areas. The project will start with diversion and dewatering a 250-foot long section of San Francisquito Creek, including installing a fish-screened cofferdam approximately 100 feet upstream from the crossing, installing gravel-bag and plastic-sheet cofferdam 20 feet downstream from the fish-screen cofferdam, and a diversion pump in between the two with diversion water pipe to an outfall onto gravel bags past a bedrock ledge (approx. 140 feet downstream of the crossing). Remove existing concrete apron and center section of the concrete crossing- approx. 60 feet long . Install new foundation with four 7-foot openings, bridge piers, top stringer and removable metal grates; a new concrete driving surface will be added to the approaches to the crossing. Angled wing walls and debris deflectors/lifters will be installed per plans, on the upstream side. Approximately 80 linear feet of the creek channel where sediment has accumulated upstream of the crossing (due to the crossing) will be regraded into a natural channel shape. At the edges of the crossing, rock protection will be used to create a smooth transition between the wing-walls and edge of the channel bank, Willows and alders that need to be removed from within access limits shall be reused onsite as elements in the bio-engineering of the creek banks, per plans.

- The 8-foot spacing of the piers is based on the weight and wheel base of the Fire Department Water Tenders and resulting load requirements. The piers will be approx. 1 foot thick and 35 feet long (including angled extensions).
- The total width of the combined culverts + piers (31 feet) is based on the existing channel shape at the crossing as well as measurements of active channel width upstream and downstream of the crossing.

☐ Continued on additional page(s)

B. Specify the equipment and machinery that will be used to complete the project.

The machinery that will be used: 1. Saw-cut machine 2. Excavators. 3. Concrete truck with extended pipe, 4. dewatering pump, 5. Bobcat

☐ Continued on additional page(s)

C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B).

☒ Yes ☐ No (Skip to box 11)

D. Will the proposed project require work in the wetted portion of the channel?

☒ Yes (Enclose a plan to divert water around work site)
☐ No

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

11. PROJECT IMPACTS

A. Describe impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

Approximately 80 linear feet of the creek channel where sediment has accumulated upstream of the crossing (due to the crossing) will be regraded into a natural channel shape. At the edges of the crossing, rock protection will be used to create a smooth transition between the wing-walls and edge of the channel bank. see Attachment 1.

☐ Continued on additional page(s)

B. Will the project affect any vegetation?

☒ Yes (Complete the tables below) ☐ No

Vegetation Type	Temporary Impact	Permanent Impact
Willows , Alders	Linear feet: 150 Total area: 2200sf	Linear feet: _____ Total area: _____
	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____

Tree Species	Number of Trees to be Removed	Trunk Diameter (range)

☐ Continued on additional page(s)

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

☒ Yes (List each species and/or describe the habitat below) ☐ No ☐ Unknown

See attached table- Attachment 2

☒ Continued on additional page(s)

D. Identify the source(s) of information that supports a "yes" or "no" answer above in Box 11.C.

The site has been monitored annually by Stanford since the late 1990s.

☐ Continued on additional page(s)

E. Has a biological study been completed for the project site?

☐ Yes (Enclose the biological study) ☒ No

Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.

F. Has a hydrological study been completed for the project or project site?

☒ Yes (Enclose the hydrological study) ☐ No

Note: A hydrological study or other information on site hydraulics (e.g., flows, channel characteristics, and/or flood recurrence intervals) may be required to evaluate potential project impacts on hydrology.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

12. MEASURES TO PROTECT FISH, WILDLIFE, AND PLANT RESOURCES

A. Describe the techniques that will be used to prevent sediment from entering watercourses during and after construction.
Dewatering pump will be installed upstream, the diverted water will be filtered through gravel bags past bedrock ledge. Bio-engineered bank stabilization (detail 1 sheet C-4) will be installed to minimize erosion, the area that has been used for access will be seeded with native grass. The project will start after June 15 to eliminate impact on bird nesting season.
☐ Continued on additional page(s)
B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.
Fish screen will be installed to make sure no fish will get into the project site, existing trees will be fenced and staging area will be fenced off to avoid wildlife at the site. Pre construction surveys will occur at various times prior to the start of construction (just before the project starts, month or so before, and couple of months before)
☐ Continued on additional page(s)
C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.
Once isolated by the fish screen and cofferdam, the reach to be dewatered will be cleared of fishes. CDFW will be contacted regarding any observed native fishes, for possible relocation; non-natives will be eliminated.
☐ Continued on additional page(s)

13. PERMITS

List any local, state, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.	
A. <u>US Army Corps 404 NWP14</u>	☒ Applied ☐ Issued
B. <u>RWQCB 401</u>	☒ Applied ☐ Issued
C. _____	☐ Applied ☐ Issued
D. Unknown whether ☐ local, ☐ state, or ☐ federal permit is needed for the project. (Check each box that applies)	
☐ Continued on additional page(s)	

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

14. ENVIRONMENTAL REVIEW

A. Has a draft or final document been prepared for the project pursuant to the California Environmental Quality Act (CEQA), National Environmental Protection Act (NEPA), California Endangered Species Act (CESA) and/or federal Endangered Species Act (ESA)? ☐ Yes (Check the box for each CEQA, NEPA, CESA, and ESA document that has been prepared and enclose a copy of each) ☒ No (Check the box for each CEQA, NEPA, CESA, and ESA document listed below that will be or is being prepared)			
☒ Notice of Exemption ☐ Initial Study ☐ Negative Declaration ☐ THP/ NTMP	☐ Mitigated Negative Declaration ☐ Environmental Impact Report ☐ Notice of Determination (Enclose) ☐ Mitigation, Monitoring, Reporting Plan	☐ NEPA document (type): _____ ☐ CESA document (type): _____ ☐ ESA document (type): _____	
B. State Clearinghouse Number (if applicable)			
C. Has a CEQA lead agency been determined?		☐ Yes (Complete boxes D, E, and F) ☒ No (Skip to box 14.G)	
D. CEQA Lead Agency	CDFW anticipated to be the Lead Agency		
E. Contact Person	Suzanne DeLeon	F. Telephone Number	831-440-9433
G. If the project described in this notification is part of a larger project or plan, briefly describe that larger project or plan. This project is not part of a larger plan. A lead agency has not yet been identified. Applicant anticipates that CDFW will act as lead agency and that the CEQA exemption for replacement of existing structures applies to this project. 14 CCR § 15302. ☐ Continued on additional page(s)			
H. Has an environmental filing fee (Fish and Game Code section 711.4) been paid? ☐ Yes (Enclose proof of payment) ☒ No (Briefly explain below the reason a filing fee has not been paid) Applicant anticipates that this project is exempt from CEQA pursuant to 14 CCR § 15302 and, therefore, is not subject to an environmental filing fee. <i>Note: If a filing fee is required, the Department may not finalize a Lake or Streambed Alteration Agreement until the filing fee is paid.</i>			

15. SITE INSPECTION

Check one box only. ☐ In the event the Department determines that a site inspection is necessary, I hereby authorize a Department representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant the Department such entry. ☒ I request the Department to first contact (insert name) <u>Philippe Cohen</u> at (insert telephone number) <u>(650) 851-6814</u> to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay the Department's determination as to whether a Lake or Streambed Alteration Agreement is required and/or the Department's issuance of a draft agreement pursuant to this notification.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

16. DIGITAL FORMAT

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?
☒ Yes (Please enclose the information via digital media with the completed notification form)
☐ No

17. SIGNATURE

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, the Department may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless the Department has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.	
 _____ Signature of Applicant or Applicant's Authorized Representative	<u>12/17/13</u> _____ Date
Tom W Zigterman _____ Print Name	

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

Stanford University – San Francisquito Creek Low Flow Crossing Modification
Notification of Lake or Streambed Alteration – Date December 17, 2015

Attachment 1 - Project Impacts

Overview

See accompanying photos for existing conditions.

Access roads and staging areas will be on existing dirt roads and existing designated parking areas. The project will start with diversion and dewatering a 250-foot long section of San Francisquito Creek, including installing a fish-screen cofferdam approximately 100 feet upstream from the crossing, installing gravel-bag and plastic-sheet cofferdam 20 feet downstream from the fish-screen cofferdam, and a diversion pump in between the two with diversion water pipe to an outfall onto gravel bags past a bedrock ledge (approx. 140 feet downstream of the crossing). Remove existing concrete apron and center section of the concrete crossing- approx. 60 feet long . Install new foundation with four 7-foot openings, bridge piers, top stringer and removable metal grates; a new concrete driving surface will be added to the approaches to the crossing. Angled wing walls and debris deflectors/lifters will be installed per plans, on the upstream side. Approximately 80 linear feet of the creek channel where sediment has accumulated upstream of the crossing (due to the crossing) will be regraded into a natural channel shape. At the edges of the crossing, rock protection will be used to create a smooth transition between the wingwalls and edge of the channel bank, Willows and alders that need to be removed from within access limits shall be reused onsite as elements in the bio-engineering of the creek banks, per accompanying construction drawings dated December 2015..

