IN-LIEU FEE ENABLING INSTRUMENT

CALLEGUAS CREEK WATERSHED

IN-LIEU FEE PROGRAM

This In-Lieu Fee Enabling Instrument ("Instrument"), dated this ___ day of _____, 2014 ("Execution Date"), is made by and between the State of California Coastal Conservancy ("Program Sponsor" or "Conservancy"), the Los Angeles District of the U.S. Army Corps of Engineers ("USACE") and Region IX of the U.S. Environmental Protection Agency ("USEPA"). The USACE and USEPA, in combination with (non-signatory) California Department of Fish and Wildlife (CDFW), comprise and are referred to jointly as the Interagency Review Team ("IRT"). The Program Sponsor and the IRT members who have agreed to sign this Instrument are hereinafter referred to jointly as the "Parties." This Instrument sets forth the agreement of the Parties regarding the continued use, operation and maintenance of the Calleguas Creek Watershed In-Lieu Fee Program (the "Program").

RECITALS

A. The USACE signed a Memorandum of Agreement (MOA) with the Program Sponsor on February 20, 2003, thus establishing the Program.

B. This Instrument is to continue the operation of the Program Sponsor's In-Lieu Fee Program in conformance with the requirements of 33 CFR Parts 325 and 332. This Instrument, except for actions covered under Section VI, supersedes the *Agreement for Establishment and Administration of the Calleguas Creek Watershed (Ventura County, California) Aquatic Resource In-Lieu Fee Compensatory Mitigation Program* (dated March 17, 2003) ("2003 Agreement") between the USACE and Program Sponsor that formally established an in-lieu-fee program between the parties.

C. The Program Sponsor is responsible for continuing the operation the Program.

D. USACE and USEPA have jurisdiction over Waters of the U.S. pursuant to the Clean Water Act, 33 U.S.C § 1251 *et seq*. Waters of the U.S. include jurisdictional wetlands. CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants and the habitat necessary for biological sustainable populations of these species pursuant to California Fish and Game Code § 1802.

E. The IRT is the interagency group which oversees the establishment, use, operation, and maintenance of the Program.

F. The primary goal of the Program is to provide effective Compensatory Mitigation for the Functions and Services of Waters of the U.S. lost through authorized Impacts.

G. The objectives of the Program are (1) to provide an alternative to permittee-responsible Compensatory Mitigation by implementing In-Lieu Fee ("ILF") Projects adequate to meet current and expected demand for Credits in the Service Area; (2) create a Program that has a level of accountability commensurate with mitigation banks as specified in 33 C.F.R. Part 332; (3) provide ILF Projects that meet current and expected demand for Credits; and (4) achieve ecological success on a watershed-basis by siting ILF Projects using the best available decision support tools, and by integrating ILF Projects with ongoing conservation activities being undertaken within the region.

H. The mitigation plan, as referenced in 33 CFR 332.4 and containing the requirements in paragraphs c2-c14 of that section, will be addressed in each proposed ILF Project by submissions required in Exhibits D-F of this Instrument (Development Plan, Interim Management Plan, Long Term Management Plan).

AGREEMENT

NOW, THEREFORE, in consideration of the foregoing Recitals and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties hereby agree as follows:

SECTION I: PURPOSE AND AUTHORITIES

A. Purpose

The purpose of this Instrument is to establish new guidelines, responsibilities, and standards for the continued use, operation, and maintenance of the Program. The Program will be used for Compensatory Mitigation for (1) unavoidable Impacts to Waters of the U.S. that result from activities authorized under section 404 of the Clean Water Act and section 401 of the Clean Water Act water quality certifications or (2) completed enforcement actions under the auspices of section 404 and 401 of the Clean Water Act.

B. Authorities

The establishment, use, operation and maintenance of the Program will be carried out in accordance with the following authorities:

1. Federal Authorities

    a. Clean Water Act (33 U.S.C. § 1251 *et seq.*);

    b. National Environmental Policy Act (42 U.S.C. § 4321 *et seq.*);

    c. Endangered Species Act (16 U.S.C. § 1531 *et seq.*);

    d. Fish and Wildlife Coordination Act (16 U.S.C. § 661 *et seq.*);

e. National Historic Preservation Act (16 U.S.C. § 470);

f. Regulatory Program of the USACE (33 C.F.R. Parts 320-332); and

g. Guidelines for Specification of Disposal Sites for Dredged and Fill Material (40 C.F.R. Part 230).

2. Authority of the USACE

The USACE will make the final decision regarding the amount and type of Compensatory Mitigation to be required of federal permittees, and determine whether and how use of Credits from the Program is appropriate to compensate for unavoidable Impacts.