Dimensions and purpose of design elements

- The purpose of the upstream cofferdam is to facilitate diversion of the small trickle of creek flow around the site while work is in progress, if flow is present, or may occur following rain. The length of dewatering pipe would be approximately 250 feet. The length of cofferdam would be approximately 35 feet across the creek. The purpose of dewatering the site between the upper cofferdam and the lower bedrock ledge is to facilitate construction and curing of the concrete piers and foundations.
- The purpose of the bottomless culverts is to allow a natural creek bed to form under the new crossing.
- The 8-foot spacing of the piers is based on the weight and wheel base of the Fire Department Water Tenders and resulting load requirements. The piers will be approx. 1 foot thick and 35 feet long (including angled extensions).
- The total width of the combined culverts + piers (31 feet) is based on the existing channel shape at the crossing as well as measurements of active channel width upstream and downstream of the crossing.
- The purpose of the vertically-angled (1 foot of rise per 2 feet of length) upstream pier extensions and wing walls is to allow expected wood and other debris to slide up and over the crossing when flows are high enough to overtop the structure (multiple times per year).

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113



California Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558
(707) 944-5500
www.wildlife.ca.gov

EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director



March 24, 2017

Tom W. Zigterman
Leland Stanford Junior University
327 Bonair Siding
Stanford, CA 94305

Dear Mr. Zigterman:

Amendment of Lake or Streambed Alteration Agreement, Notification No. 1600-2015-0447-R3, San Francisquito Creek Low Flow Crossing Modification

The California Department of Fish and Wildlife (CDFW) has received your request to amend Lake or Streambed Alteration Agreement 1600-2015-0447-R3 (Agreement) and the required fee in the amount of \$421.00 for a minor amendment. Your request to amend the Agreement includes modification of the originally permitted design from a cast-in-place concrete structure with deep piers to a triple box precast concrete culvert. Diversion and dewatering plans are the same, but the construction period will be shorter due to the installation of the precast culvert.

CDFW hereby agrees to amend the agreement as requested. All conditions in the Agreement remain in effect.

Copies of the Agreement and this amendment must be readily available at project worksites and must be presented when requested by a CDFW representative or agency with inspection authority.

If you have any questions regarding this letter, please contact Randi Adair, Senior Environmental Scientist (Supervisory) at (707) 576-2786 or by email at randi.adair@wildlife.ca.gov.

Sincerely,

Craig J. Weightman, Environmental Program Manager

cc: California Department of Fish and Wildlife
Lieutenant Ober

Conserving California's Wildlife Since 1870

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

FOR DEPARTMENT USE ONLY				
Date Received	Fee Enclosed	Approved?	Date Approved	Expiration Date
3-14-2017	\$ 421.00	☒ Yes ☐ No	3/24/2017	12/31/2020



✓ #1980578
Stanford University

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND WILDLIFE

Adair
LT. OBEN



REQUEST TO AMEND LAKE OR STREAMBED ALTERATION AGREEMENT

Complete EACH field and include all required enclosures. Attach additional pages, if necessary.

1. APPLICANT REQUESTING AMENDMENT

If the applicant is a business, agency, or utility, please include the name of the applicant's representative, who should be an employee of the applicant.

Name	Tom W Zigterman, P.E., D.WRE			Fish & Wildlife
Business/Agency	Leland Stanford Junior University			MAR 14 2017
Street Address	327 Bonair Siding			
City, State, Zip	Stanford, CA 94305			Napa
Telephone	650-725-3400	Fax	650-723-3191	
Email	twz@stanford.edu			

2. PROJECT INFORMATION

Agreement Number	1600-2015-0447-R3
Expiration Date	December 31, 2020

3. AMENDMENT REQUEST AND FEE

Check the applicable box below and refer to the current fee schedule to determine the appropriate amendment fee.	
- A <u>minor amendment</u> is one that would not significantly modify the scope or nature of any project covered by the agreement or any measure included in the agreement to protect fish and wildlife resources. - A <u>major amendment</u> is one that would significantly modify the scope or nature of any project covered by the agreement or any measure included in the agreement to protect fish and wildlife resources, or require additional environmental review.	
☒ Minor Amendment	☐ Major Amendment
Note: The Department may not process requests for amendments until it receives the correct fee.	

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113

REQUEST TO AMEND LAKE OR STREAMBED ALTERATION AGREEMENT

4. AMENDMENT DESCRIPTION

A. Describe the amendment in detail

- Include any structures (e.g., rip-rap, culverts, or channel clearing) that will be placed, built, or completed in or near the stream, river, or lake.
- Specify the type and volume of materials that will be used.
- If water will be diverted or drafted, specify the purpose or use.

Enclose diagrams, drawings, plans, and/or maps that provide all of the following: site specific construction details; the dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; an overview of the entire project area (i.e., "bird's-eye view") showing the location of each structure and/or activity, significant area features, and where the equipment/machinery will enter and exit the project area.

The design was modified from a cast in place concrete structure with deep piers to a triple box precast concrete culvert.

Diversion and dewatering plans are the same as the original plans but the construction period is shorter due to the installation of the precast culvert.

See attached revised project description and revised set of plans dated 02/13/2017

☐ Continued on additional page(s)

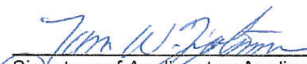
B. Explain the reason(s) for the amendment request

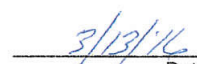
The revised design consists of installing a triple box precast concrete culvert while maintaining a natural creek bed. This design approach provides multiple benefits including a less intrusive structure in the creek, larger openings for better flow passage, and a more expedient construction schedule.

☐ Continued on additional page(s)

3. SIGNATURE

I hereby certify that to the best of my knowledge the information in this amendment request ("request") is true and correct and that I am authorized to sign this request as, or on behalf of, the applicant. I understand that if any information in this request is found to be untrue or incorrect, the Department may suspend processing this request or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this request. I understand also that if any information in this request is found to be untrue or incorrect and the changes described in this request has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein, unless the Department has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.


Signature of Applicant or Applicant's Authorized Representative


Date

Tom W Zigterman
Print Name

Note: If approved, a copy of this form must be available at the work site with the original agreement.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: H

File Numbers: PLN2017-00113



EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

San Francisco Bay Regional Water Quality Control Board

Sent via electronic mail: No hard copy to follow

April 27, 2016
CIWQS Place No. 820293 (bkw)
CIWQS Reg. Measure No. 404029
Corps File No. 2014-00427

Stanford University Utilities Division
3217 Bonair Siding Rd.
Stanford, CA 94305

Attn: Mr. Tom Zigterman (twz@stanford.edu)

Subject: Water Quality Certification for Stanford University's Jasper Ridge Low Flow Crossing Improvement Project at San Francisquito Creek, Santa Clara County

Dear Mr. Zigterman:

San Francisco Bay Regional Water Quality Control Board (Water Board) staff have reviewed the application for water quality certification submitted by Stanford University (the Applicant) for the project to improve fish passage at the Jasper Ridge low flow crossing of San Francisquito Creek, downstream of Searsville Dam and the confluence with Bear (Gulch) Creek in Santa Clara County (Project). On October 7, 2016, the Applicant was informed by the Army Corps of Engineers (Corps) that the Project was authorized under Clean Water Act (CWA) Section 404 Nationwide Permit (NWP) Nos. 27 (*Aquatic Habitat Restoration, Establishment, and Enhancement Activities*) and 33 (*Construction Access and Dewatering*). The Applicant has applied to the Water Board for CWA Section 401 water quality certification that the Project will not violate State water quality standards.

Project Description: The following Project Description was derived from application materials received by the Water Board on December 18, 2015, and supplemental application materials received through February 2017. The Project purpose is to enhance fish passage at the creek crossing while maintaining the structure's function as a low-flow vehicle crossing. The new crossing is designed to be stable at high flows and passable to fish at low flows. The existing concrete road crossing of San Francisquito Creek is used for dry-season fire-truck access by the Woodside Fire Department. The crossing is also used by researchers at Stanford University's Jasper Ridge Biological Preserve.

To enhance fish movement at this road crossing, Stanford will modify the crossing by constructing new culverts that will allow free flow of water under the driving surface. The modified crossing will replace the middle portion of the low-flow crossing with three 10-foot by 10-foot precast concrete box culverts, whose total width will approximate the active channel width of the creek channel. The bottoms of the new culverts will be set well below the stable bed

DR. TERRY F. YOUNG, CHAIR | BRUCE H. WOLFE, EXECUTIVE OFFICER

1515 Clay St., Suite 1400, Oakland, CA 94612 | www.waterboards.ca.gov/sanfranciscobay



San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: I

File Numbers: PLN2017-00113

elevation of the creek channel in order to allow a natural creek bed to form and evolve underneath the crossing; this is anticipated to allow a pool/glide/ riffle complex to develop in the Project reach. The Project has been designed so that flow under the reconstructed crossing will meet State and federal velocity and depth guidelines for fish passage guidance documents:

- U.S. Department of Agriculture, Forest Service, National Technology and Development Program, 2006, Low-Water Crossings: Geomorphic, Biological, and Engineering Design Considerations, Appendix A, Case Study 19.
- State of California, Resources Agency, Department of Fish and Game, 2002, Culvert Criteria for Fish Passage. Revised May 2002.
- State of California, Resources Agency, Department of Fish and Game, 2004, California Salmonid Stream Habitat Restoration Manual, "Part XI Riparian Habitat Restoration."

Project Geomorphology. The Jasper Ridge low-flow crossing on San Francisquito Creek is located about 300 feet downstream of the confluence of Bear (Gulch) Creek and Corte Madera Creek, off Sand Hill Road in the Jasper Ridge Biological Preserve (Latitude 37.410714, Longitude - 122.237850). (Figure 1 in Att. A). In the Project reach, San Francisquito Creek is a single-thread, meandering, pool-riffle channel. Exposed bedrock is visible along the creek bed and banks in many locations in the Project reach. In several locations downstream of the Project site, bedrock ledges cross the full channel width and provide grade control. Alluvial riffles in the vicinity of the Project reach are composed of cobbles and boulders with interstitial gravels, have slopes that vary from 1.5% to 4.5%, and vary between 49 feet long and 310 feet long. Some riffles have full or partial bedrock control.

A longitudinal profile of current channel conditions was used to design the Project (see Figures 2a and 2b in Att. A). The pool upstream of the crossing is about 400 to 450 feet long, with a maximum depth of 5 feet. The size of this pool is partially controlled by backwater effects from the existing crossing structure. Approximately 100 feet upstream of the crossing, large boulders line the pool bed. A large wedge of material that has accumulated upstream of the current crossing structure will be reshaped during Project construction. A pool with a pool tail out consisting of a cobble riffle is located about 30 feet downstream of the crossing. A longer pool, edged by bedrock on the right bank is located downstream of the cobble riffle. Roughly 180 feet downstream of the crossing, the next riffle is formed by bedrock, so downcutting is not expected below this point.

Data used in the Project design was obtained from the Balance Hydrologics "SFPL" gaging station, located at San Francisquito Creek at Piers Lane, which is about 3.7 miles downstream of the project site. This station has been operated by Balance for Stanford from water year 2002 to present. Additional data were obtained from USGS station number 11164500 (San Francisquito Creek at Stanford Golf Course), which is located 4.5 miles downstream of the Project site and has been operated since 1931 (Figure 4 in Att. A). Hydrology data from SFPL was used to verify that the Project design met California Department of Fish and Wildlife (CDFW) criteria for the minimum water depth and maximum water velocities for juvenile and adult salmonids. Figure 7 in Att. A shows the water surface elevations based on modeling for the 20-year and 100-year design storms. Large-storm water-surface elevations will be 8 to 10 feet above the road crossing. Even in a normal year, the crossing is inundated many times.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: I

File Numbers: PLN2017-00113

Project Construction: 250 linear feet of San Francisquito Creek will be dewatered for Project construction. A fish screen will be installed about 100 linear feet upstream from the crossing and a gravel-bag and plastic-sheet cofferdam will be installed about 20 feet downstream from the fishscreen cofferdam (See Sheet C-2 in Att. B). The length of the cofferdam will be about 35 feet across the creek. A diversion pump placed between the fish screen and coffer dam will direct flow to a diversion pipe that will outfall downstream of the crossing onto gravel bags past a bedrock ledge located about 140 feet downstream of the crossing. Dewatering pump(s) may be needed during construction of the crossing. If water from this area is turbid, it will be pumped to an upland infiltration/dispersal area away from the creek channel. The location of this infiltration/dispersal area will be determined in cooperation with Jasper Ridge staff to avoid affecting sensitive and/or research areas.

A 36-foot-wide notch will be cut in the concrete structure of the existing crossing, which extends along 18 linear feet of the channel, and an existing, 10-foot-long concrete apron on the downstream side of the crossing will be removed (See Sheet C-2 in Att. B). An additional 47 feet of concrete outboard of the active channel will also be removed. Concrete debris will be contained and removed from the Project site. Underlying channel bed material will be excavated to bedrock, which has been identified by geotechnical explorations as roughly 10 feet below the existing crossing surface, and the precast concrete box culverts will set in place (See Sheets C-3 and C-4 in Att. B). Placing the concrete box culverts directly on leveled bedrock will provide a solid foundation and ensure that the openings will extend down to the natural maximum scour depth of the stream. Once the box culverts are placed, the bottoms of the culverts will be backfilled with salvaged native bed material up to the anticipated adjacent stable bed elevation. In order to ensure the box culverts are secured and provide the design clearance above the channel bed, the foundation design may need to be adapted in the field, depending on the nature of the bedrock surface encountered during excavation.

The combined width selected for the new culverts was based on measurements of active channel width upstream and downstream of the project site. The new culverts have a combined opening larger than the active channel width, so that the post-Project channel will be able to evolve and adjust its form in response to flows and sediment loads in the watershed. The average active channel width measured upstream and downstream of the project site is 25 feet. The three, 10-foot-wide culverts will provide 30 feet of flow width, with an edge-to-edge total width of 36 feet. The new driving surface will be constructed of poured concrete to provide a durable travel surface. The driving surface of the new modified crossing will be approximately 1.0 to 2.0 feet higher (elevation 265.0 feet) than the driving surface of the existing crossing (elevation ranging from 263 to 264 feet). To match the higher grade of the new crossing, new concrete driving surfaces will be added to the approaches to the crossing.

At the edges of the crossing, concrete wing walls will be constructed to create a smooth transition between the box culverts and the channel banks; this is anticipated to reduce the likelihood of erosive eddies being generated at the transition to the box culverts. After construction, most of each wingwall will be buried beneath channel bed material. Rock riprap bank armoring will be installed on the downstream side of the left bank to protect the bank from scour. Any willows and alders that are removed during Project construction will be reused onsite as elements in the bio-engineering of the creek banks (See Sheets C-4, C-5, and C-6 in Att. B).

Following the modification of the crossing, backwatering will be reduced in the upstream creek segment. The upstream pool will shrink in length and, at least initially, in depth, because the new

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: I

File Numbers: PLN2017-00113

hydraulic control will be the natural creek bed approximately 110 feet upstream of the crossing (Figures 2b and 9b). The approximately 80 linear-foot-long wedge of sediment that has accumulated just upstream of the crossing will be reshaped into a more natural channel shape.

Access roads and staging areas are shown in the plans (See Sheet C-2 in Att. B), and will be on existing dirt roads and existing designated parking areas. Access to the creek bed will be from the north approach, and a temporary access ramp will be constructed along the upstream side of the approach. Some temporary fill may be used in this location, but this fill will be removed during bank reconstruction. Access to the upstream cofferdam will be via an overgrown old road bed, and may require the removal of some small trees.

Impacts: The *San Francisco Bay Basin Water Quality Control Plan* (Basin Plan) defines the beneficial uses of waters of the State. The Project will impact San Francisquito Creek. San Francisquito Creek has existing and potential beneficial uses of: cold freshwater habitat, fish migration, spawning, warm freshwater habitat, wildlife habitat, contact water recreation, and non-contact water recreation. Although not formally designated in the Basin Plan, the Creek is also known to provide habitat for rare, threatened, and endangered species (RARE).

Preservation of the beneficial uses of fish migration and spawning and habitat for special-status species is especially significant for San Francisquito Creek, because San Francisquito Creek and its tributaries support a regionally significant population of the endangered Central California Coast steelhead trout (*Oncorhynchus mykiss*).

The Project will temporarily impact 0.34 acres of San Francisquito Creek. Materials removed from the creek by the Project, including the upstream sediment wedge (230 cubic yards of sediment) and the center of the existing concrete low flow crossing and the concrete apron downstream of the existing crossing (a total of 135 cubic yards of concrete), will have a footprint of 0.13 acres within the creek channel. Construction of the new concrete road (35 cubic yards), the new concrete box culverts (70 cubic yards), the new concrete wing walls (30 cubic yards) and the new rock riprap slope projection (50 cubic yards) will have a footprint of 0.05 acres. Therefore, the Project will reduce the amount of fill in San Francisquito Creek by 180 cubic yards, over a footprint of 0.13 acres.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: I

File Numbers: PLN2017-00113

Table 1: Temporary and Permanent Impacts to San Francisquito Creek at the Jasper Ridge Low Flow Crossing Project.