SECTION II: DEFINITIONS

The initially-capitalized terms used and not defined elsewhere in this Instrument are defined as set forth below.

1. "Adaptive Management" means an approach to natural resource management which incorporates changes to management practices, including corrective actions as determined to be appropriate by the IRT in discussion with the Program Sponsor based upon annual report results and IRT review of overall Program performance and compliance.

2. "Advance Credits" means any Credits of the Program that are available for sale prior to being fulfilled in accordance with an approved Development Plan.

3. "Buffer" means an upland, wetland, and/or riparian area that protects and/or enhances aquatic resource functions associated with wetlands, rivers, stream, and lakes from disturbances associated with adjacent land uses.

4. "Catastrophic Event" shall mean an unforeseen event, such as the impact of a vehicle or falling aircraft, which has a material and detrimental impact on the ILF Project site(s), and over which the Program Sponsor has no control.

5. "Compensatory Mitigation" means the Restoration, Establishment, Enhancement, and/or in certain circumstances Preservation of aquatic resources for the purposes of offsetting unavoidable Impacts which remain after all appropriate and practicable avoidance and minimization measures have been achieved.

6. "Conservation Easement" means a perpetual conservation easement, as defined by California Civil Code § 815.1, substantially in the form of **Exhibit H**.

7. "Credit" is a unit of measure (e.g., a functional or areal measure or other suitable metric) representing the accrual or attainment of aquatic functions at an ILF Project site(s). The measure of aquatic functions is based on the resources Restored, Established, Enhanced, or Preserved.

8. "Credit Release" means an action by the USACE to make specified Credits available for Transfer pursuant to this Instrument.

9. "Development Plan" is one of the (3) phases of a "Mitigation Plan", and is the document that formally establishes an ILF Project and stipulates the terms and conditions of its construction and habitat establishment activities required to be conducted on the ILF Project site to establish Credits. Each Development Plan will be bound by the terms and conditions of the Instrument by reference.

10. "Enhance" or "Enhancement" means the manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource Function(s). Enhancement results in the gain of selected aquatic resource Function(s), but may also lead to a decline in other aquatic resource Function(s). Enhancement does not result in a gain in aquatic resource area.

11. "Establish" or "Establishment" means the manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area and Functions.

12. "Force Majeure" shall mean war, insurrection, riot or other civil disorder, flood, drought, lightning, earthquake, fire, landslide, disease, effects of climate change on habitat or hydrology, condemnation or other taking by governmental body. Other conditions beyond the Program Sponsor's control will include: interference by third parties; condemnation or other taking by any governmental body; change in applicable law, regulation, rule, ordinance, or permit condition, or the interpretation or enforcement thereof; any order, judgment, action or determination of any federal, state or local court, administrative agency or governmental body; and/or suspension or interruption of any permit, license, consent, authorization or approval.

13. "Functions" mean the physical, chemical, or biological processes that occur in ecosystems.

14. "ILF Project" means Compensatory Mitigation implemented by the Program Sponsor under the Program.

15. "Impacts" mean adverse effects.

16. “Interim Management Plan” is one of the (3) phases of a “Mitigation Plan”, and is the document that describes the management, monitoring, Adaptive Management, reporting and other activities to be implemented by the Program Sponsor during the Interim Management Period. Each Interim Management Plan will be bound by the terms and conditions of the Instrument by reference.

17. “Interim Management Plan” means the document that describes the management, monitoring, Adaptive Management, reporting and other activities to be implemented by the Program Sponsor during the Interim Management Period. Each Interim Management Plan will be bound by the terms and conditions of the Instrument by reference.

18. “Long-term Management Plan” is one of the (3) phases of a “Mitigation Plan”, and is the document that identifies specific land management activities that are required to be performed at each of the ILF Project sites, including, but not necessarily limited to, biological monitoring, improvements to biological carrying capacity, enforcement measures, and other actions designed to protect or improve the habitat values of the ILF Project site. Each Long-term Management Plan will be bound by the terms and conditions of the Instrument by reference. “Mitigation Plan” as referenced in 33 CFR 332.4 includes the requirements in paragraphs c2-c14 of that section which are met in Exhibits D-F of this instrument (Development Plan, Interim Management Plan, Long Term Management Plan)."

19. “Long-term Management Plan” means the document that identifies specific land management activities that are required to be performed at each of the ILF Project sites, including, but not necessarily limited to, biological monitoring, improvements to biological carrying capacity, enforcement measures, and other actions designed to protect or improve the habitat values of the ILF Project site. Each Long-term Management Plan will be bound by the terms and conditions of the Instrument by reference.