Location	Reason For Action	Amount and Type of Material	Surface Area Affected	Linear Feet
110 feet upstream of crossing	Fish-screen coffer dam to exclude fish	12 cy of sand and gravel bags	105 sq.ft. (T)	10
100 feet upstream of crossing	Coffer dam to divert creek flow during construction	12 cy of sand and gravel bags	105 sq.ft. (T)	10
Center of existing crossing	Concrete to be removed to improve fish passage	-135 cy of concrete removal from crossing and apron	1,550 sq.ft. (P)	28
Channel bed for 80 feet upstream of crossing	Accumulated sediment wedge to be removed for bed continuity	--230 cy of accumulated creek bed sediment	4,275 sq.ft. (P)	80
At transitions between new structure and creek banks	Smoothing transitions between structure and creek banks to reduce erosion	50 cy of rock fill (salvaged cobble and boulder from upstream creek bed)	675 sq.ft. (P)	20
Center of existing crossing	New pre-cast concrete box culverts	70 cy of concrete	191 sq.ft. (P)	14
Outboard sides of crossing	Cast in place wingwalls	30 cy of concrete	60 sq.ft. (P)	32
Roadway	Replace driving surface	15 cy of road base+20 cy of concrete	1100 sq.ft.	14
Left bank upstream of crossing	Ramp or machinery access upstream of crossing	25 cy of reused creek bed material	360 sq.ft. (T)	35
Short sections of both creek banks upstream of crossing	Bioengineering bank reconstruction	Small amount of balanced cut and fill	750 sq.ft. (P)	35
Upstream of crossing	Debris deflectors	(2) 8" steel I beams	20 sq. (P)	16
Total temporary Fill		49 cy		
Total Permanent Fill		-180 cy		

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: I

File Numbers: PLN2017-00113

During Project construction, some tree branches will be trimmed to facilitate construction access. About 20 small willows and alders may be impacted by this trimming.

Mitigation: Since the Project authorized by this Certification will reduce the amount of fill in the creek channel and improve conditions for fish passage, no additional mitigation is required for the Project beyond monitoring for successful establishment of cottonwoods and willows in the biotechnical bank stabilization adjacent to the rebuilt crossing and the stability of the creek channel at the crossing.

After Project construction, disturbed areas of the creek bank will be stabilized with erosion control blankets and hydroseeded with native grasses. Sedges will be planted along the upper edge of the active channel and some buckeye saplings, oak saplings, and elderberry saplings will be planted along the upper right bank and, shrubs, willows and alders (See Sheet C-7 in Att. B). Willows and alders will be incorporated into areas of biostabilized banks (See Sheets C-3, C-5, and C-6 in Att. B). About 1 vertical stake per square foot of bank reconstruction shall be installed, which will result in installing about 500 willow and alder stakes for bank stabilization. Willow and alder stakes shall be salvaged on site, and then stored in water until they are ready to be planted. The Project site shall be monitored and maintained by the Applicant for a minimum of five years for to track the success of revegetation and for 10 years to assess the stability of the creek channel in the Project reach.

After Project construction and planting, the general conditions at the Project site will be photographed to document the year one conditions at the site. Site visits will be conducted to evaluate the site for erosion in the impacted reach of San Francisquito Creek. Any undercutting, excessive scouring, and sloughing with the potential to compromise the structural integrity of the new crossing or to create a barrier to fish passage will be repaired and described in an annual monitoring report.

EcoAtlas: The Water Board tracks routine riparian repair and creek maintenance projects in an effort to detect potential systemic instabilities and document project performance in the creeks of the Bay Area. As such, the Applicant is required to submit a Riparian Repair and Maintenance (short) Form describing Project size, type, and performance measures. An electronic copy of the short form and instructions can be downloaded at:
<http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml>.

Project information will be made available at the web link:
<http://www.ecoatlas.org/regions/ecoregion/bay-delta/projects>

CEQA Compliance: The California Department of Fish and Wildlife (CDFW) has determined that the Project is exempt from review pursuant to the requirements of the California Environmental Quality Act (CEQA), because the Project qualifies for a Categorical Exemption from CEQA review as a Class 33 exempt project, Small Habitat Restoration Projects, pursuant to Section 15333 of the CEQA Guidelines (Title 14, California Code of Regulations, Chapter 3, Article 19). A Notice of Exemption for the Project was filed with the State Office of Planning and Research by CDFW on September 22, 2016. As a responsible agency under CEQA, the Water Board concurs that the CEQA exemption is appropriate.

Certification and General Waste Discharge Requirements: I hereby issue an order certifying that any discharge from the referenced Project will comply with the applicable provisions of

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: I

File Numbers: PLN2017-00113

sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act, and with other applicable requirements of State law. This discharge is also regulated under State Water Resources Control Board Order No. 2003-0017-DWQ, "General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification," which requires compliance with all conditions of this Water Quality Certification. The following conditions are associated with this certification:

1. No debris, rubbish, creosote-treated wood, soil, silt, sand, cement, concrete, or washings thereof, or other construction related materials or wastes, oil or petroleum products or other organic or earthen material shall be allowed to enter into, or be placed where they may be washed by rainfall or runoff into San Francisquito Creek. Any of these materials placed within or where they may enter San Francisquito Creek by the Applicant or any party working under contract, or with the permission of the Applicant shall be removed immediately. When construction is completed, any excess material shall be removed from the work area and any areas adjacent to the work area where such material may be washed into San Francisquito Creek. During construction, the contractor shall not dump any litter or construction debris within the riparian/stream zone. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site;
2. The Applicant shall adhere to the terms of NWP Nos. 27 and 33 issued by the Army Corps of Engineers (Corps) (Corps File No. 2014-00427);
3. The Applicant shall adhere to the conditions imposed by the California Department of Fish and Wildlife (CDFW) in the Streambed and Lake Alteration Agreement (SAA) (Notification No. 1600-2015-0447-R3) issued for the Project;
4. The Applicant shall fully implement the non-discretionary Terms and Conditions for incidental take of federally-listed Central California Coast ESU steelhead, as stipulated in the Biological Opinion titled *Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation: Program to Fund and/or Permit Restoration Projects within the NOAA Restoration Center's Central Coastal California Office Jurisdictional Area in California* (dated June 14, 2016);
5. The Applicant shall fully implement the non-discretionary Terms and Conditions and Reasonable and Prudent Measures for incidental take of the federally-listed California red-legged frog, as stipulated in the August 30, 2016, Biological Opinion entitled Formal Consultation on the San Francisquito Creek Low Flow Crossing Modification Project in San Mateo County, California and appending to the (U.S. Army Corps of Engineers (Corps) File Number 2007-400361S) to the June 14, 2014, *Programmatic Biological Opinion for Issuance of Permits under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, including Authorizations Under 22 Nationwide Permits, for Projects that may Affect the Threatened California Red-Legged Frog in Nine San Francisco Bay Area Counties, California* (Reference No. OSESMF00-2016-F-1735);
6. Construction of the Project shall be consistent with the project design sheets in Attachment B, including implementation of the planting in Sheet C-7 in Attachment B and the biotechnical bank stabilization in Sheets C-3, C-5, and C-6 in Attachment B.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: I

File Numbers: PLN2017-00113

Planting shall occur in the first rainy season following Project Construction. Any changes to these plans that change the impacts to waters of the State must be submitted to the Water Board's Executive Officer for review and approval before they are implemented;

7. All work performed within waters of the State shall be completed in a manner that minimizes impacts to beneficial uses and habitat; measures shall be employed to minimize disturbances along the creek channel that will adversely impact the water quality of waters of the State. Disturbance or removal of vegetation shall be minimized;
8. No equipment shall be operated in areas of flowing or standing water; no fueling, cleaning, or maintenance of vehicles or equipment shall take place within any areas where an accidental discharge to San Francisquito Creek may occur; construction materials and heavy equipment must be stored outside of the creek channel;
9. No more than 48 hours prior to starting construction at any of the Project site covered under this certification, a qualified biologist shall survey the project area for the presence of steelhead, California red-legged frogs, western pond turtles, and other native species. If individuals of these species are located, the procedures in the Biological Opinions referenced in Conditions 4 and 5 shall be implemented;
10. To protect juvenile steelhead in San Francisquito Creek, work in waters of the State, including any work requiring diversion of flow in the creek channel, is limited to the period between June 15 and October 31, or the end of any extension period granted by CDFW;
11. Dewatering of the Project site shall be consistent with the dewatering plan in Sheet C-2 in Attachment B. The fish screen and coffer dam shall be removed immediately upon completion of Project construction. Any changes to this dewatering plan shall be submitted to the Water Board's Executive Officer for review and approval prior to implementing the modified dewatering plan;
12. Concrete used in the Project shall be allowed to completely cure (a minimum of 28 days) or be treated with a sealant that is non-toxic to aquatic life before it comes into contact with flowing water (Note: Demonstration of non-toxicity to aquatic life may be evaluated by measuring survival of test organisms in a 96-hour bioassay. The bioassay should be performed according to the most up-to-date protocols in 40 C.F.R. part 136, currently *Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms*, 5th Edition (EPA-821-R-02-012), including sample collection, handling, and preservation in accordance with U.S. EPA protocols). Only sealants that have been tested and found non-toxic to freshwater aquatic life, including benthic macro-invertebrates, maybe used on concrete surfaces that may come into contact with flowing water. Concrete will be considered to be cured when water poured over the surface of concrete consistently has a pH of less than 8.5;
13. Groundwater or accumulated stormwater removed during dewatering of excavations shall not be discharged directly to waters of the State without meeting the following conditions: any groundwater or accumulated stormwater released to waters of the State shall not exceed 110 percent of the ambient turbidity of the receiving water, if receiving water turbidity is greater than 50 NTU, or 5 NTU above ambient turbidity if the ambient

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: I

File Numbers: PLN2017-00113

turbidity is less than or equal to 50 NTU; any groundwater discharged to waters of the State shall have a pH in the range of 6.5 to 8.5;

14. If groundwater or accumulated stormwater is discharged from the Project site, the Applicant shall monitor the turbidity of the discharged water once every 15 minutes during the startup phase of any turbidity reduction equipment and at two-hour intervals after the discharged turbidity achieves steady state levels that are in compliance with Condition 9. The pH of discharged water shall be measured daily. All required monitoring measurements shall be recorded, along with a daily estimate of the flow rate and volume of water discharged, and submitted to the Water Board within 7 days of the end of any month in which groundwater or accumulated stormwater is discharged from the Project site;
15. Prior to commencing construction, a qualified biologist shall conduct an educational session for the work crews and foremen. The session shall include identification concerning the sensitive habitat, sensitive resources present, the need for special care to avoid impacts, and appropriate procedures to follow if any sensitive species enter the work areas;
16. No later than 24 hours prior to the start of a likely rain event, the Applicant shall ensure that disturbed areas that drain to waters of the State are protected with correctly installed erosion control measures (e.g., jute, straw, coconut fiber erosion control fabric, coir logs, straw, etc.). The likely rain event is defined as any weather pattern that is forecast to have a 50% or greater probability of producing precipitation in the Project area. The Applicant shall obtain a daily printed copy of the precipitation forecast information (and keep for record) from the National Weather Service Forecast Office (e.g., by entering the zip code of the Project's location at <http://www.srh.noaa.gov/forecast>);
17. Within 30 days of the first Project-related disturbance of waters of the State, the Applicant shall provide the Executive Officer of the Water Board with written notification that the Project has disturbed waters of the State;
18. Within 30 days of completing all project elements with impacts to waters of the State that are authorized by this Certification, the Applicant shall provide the Executive Officer of the Water Board with a Final Project Completion Report that includes: (a) the Project name; (b) the CIWQS Place ID listed at the top of this Certification; and (c) the date Project impacts to waters of the State at the Project site were completed. The Final Completion Report shall include an as-built report for the Project that documents any significant deviations between the extent of impacts to San Francisquito Creek and the impacts authorized by this Certification, as well as any deviations between the planting plan and biostabilization of the banks specified in Sheets C-3, C-5, C-6, and C-7 in Attachment B and the actual planting, and shall document the need for any such deviations. The as-built report shall include photo-documentation of the constructed condition of the Project site, as described in Condition 19, and the as-built survey required in Condition 21;
19. To document channel and bank conditions at the Project site, the Applicant shall establish a minimum of 5 photo-documentation points to track channel evolution and stability between the upstream end of the pool upstream of the current crossing and the bedrock grade control downstream of the crossing. Following construction of the Project,

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: I

File Numbers: PLN2017-00113

the Applicant shall photographically document the immediate post-construction condition of the site and submit a report to the Water Board including the post-construction photographs, and a site map with the locations of the photo-documentation points clearly indicated. This report shall be submitted to the Water Board along with the as-built report (See previous Condition);

20. Vegetation at the Project site, consisting of planted grasses, sedges, saplings, and willow and alder stakes, shall be monitored and maintained by the Applicant for a minimum of five years. If more plant mortality exceeds more than 50 percent over the initial five-year vegetation monitoring program, the Applicant shall prepare a revegetation plan and submit this plan to the Water Board's Executive Officer for review. Upon receiving approval of the revegetation plan from the Water Board's Executive Officer, the revegetation plan shall be implemented within 12 months of plant survival falling below 50 percent;
21. Site visits shall be conducted to evaluate the banks of San Francisquito Creek at the Project for excessive erosion. Any significant undercutting, excessive scouring, or sloughing shall be repaired and described in the annual monitoring report for the restoration program. To monitor channel stability, the Applicant shall establish monitoring at 3 cross sections upstream of the crossing, 2 cross sections downstream of the crossing, and a longitudinal thalweg profile that would extend several hundred feet upstream and downstream of the crossing. Surveys shall be performed during the dry season. Surveys shall be conducted after Project construction, and in years 1, 3, 5, 7, and 10 after construction;
22. Monitoring reports shall be submitted to the Water Board by January 31 following each year of the initial five-year monitoring period for grasses, sedges, saplings, and willow and alder stakes, and in years 7 and 10 of the initial monitoring period for surveys of the channel cross-sections and thalweg at the Project site (See Condition 21). In addition to tracking the progress of the revegetation program, the reports submitted for years 1, 3, 5, 7, and 10 are required to include an evaluation of channel geomorphology at the rebuilt low flow crossing that includes an assessment of the stability of the channel banks, an assessment of any scour visible on the creek banks, an assessment of the channel thalweg for any signs of head cuts or nick points, an assessment of bank stability at the new crossing, and an assessment of any accumulation of sediment or incision in the Project reach. All reports shall include photographs from the photo-documentation points specified in Condition 19. Reports shall compare data to previous years. At the end of the initial monitoring period, a comprehensive final report shall be prepared that includes summaries of the survey data, representative photos, and maps. The final report shall summarize the success of revegetation at the Project site and the stability of the creek channel and the creek banks at the Project site. If the creek channel is unstable or vegetation is not attaining 50 percent survival, the Applicant shall consult with the Water Board and the other resource agencies to evaluate potential sources of the instability, and propose remedial actions. If deemed necessary by the Water Board, remedial actions shall be implemented by the Applicant;
23. If the site is not revegetated at year 5 or the channel reach is not stable at year 10 after Project construction, the Applicant shall prepare a remedial action plan. The plan shall include an analysis of the likely causes of failure and recommend alternative solutions.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: I

File Numbers: PLN2017-00113

Remedial measures may include: site modifications such as sediment removal, or replanting; or design changes. The Applicant shall provide this analysis to Water Board Executive Officer for approval. Upon the Executive Officer's approval, the Applicant shall implement the remedial action plan;

24. The Applicant is required to use the Riparian Repair and Maintenance (short) Form to provide Project information within 14 days from the date of this certification. An electronic copy of the short form and instructions can be downloaded at: <http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml>. The completed short form and map showing the project boundaries shall be submitted electronically to habitatdata@waterboards.ca.gov or shall be submitted as a hard copy to both: 1) the Water Board (see the address on the letterhead), to the attention of EcoAtlas; and 2) the San Francisco Estuary Institute, 4911 Central Avenue, Richmond, CA 94804, to the attention of EcoAtlas;
25. In accordance with California Water Code (CWC) section 13260, the Applicant shall file with the Board a report of any material change or proposed change in the ownership, character, location, or quantity of this waste discharge. Any proposed material change in operation shall be reported to the Executive Officer at least 30 days in advance of the proposed implementation of any change. This shall include, but not be limited to, all significant new soil disturbances, all proposed expansions of development, or any change in drainage characteristics at the Project site. For the purpose of this Order, this includes any proposed change in the boundaries of the area of wetland/waters of the State to be filled;
26. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to CWC Section 13330 and Section 3867 of Title 23 of the California Code of Regulations (23 CCR);
27. This certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to 23 CCR Subsection 3855(b) and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought; and,
28. Certification is conditioned upon total payment of the full fee required in State regulations (23 CCR Section 3833). The total fee for this Project is \$675. The Water Board received payment in full on April 8, 2016, for the application fee for the Project. An annual discharge fee shall be paid to the Water Board until all of the impacts to waters of the State at the Project site that are authorized by this Certification have been implemented (See Condition 18) (Note: The Annual Active Discharge Fee may be changed by the State Board; at the time of Certification it was \$720 per year). After all impacts to waters of the State at the Project site have been implemented, an Annual Post Discharge Monitoring Fee shall be paid to the Water Board until the monitoring reports required pursuant to Condition 22 have all been submitted to the Water Board (Note: The Annual Post Discharge Monitoring Fee may be changed by the State Board; at the time of Certification it was \$360 per year).

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

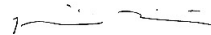
Attachment: I

File Numbers: PLN2017-00113

This certification applies to the Project as proposed in the application materials and designs referenced above in the conditions of certification. Be advised that failure to implement the Project in conformance with this certification is a violation of this water quality certification. Also, any violation of water quality certification conditions is a violation of State law and subject to administrative civil liability pursuant to CWC Section 13350. Failure to meet any condition of a certification may subject the Applicant to civil liability imposed by the Water Board to a maximum of \$10,000 per day of violation or \$10 for each gallon of waste discharged in violation of this action. Any requirement for a report made as a condition to this action (e.g., Conditions 14, 17, 18, 19, 22, 23, 24, and 25) is a formal requirement pursuant to CWC Section 13267, and failure or refusal to provide, or falsification of such required report, is subject to civil liability as described in CWC Section 13268. Should new information come to our attention that indicates a water quality problem with this Project, the Water Board may issue Waste Discharge Requirements.