20. “Performance Standards” means the minimum standards set forth in the Development Plan to define the successful development of Waters of the U.S.

21. “Phase I Environmental Site Assessment” is an assessment of the environmental condition of the Property performed in accordance with the American Society of Testing and Materials (ASTM) Standard E1527-05 “Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process,” or any successor to such ASTM Standard which is active at the time of the assessment.

22. “Preservation” means the protection of existing ecologically important wildlife, habitat or other ecosystem resources in perpetuity.

23. “Program Account” means an account established by the Program Sponsor at an institution that is a member of the Federal Deposit Insurance Corporation and that is used

by the Program Sponsor for the purpose of providing compensatory mitigation for Department of the Army permits.

24. "Program Effective Date" is the date determined pursuant to Section IV.D., when the Program is considered effective and Transfer of Advance Credits may begin.

25. "Property Assessment" means the written ILF Project site evaluation signed by the Program Sponsor, using the form attached in **Exhibit I**.

26. "Remedial Action" means any corrective measures which the Program Sponsor is required to take to ameliorate any injury or adverse Impact to the ILF Project Site as Preserved, Restored or Enhanced or as a result of a failure to achieve the Performance Standards.

27. "Re-establishment" means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic Functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area, Functions and Services.

28. "Rehabilitation" means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic Functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource Function, but does not result in a gain in aquatic resource area.

29. "Restore" or "Restoration" means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic Functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

30. "RIBITS" means the Regulatory In-Lieu Fee and Bank Information Tracking System.

31. "Services" mean the benefits that human populations receive from Functions that occur in ecosystems.

32. "Service Area" means the geographic area(s) within which Impacts to Waters of the U.S. that occur may be compensated through Credits from the Program.

33. "Subordination Agreement" means a written, recorded agreement in which the holder of an interest in, or lien or encumbrance on the ILF Project site makes the lien or encumbrance subject to and of lower priority than the Conservation Easement or equivalent protection mechanism, even though the lien or encumbrance was recorded before the Conservation Easement or equivalent protection mechanism.

34. “Transfer” means the use, sale, or conveyance of Credits by the Program Sponsor.

35. “Unlawful Act” shall mean the unlawful act of any person or entity other than the Program Sponsor and shall include an event or series of events, such as the intentional release within the ILF Project site(s), or any connected watercourse, of any Hazardous Substance, or the discharge of such a substance in violation of a statute, ordinance, regulation or permit, which event or series of events has a material and detrimental impact on the ILF Project site.

36. “Waters of the U.S.” mean waterbodies, including wetlands, over which there is federal jurisdiction under section 404 of the Clean Water Act.

SECTION III: STIPULATIONS

A. Disclaimer

This Instrument does not in any manner affect the statutory authorities and responsibilities of the Parties.

B. Exhibits

The following Exhibits are attached to and incorporated by this reference into this Instrument:

A - Prioritization and Compensation Planning Framework

B - Service Area

C - Instrument Modification Procedure

D - Development Plans

E - Interim Management Plans

F - Long-term Management Plans

G - Statement of Sale of Credit

H - Real Estate Instrument

I - Property Assessment Form

J - Credit Ledger Report Form

SECTION IV: PROGRAM STRUCTURE

A. Framework

This Instrument is intentionally broad and sets the framework under which Program sponsored ILF Projects will be identified, funded, operated, maintained and managed. The Instrument provides the authorization for the Program to provide Credits to be used as Compensatory Mitigation for Department of the Army permits and associated Clean Water Act section 401 water quality certifications or as a result of completed enforcement actions under the auspices of section 404 and 401 of the Clean Water Act. As ILF Projects are identified, the Program Sponsor will submit site-specific Development Plans, Interim Management Plans, and Long-term Management Plans to the USACE for review and approval as modifications to the Instrument through the process outlined in **Exhibit C**, and included in this Instrument as subparts of **Exhibits D-F**.

B. Service Area

The Service Area for the Program is defined as an area inside the Calleguas Creek watershed shown on **Exhibit B.** This specific Service Area was chosen based on environmental considerations and the Program Sponsor's jurisdictional boundary.