Please contact Brian Wines of my staff at (510) 622-5680 or bwines@waterboards.ca.gov if you have any questions. All future correspondence regarding this Project should reference the Site Number indicated at the top of this letter.

Sincerely,



for Bruce H. Wolfe
Executive Officer

Digitally signed by
Keith H. Lichten,
Division Chief
Date: 2017.04.27
11:23:52 -07'00'

Attachment A: Project Site Maps and Creek Channel Conditions.

Attachment B: Project Design Figures

cc: SWRCB-DWQ, Bill Orme (Stateboard401@waterboards.ca.gov)
EPA, Region 9, Jennifer Siu (Siu.Jennifer@epa.gov)
Corps, San Francisco District, Katerina Galacatos (Katerina.galacatos@usace.army.mil)
Corps, San Francisco District, Gregory Brown (gregory.g.brown@usace.army.mil)
CDFG, Bay Delta Region, Randi Adair (randi.adair@wildlife.ca.gov)
CDFG, Bay Delta Region, Suzanne DeLeon, (suzanne.deleon@wildlife.ca.gov)
National Marine Fisheries Service, Gary Stern (gary.stern@noaa.gov)
EcoAtlas (Habitat.data@waterboards.ca.gov)

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: I

File Numbers: PLN2017-00113



United States Department of the Interior



In Reply Refer to:
08ESMF00-
2016-F-1735

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

AUG 30 2016

Holly Costa
Acting Chief, Regulatory Division
Attn: Gregory Brown
San Francisco District
U. S. Army Corps of Engineers
1455 Market Street
San Francisco, California 94103-1398

Subject: Formal Consultation on the San Francisquito Creek Low Flow Crossing Modification Project in San Mateo County, California and appending to the (U.S. Army Corps of Engineers (Corps) File Number 2007-400361S) to the June 14, 2014, *Programmatic Biological Opinion for Issuance of Permits under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, including Authorizations Under 22 Nationwide Permits, for Project that May Affect the Threatened California Red-Legged Frog in Nine San Francisco Bay Area Counties, California.*

Dear Ms. Holly Costa:

This letter is in response to the Corps June 9, 2016, request for initiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed San Francisquito Creek Low Flow Crossing Modification Project (Project), San Mateo County, California. Your request was received by the Service on June 15, 2015. At issue are the potential effects of the proposed project on the threatened California red-legged frog (*Rana draytonii*). This document is issued under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act).

The federal action on which we are consulting is the issuance of a Clean Water Act Section 404 permit to Stanford University (Stanford) for the Project. Pursuant to 50 CFR 402.12(j), you submitted a biological assessment and supplement for our review and requested concurrence with the findings presented therein. These findings concluded that the proposed project may affect, and was likely to adversely affect the California red-legged frog.

In considering your request, we based our evaluation on the following: (1) Biological Resources Assessment for the Norris Canyon Estates Detention Basin Cleanout Project and supplemental information; (2) a site visit that occurred on October 8, 2015; and (3) other information available to the Service.

Consultation History

Date:	Description
June 9, 2016	The Service received a request from the Corps for formal consultation and concurrence that he proposed action may

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: J

File Numbers: PLN2017-00113

affect likely to affect the California red-legged frog. The Corps requested to append the proposed project to the, June 14, 2014 *Programmatic Biological Opinion for Issuance of Permits under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, including Authorizations Under 22 Nationwide Permits, for Project that May Affect the Threatened California Red-Legged Frog in Nine San Francisco Bay Area Counties, California.*

BIOLOGICAL OPINION

Description of the Action

Stanford's proposed modification of the low flow crossing is proposed to modify the existing low flow road crossing in San Francisquito Creek in order to improve conditions for steelhead. The existing road has been in place for at least a century. This road is not open to the general public. It is used by Stanford (operations staff, researchers and students), and Pacific Gas & Electric (PG&E) (in order to service their electrical lines that pass through the area). It is also a critical route for emergency fire control access and an emergency exit route. The proposed project will replace the existing in-channel concrete drive-through with a bottomless box culvert. During typical flow conditions the creek will flow unimpeded through the new box culvert. Under high flow conditions the creek will flow through and over the box culvert. The proposed box culvert will allow for steelhead passage and dispersal over a much broader range of flows and in particular the project will improve opportunities for fish to disperse during the low flows typical in the reach during late spring and early fall months. The creek channel immediately upstream from the existing crossing structure consists of a large pool, which is partially filled with sediment. This project will eliminate this artificial pool and create a dynamic channel that is more representative of nearby natural reaches. The project will be constructed during the low-flow period prior to the rainy season.

Access roads and staging areas will be on existing dirt roads and existing designated parking areas. The project will include construction of an upstream cofferdam and a fish-screen barrier installed approximately 20 feet upstream of the gravel-bag and plastic cofferdam. This cofferdam will be located approximately 100 feet upstream from the existing concrete low flow crossing. A pump will be placed in the area between the fish-screen barrier and the upstream cofferdam in order to route water flow, if any is present during the projected construction time period, to an outfall onto gravel bags past a bedrock ledge located approximately 140 feet downstream from the edge of the existing low flow crossing (given the topography of the creek channel, a downstream cofferdam is not required in order to prevent "backflow" into the project site). Approximately 250 feet of San Francisquito Creek will be temporarily dewatered during the construction of this project. A temporary sump pump will be installed in the dewatered area to discharge dewatering flows into an infiltration dispersal area away from the Creek. After installation of the fish barrier screen, fish relocation efforts will be initiated. Fish captured via dip nets, seines, minnow traps, and electrofishing will be held for a brief time period then released in the nearest portion of the Creek with suitable water conditions.

Once the construction site is dewatered, construction will start and consists of removing the existing concrete apron and center section (approximately 60 feet in length) of the concrete crossing, installing a new foundation with four 7-foot openings, bridge piers, top stringer, and removable metal grates with plates to protect fishes in high flows. The new box culvert will be bottomless and will allow a natural creek bed to form under the new crossing. A new concrete driving surface will be added on the approaches to the crossing; angled wing walls and debris deflectors/lifters will be installed on the upstream side. Approximately 80 linear feet of the creek channel where sediment has

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: J

File Numbers: PLN2017-00113

channel shape. At the edges of the crossing, rock protection will be used to create a smooth transition between the wing walls and edge of the channel bank. The few willows and alders that need to be removed from within the active construction zone will be salvaged and used as needed for the revegetation/bio- engineering of the project site. When work in the creek is completed, the cofferdam and fish screen will be removed. Flow through the project site will be restored in such a way as to not disrupt flow in the downstream portion of the watershed. Once completed, the constructed facility will be inspected frequently and any woody debris will be placed in the creek downstream of the structure. The driving surface also will be maintained.

Except as noted below, the applicant will implement the proposed project using the Conservation Measures described in the Programmatic Biological Opinion.

Amended Conservation Measures from Programmatic Biological Opinion

9. The Corps, through the applicant, will minimize adverse effects to the California red-legged frog by limiting, to the maximum extent possible, the number of access routes, construction areas, equipment staging, storage, parking, and stockpile areas. Prior to the date of initial ground disturbance at the project site, equipment staging areas, site access routes, construction equipment and personnel parking areas, debris storage areas, and any other areas that may be disturbed will be identified, surveyed by the Service-approved biologist, and clearly identified with fencing. The fencing will be inspected by the Service approved biologist and maintained daily by the applicant until the last day that construction equipment are at the project site.
28. Trenches or pits one (1) foot or deeper that are going to be left unfilled for more than forty eight(48) hours will be securely covered with boards or other material to prevent the California red-legged frog from falling into them. If this is not possible, the applicant will ensure wooden ramps or other structures of suitable surface that provide adequate footing for the California red-legged frog are placed in the trench or pit to allow for their unaided escape. The Service-approved biologist will inspect the trenches, pits, or holes prior to their being filled to ensure there are no California red-legged frogs in them. The trench, pit, or hole also will be examined by the Service-approved biologist each workday morning at least one hour prior to initiation of work and in the late afternoon no more than one hour after work has ceased to ascertain whether any individuals have become trapped. If the escape ramps fail to allow the animal to escape, the Service-approved biologist will remove and transport it to a safe location, or contact the Service for guidance.

Action Area

The action area is defined in 50 CFR § 402.02, as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” For the proposed project, the action area encompasses the approximately 250 feet construction footprint to be dewatered and extending 300 feet in all directions. Within this buffer area beyond the construction footprint, California red-legged frogs have the potential to be affected by noise and visual disturbance.

Analytical Framework for the Jeopardy Determination

The following analysis relies on four components to support the jeopardy determination for the California red-legged frog: (1) the *Status of the Species*, which evaluates the species’ range wide condition, the factors responsible for that condition, and their survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of these species in the action area, the factors

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: J

File Numbers: PLN2017-00113

responsible for that condition, and the role of the action area in the species' survival and recovery; (3) the *Effects of the Action*, which determines the direct and indirect effects of the proposed Federal action and the effects of any interrelated or interdependent activities on these species; and (4) *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on these three species.

In accordance with the implementing regulations for Section 7 and Service policy, the jeopardy determination is made in the following manner: the effects of the proposed Federal action are evaluated in the context of the aggregate effects of all factors that have contributed to the current status of the California red-legged frog. Additionally, for non-Federal activities in the action area, we will evaluate those actions likely to affect the species in the future, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both its survival and recovery in the wild.

The following analysis places an emphasis on using the range-wide survival and recovery needs of the California red-legged frog, and the role of the action area in providing for those needs as the context for evaluating the significance of the effects of the proposed programmatic Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

Status of the Species

Refer to pages 13 through 17 of the Programmatic Biological Opinion for the current status of the California red-legged frog.

Environmental Baseline

The project is located in San Francisquito Creek. This watershed encompasses an area of approximately 45 square miles and is located on the eastern flank of the Santa Cruz Mountains, at the base of the San Francisco Peninsula. The San Francisquito Creek watershed has four major sub-watersheds located at least partially on Stanford lands. Bear Creek (aka Bear Gulch Creek), Los Trancos Creek, San Francisquito Creek, and streams that flow into Searsville Reservoir (including Corte Madera, Dennis Martin, Sausal, and Alambique Creeks) comprise the watershed.

Riparian vegetation is well established along the creek at the project site and small clumps of native and non-native grasses and forbs are also present in the understory of the riparian zone. Flow in the creek during the projected summer construction period is typically very low, less than 0.5 cubic feet per second, and many portions of the watershed are intermittent.

California red-legged frog is known to occur within 2 miles of the project site. While the species has not been documented on or within the project site, the stream within the site may allow dispersal from upstream locations and suitable dispersal and foraging habitat occurs on and near the project site.

Based on the documented presence of California red-legged frogs in the area, the habitat within and adjacent to the action area, and the biology and ecology of the California red-legged frog, the Service has determined that California red-legged frogs are likely to be present in the action area for sheltering, foraging, and dispersal.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: J

File Numbers: PLN2017-00113

Effects of the Action

The proposed action may result in the following effects analyzed in the Programmatic Biological Opinion. These effects will be reduced by implementing the Conservation Measures in the Programmatic Biological Opinion.

Direct effects to California red-legged frogs may include injury or mortality from being crushed by earth moving equipment, construction debris, and worker foot traffic. These impacts would be reduced by minimizing and clearly demarcating the boundaries of the action area and equipment access routes and locating staging areas outside of riparian areas or other water bodies. In addition, relocating individual California red-legged frogs may further minimize injury or mortality. Injury and mortality is expected to be very low based on implementation of the Conservation Measures.

Work activities, including noise, may harass California red-legged frogs by causing them to leave the work area. This disturbance may increase the potential for predation and desiccation. Minimizing the area disturbed by proposed action activities and constraining activities to seasonal limits would reduce the potential for dispersal resulting from the action.

Limiting the staging areas to previously disturbed areas, and demarcating overland access routes to the shortest necessary to accomplish the project, with minimal disturbance to soil and vegetation, would avoid and minimize direct impacts to habitat for the California red-legged frog.

The capture and handling of California red-legged frogs to move them from a work area involves harassment of individuals. Mortality may occur as a result of improper handling, containment, or transport of individuals or from releasing them into unsuitable habitat. Improper handling, containment, or transport of individuals would be reduced or prevented by use of a Service-approved biologist.

The proposed action will result in temporary effects to 250 feet of California red-legged frog non-breeding aquatic, upland foraging, and dispersal habitat within the action area. No breeding habitat would be affected by project implementation because none of the project treatments would result in loss or degradation of any pools in the action area. Implementation of the conservation measures may reduce mortality, injury and harassment of California red-legged frog.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. During this consultation, the Service did not identify any future non-federal actions that are reasonably certain to occur in the action area of the proposed project.

Conclusion

The proposed project, as described, fits within the parameters of the level of effects analyzed in the Programmatic Biological Opinion and is not likely to jeopardize the continued existence of the California red-legged frog or adversely modify its designated critical habitat.

We base this conclusion on the following: (1) the small size of the project will not result in loss of habitat for dispersing California red-legged frog; (2) the short duration of the project; and (3)

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: J

File Numbers: PLN2017-00113

implementation of conservation measures to minimize the extent of take and other adverse effects to listed species.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by regulation 50 CFR 17.3 as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Corps so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

Amount or Extent of Take

The Service anticipates that incidental take of the California red-legged frog will be difficult to detect because of their life history. California red-legged frogs can be difficult to locate due to their cryptic appearance and finding a dead or injured individual is unlikely due to their relatively small size. Losses of California red-legged frogs may also be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, changes in water regime at their breeding ponds, or additional environmental disturbances. Therefore, the Service anticipates that all California red-legged frogs within the 250 lineal feet of action area will be subject to incidental take in the form of non-lethal harm and harassment. In addition, the Service anticipates that no more than one (1) California red-legged frog will be subject to incidental take in the form of death or injury as a result of construction-related activities. Upon implementation of the following *Reasonable and Prudent Measures*, incidental take of California red-legged frog associated with the project will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

Effect of the Take

The proposed action, as described, fits within the parameters of the level of take anticipated in the Programmatic Biological Opinion and the Service has determined that this level of anticipated take is not likely to result in jeopardy to the California red-legged frog.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: J

File Numbers: PLN2017-00113

Reasonable and Prudent Measures

The Service has determined that the following reasonable and prudent measure is necessary and appropriate to minimize impacts of incidental take of the California red-legged frog:

1. The Corps will minimize effects to the California red-legged frog and its habitat resulting from project related activities by following this biological opinion and the Programmatic Biological Opinion as modified by the terms and conditions below.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Corps shall ensure the permittee complies with the following Terms and Conditions, which implement the Reasonable and Prudent Measure described above. These Terms and Conditions are nondiscretionary.

The following Terms and Conditions implement the Reasonable and Prudent Measure:

1. The permittee, Stanford, shall fully implement all the Conservation Measures as described in this biological opinion and the Programmatic Biological Opinion.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends the following actions:

1. To avoid transferring disease or pathogens while handling amphibians, the Corps should encourage all applicants to follow the Declining Amphibian Populations Task Force Fieldwork Code of Practice.
2. Sightings of any listed or sensitive animal species should be reported to California Department of Fish and Wildlife California Natural Diversity Database. A copy of the reporting form and a topographic map clearly marked with the location the animals were observed should also be provided to the Service.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION—CLOSING STATEMENT

This concludes formal consultation on the San Francisquito Creek Low Flow Crossing Modification Project. As provided in 50 CFR §402.16, reinitiation of formal consultation is required and shall be requested by the Federal agency or by the Service where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and:

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: J

File Numbers: PLN2017-00113

- (a) If the amount or extent of taking specified in the incidental take statement is exceeded;
- (b) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
- (c) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or
- (d) If a new species is listed or critical habitat designated that may be affected by the identified action.

If you have any questions regarding this biological opinion, please contact Leif Goude, Biologist, (leif_goude@fws.gov) or Ryan Olah, Coast Bay Division Chief (ryan_olah@fws.gov), at the letterhead address, (916-414-6659) or by e-mail.

Sincerely,



Jennifer M. Norris
Field Supervisor

cc: Rachel Bejerano, Stanford University, Stanford, California

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: J

File Numbers: PLN2017-00113



DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET, 16TH FLOOR
SAN FRANCISCO, CALIFORNIA 94103-1398

JUN 22 2017

Regulatory Division

Subject: File Number 2014-00427S

Mr. Tom W. Zigterman
Stanford University
327 Bonair Siding
Stanford, CA 94305-7272

Dear Mr. Zigterman:

This correspondence is in reference to your submittal of February 9, 2017, concerning Department of the Army (DA) re-authorization for the revised San Francisquito Creek low flow crossing modification project, located in the Jasper Ridge Biological Preserve, near the town of Woodside, San Mateo County, California (37.4108°N, -122.2378°W). The revised project involves removing part of the existing concrete weir to allow fish passage, and installing precast concrete box culverts instead of the cast-in-place concrete bridge/culvert structure that was previously authorized. This authorization supersedes all previous authorizations.

Work within U.S. Army Corps of Engineers' (Corps) jurisdiction will include removal of approximately 365 cubic yards of existing concrete and accumulated sediment from the weir, and placement of approximately 185 cubic yards of new concrete, soil and rock backfill, and rock slope protection to construct the new culvert crossing and associated bank protection. Permanent fill will impact approximately 0.165 acre of the bed and banks of San Francisquito Creek. The project will be implemented during the summer/fall dry season, and approximately 250 linear feet of the creek channel will be dewatered using gravel bag coffer dams (temporarily impacting approximately 0.013 acre of the creek) to ensure dry conditions during construction. All work shall be completed in accordance with the plans and drawings titled "USACE File #2014-00427S, San Francisquito Creek low-flow crossing modification, February 9, 2017, sheets 1 to 7" provided as enclosure 1.