C. Program Account

1. Upon the Instrument being fully executed by all of the Parties and prior to accepting any fees from federal permittees, the Program Sponsor must establish a Program Account. The Program Account will collect deposits from the sale of Credits, and will be used only for the comprehensive costs associated with site selection, design, acquisition, implementation, and management of ILF Projects, and administrative costs for the Program Sponsor. Administrative costs equal to 15% of each Credit sale will be allowed for the Program Sponsor to manage the Program. All interest and earnings from the Program Account will remain in that account for the purpose of providing Compensatory Mitigation for unavoidable Impacts to Waters of the U.S. Funds for the operation of the Program may be obtained from other sources and repaid as Credits are sold.

2. Complete budgets for individual ILF Projects will be approved as part of Development Plans.

3. Annual accounting reports will be presented by September 30th for approval by the USACE. Reports will include detailed summaries of Program Account deposits and disbursements for each ILF Project made over the previous state fiscal year (July 1 – June 30) (Section VIII). Any deviation in excess of ten percent from the approved budget will require USACE approval before additional funds are disbursed. The USACE may review Program Account records with 14 days written notice. When so requested, Program Sponsor shall provide all books, accounts, reports, files, and other records relating to the Program Account.

D. Program Effective Date

The Program Effective Date will occur and Transfer of Advance Credits may begin only after (1) the Instrument has been fully executed by all of the Parties and (2) the Program Account has been established. Within 30 days of the Program Effective Date, the Program Sponsor shall upload the final, signed Instrument including all of its Exhibits, to RIBITS and provide an electronic copy each member of the IRT.

E. ILF Projects

Program Sponsor will identify potential ILF Projects consistent with the Instrument and submit a Development Plan, including a project budget, Interim Management Plan, and Long-term Management Plan to the USACE along with a written request for an Instrument Modification (**Exhibit C**). Program Sponsor will implement the ILF Projects upon approval and report annually to the IRT (Section VIII).

F. Establishment and Use of Credits

In accordance with the provisions of this Instrument and upon satisfaction of the Credit Release schedule described in Development Plans (contained herein as subparts of **Exhibit D**) and in Section VII.C, Credits are available for Transfer as Compensatory Mitigation in accordance with all applicable requirements for permits issued under section 404 of the Clean Water Act and associated Clean Water Act section 401 water quality certifications. The USACE, based on recommendations of the IRT, will determine the number of Credits available for each ILF Project based upon the approved design and the resulting habitats achieved, in accordance with the terms and conditions contained herein.

SECTION V: ILF PROJECT ESTABLISHMENT AND OPERATION

This section identifies the general framework in which individual ILF Projects will be established and operated. Each ILF Project will be approved individually, as detailed herein, and the specific requirements for its operation, monitoring, and management will meet the USACE standard operating procedures at the time of its approval. The Program Sponsor shall provide for access to the ILF Project site by members of the IRT or their agents or designees at reasonable times as necessary to conduct inspections and compliance monitoring with respect to the requirements of this Instrument. Inspecting parties shall not unreasonably disrupt or disturb activities on the ILF Project site, and will provide written notice within reasonable time prior to the inspection.

A. Establishment

1. Project Site Selection

   All individual ILF Projects will be located within the Program Service Area. Program Sponsor will seek ILF Projects based on the prioritization and compensation planning framework outlined in **Exhibit A**.

2. Instrument Modifications

   As ILF Projects are identified, Program Sponsor will prepare a Development Plan, including a project budget, Interim Management Plan, and Long-term Management Plan and submit a written request to the USACE to modify the Instrument. This process is outlined in **Exhibit C**.

3. Permits

   The Program Sponsor will obtain all applicable permits and authorizations needed to construct and maintain the ILF Project(s). This Instrument does not constitute or substitute for any such approval.

4. Financial Assurances

   Notwithstanding any other provision of this Instrument, the Program Sponsor's financial obligation for the Program will be limited to funds in the Program Account. The Program Sponsor will take the following actions to ensure funds are available to meet mitigation requirements for Credits Transferred:

   a. Funds outlined in approved ILF Project budgets will be earmarked, held in the Program Account, and disbursed as work is accomplished to operate and monitor the individual ILF Projects.

   b. Funds outlined in approved ILF Project budgets will be earmarked, held in the Program Account to manage the individual ILF Project, including contingency and Remedial Actions.

   c. A financial assurance for each ILF Project in accordance with 33 C.F.R. 332.3(n).

   Each approved ILF Project will have an identified schedule for the release of the financial assurances as the ILF Project meets its approved Performance Standards.

B. Operation

1. Development Plans

Program Sponsor shall be responsible for preparing Development Plans in accordance with **Exhibit D**. The Development Plans shall outline measurable objectives, Performance Standards, and monitoring requirements. Pre- and post-ILF Project implementation jurisdictional determination and delineations (as appropriate) and functional assessments will be completed using USACE-approved techniques. Development Plans must include a survey or other document acceptable to the USACE, completed by a professional land surveyor or other qualified person or entity, defining the ILF Project site, and a Property Assessment using the Form in **Exhibit I**. Upon approval of the Development Plan by the USACE, the Program Sponsor shall be responsible for implementing the plan.