Section 404 of the Clean Water Act (CWA) generally regulates the discharge of dredged or fill material below the plane of ordinary high water in non-tidal waters of the United States, below the high tide line in tidal waters of the United States, and within the lateral extent of wetlands adjacent to these waters. Section 10 of the Rivers and Harbors Act generally regulates construction of structures and work, including excavation, dredging, and discharges of dredged or fill material, occurring below the plane of mean high water in tidal waters of the United States; in former diked baylands currently below mean high water; outside the limits of mean high water but affecting the navigable capacity of tidal waters; or below the plane of ordinary high water in non-tidal waters designated as navigable waters of the United States. Navigable waters of the United States generally include all waters subject to the ebb and flow of the tide; and/or all waters presently used, or have been used in the past, or may be susceptible for future

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: K

File Numbers: PLN2017-00113

use to transport interstate or foreign commerce. A Preliminary Jurisdictional Determination (JD) has been completed for your site. Preliminary JDs are written indications that there may be waters of the U.S. on a parcel or indications of the approximate location(s) of waters of the U.S. on a parcel. Preliminary JDs are advisory in nature and may not be appealed. While this preliminary jurisdictional determination was conducted pursuant to Regulatory Guidance Letter No. 16-01, *Jurisdictional Determinations*, it may be subject to future revision if new information or a change in field conditions becomes subsequently apparent. The basis for this preliminary jurisdictional determination is fully explained in the *Preliminary Jurisdictional Determination Form* which has been previously sent to you.

Based on a review of the information in your submittal and the current condition of the site, as verified during a field investigation on March 1, 2016, the project qualifies for authorization under Department of the Army Nationwide Permits (NWP) 27 - *Aquatic Habitat Restoration, Establishment, and Enhancement Activities* (http://www.spn.usace.army.mil/Portals/68/docs/regulatory/NWP/NWP17_27.pdf) and 33 - *Temporary Construction, Access, and Dewatering* (http://www.spn.usace.army.mil/Portals/68/docs/regulatory/NWP/NWP17_33.pdf), 82 Fed. Reg. 1860, January 6, 2017, pursuant to Section 404 of the CWA of 1972, as amended (33 U.S.C. § 1344 *et seq.*). The project must be in compliance with the terms of the NWP, the general conditions of the Nationwide Permit Program (www.spn.usace.army.mil/Portals/68/docs/regulatory/NWP/NWP17_GC.pdf), and the San Francisco District regional conditions cited on our website (www.spn.usace.army.mil/Portals/68/docs/regulatory/NWP/NWP17_RC.pdf). You must also be in compliance with any special conditions specified in this letter for the NWP authorization to remain valid. Non-compliance with any term or condition could result in the revocation of the NWP authorization for your project, thereby requiring you to obtain an Individual Permit from the Corps. This NWP authorization does not obviate the need to obtain other State or local approvals required by law.

This verification will remain valid until March 18, 2022, unless the NWP authorization is modified, suspended, or revoked. Activities which have commenced (i.e., are under construction) or are under contract to commence in reliance upon a NWP will remain authorized provided the activity is completed within 12 months of the date of a NWP's expiration, modification, or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 C.F.R. § 330.4(e) and 33 C.F.R. § 330.5 (c) or (d). This verification will remain valid if, during the time period between now and March 18, 2022, the activity complies with any subsequent modification of the NWP authorization. The Chief of Engineers will periodically review NWPs and their conditions and will decide to modify, reissue, or revoke the permits. If a NWP is not modified or reissued within five years of its effective date, it automatically expires and becomes null and void. It is

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: K

File Numbers: PLN2017-00113

incumbent upon you to remain informed of any changes to the NWP. Changes to the NWP would be announced by Public Notice posted on our website (<http://www.spn.usace.army.mil/Missions/Regulatory/Public-Notices.aspx>). Upon completion of the project and all associated mitigation requirements, you shall sign and return the Certification of Compliance, enclosure 2, verifying that you have complied with the terms and conditions of the permit.

This authorization will not be effective until you have obtained a Section 401 water quality certification from the San Francisco Bay Regional Water Quality Control Board (RWQCB). If the RWQCB fails to act on a valid request for certification within two months after receipt of a complete application, the Corps will presume a waiver of water quality certification has been obtained. You shall submit a copy of the certification to the Corps prior to the commencement of work.

General Condition 18 stipulates that project authorization under a NWP does not allow for the incidental take of any federally-listed species in the absence of a biological opinion (BO) with incidental take provisions. As the principal federal lead agency for this project, the Corps initiated consultation with the United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) to address project related impacts to listed species, pursuant to Section 7(a) of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq.*). By letter of August 30, 2016 (enclosure 3), USFWS issued a BO (08ESMF00-2016-F-1735) with an incidental take statement for California red-legged frogs, which verified that the project is covered under the 2014 *Programmatic Biological Opinion for Issuance of Permits under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, including Authorization under 22 Nationwide Permits, for Projects that May Affect the Threatened California Red-legged Frog in Nine San Francisco Bay Area Counties, California* (http://www.spn.usace.army.mil/Portals/68/docs/regulatory/BOs/Prog/USFWS_PBO_CRFL_BayArea_2014.pdf). By email of May 12, 2017 (enclosure 4), NMFS verified that the project is covered under the 2016 *Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation: Program to Fund and/or Permit Restoration Projects within the NOAA Restoration Center's Central Coastal California Office Jurisdictional Area in California* (http://www.spn.usace.army.mil/Portals/68/docs/regulatory/BOs/Prog/NMFS_PBO_NOAA_RC_2016.pdf), with an incidental take statement for steelhead..

In order to ensure compliance with this NWP authorization, the following special conditions shall be implemented:

1. To remain exempt from the prohibitions of Section 9 of the Endangered Species Act, the non-discretionary Terms and Conditions for incidental take of federally-listed

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: K

File Numbers: PLN2017-00113

California red-legged frogs and Central California Coast ESU steelhead shall be fully implemented as stipulated in the Biological Opinions titled *Programmatic Biological Opinion for Issuance of Permits under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, including Authorization under 22 Nationwide Permits, for Projects that May Affect the Threatened California Red-legged Frog in Nine San Francisco Bay Area Counties, California* (dated June 18, 2014), as amended by enclosure 3, and *Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation: Program to Fund and/or Permit Restoration Projects within the NOAA Restoration Center's Central Coastal California Office Jurisdictional Area in California* (dated June 14, 2016), as amended by enclosure 4. Project authorization under the NWP is conditional upon compliance with the mandatory terms and conditions associated with incidental take. Failure to comply with the terms and conditions for incidental take, where a take of a federally-listed species occurs, would constitute an unauthorized take and non-compliance with the NWP authorization for your project. The USFWS and NMFS are, however, the authoritative federal agency for determining compliance with the incidental take statement and for initiating appropriate enforcement actions or penalties under the Endangered Species Act.

2. Incidents where any individuals of Central California Coast ESU steelhead listed by NOAA Fisheries under the Endangered Species Act appear to be injured or killed as a result of discharges of dredged or fill material into waters of the United States or structures or work in navigable waters of the United States authorized by this NWP shall be reported to NOAA Fisheries, Office of Protected Resources at (301) 713-1401 and the Regulatory Office of the San Francisco District of the U.S. Army Corps of Engineers at (415) 503-6795. The finder should leave the plant or animal alone, make note of any circumstances likely causing the death or injury, note the location and number of individuals involved and, if possible, take photographs. Adult animals should not be disturbed unless circumstances arise where they are obviously injured or killed by discharge exposure, or some unnatural cause. The finder may be asked to carry out instructions provided by NOAA Fisheries, Office of Protected Resources, to collect specimens or take other measures to ensure that evidence intrinsic to the specimen is preserved.

You may refer any questions on this matter to Greg Brown of my Regulatory staff by telephone at 415-506-6791 or by e-mail at gregory.g.brown@usace.army.mil. All correspondence should be addressed to the Regulatory Division, South Branch, referencing the file number at the head of this letter.

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: K

File Numbers: PLN2017-00113

The San Francisco District is committed to improving service to our customers. My Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner, while preserving and protecting our nation's aquatic resources. If you would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website: <http://www.spn.usace.army.mil/Missions/Regulatory.aspx>

ORIGINAL SIGNED
Sincerely, Katerina Galacatos
CHIEF, REG. DIV., SOUTH BR.
FOR

Rick M. Bottoms, Ph.D.
Chief, Regulatory Division

Enclosures

Copies Furnished (w/ encls):

CA RWQCB, Oakland, CA (Brian.Wines@waterboards.ca.gov)
US FWS, Sacramento, CA (leif_goude@fws.gov)
US NMFS, Santa Rosa, CA (joe.pecharich@noaa.gov)

San Mateo County Planning Commission Meeting

Owner/Applicant: Stanford University

Attachment: K

File Numbers: PLN2017-00113