2. Interim Management and Monitoring

Program Sponsor shall be responsible for preparing Interim Management Plans in accordance with **Exhibit E**. Upon approval of the Interim Management Plan by the USACE, the Program Sponsor shall be responsible for conducting management and monitoring activities according to the Interim Management Plan until completion of the Interim Management Period.

3. Long-term Management and Monitoring

ILF Projects shall be designed, to the maximum extent practicable, to be self-sustaining once Performance Standards have been achieved. Program Sponsor shall be responsible for preparing Long-term Management Plans in accordance with **Exhibit F**. Once the Interim Management Period is completed, the Program Sponsor shall implement long-term management and monitoring of the ILF Project site(s) according to the Long-term Management Plan. Program Sponsor shall be obligated to manage and monitor the ILF Project site in perpetuity to preserve its habitat and conservation values in accordance with this Instrument, the real estate instrument (e.g., Conservation Easement), and the Long-term Management Plan. Such activities shall be funded through the Program Account, including, but not limited to, the potential transfer of long-term management funds to be managed by the steward in a separate endowment account pursuant to 33 C.F.R. § 332.8(u)(3). Program Sponsor and the IRT members shall meet and confer upon the request of any one of them, to consider revisions to the Long-term Management Plan which may be necessary or appropriate to better conserve the habitat and conservation values of the ILF Project site(s). During the Long-term Management Period, Program Sponsor shall be responsible for submitting annual reports to each member of the IRT in accordance with Section VIII.A of this Instrument. The Program Sponsor shall upload annual reports into RIBITS.

4. Remedial Action Plan

Prior to Program closure, if any Party discovers any failure to achieve the Performance Standards or any injury or adverse impact to the ILF Project site as Preserved, Established, Restored, or Enhanced, the Party making the discovery shall notify the other Parties. Subject to the limitations on any duty of the Program Sponsor to remediate outlined in Section IX.A, the USACE, in consultation with the IRT members, may require the Program Sponsor to develop and implement a Remedial Action plan to correct such condition, as described below. The annual report required under Section VIII.A. shall identify and describe any Remedial Action proposed, approved, or performed and, if the Remedial Action has been completed, evaluate its effectiveness.

a. Within 60 days of the date of written notice from the USACE, the Program Sponsor shall develop a Remedial Action plan and submit it to the USACE for approval. The Remedial Action plan must identify and describe proposed actions to achieve the Performance Standards or ameliorate injury or adverse impact to the ILF Project site and set forth a schedule within which the Program Sponsor will implement those actions. The Program Sponsor shall implement the necessary and appropriate Remedial Action in accordance with the Remedial Action plan approved by the USACE. In the event the Program Sponsor fails to submit a Remedial Action plan to the USACE in accordance with this section, the USACE will notify the Program Sponsor that the Program Sponsor is in default and may identify Remedial Action the USACE deems necessary. If (a) the Program Sponsor fails to develop a Remedial Action plan or to implement Remedial Action identified by the USACE, in accordance with this section, or (b) conditions have not improved or continue to deteriorate two years after the date that the USACE approved a Remedial Action plan or notified Program Sponsor of Remedial Actions the USACE deemed necessary, then the USACE may direct funds from the Program Account to undertake Remedial Action on the ILF Project site.

b. If the USACE determines, in consultation with the IRT, that the Program is operating at a Credit deficit (i.e., that Credit Transfers made exceed the Credits authorized for release, as adjusted in accordance with this Instrument), then the USACE shall notify the Program Sponsor. Upon the USACE giving such notice, Program Sponsor shall immediately cease Transfer of Credits. The USACE, in consultation with the IRT, will determine what Remedial

Action is necessary to correct the Credit deficit, and Program Sponsor shall implement such Remedial Action, in accordance with this Section V.B.4.

5. Long-term Ownership and Protection

Program Sponsor shall be responsible for ensuring long-term protection of each ILF Project through the use of real estate instruments in accordance with 33 C.F.R. 332.7(a). Program Sponsor will ensure that the real estate instrument is in place ***prior to*** ILF Project implementation, as stipulated in each Development Plan. The draft real estate instrument, substantially in the form of **Exhibit H**, shall be submitted to the IRT for review and USACE approval. The real estate instrument shall include, but is not limited to, assigning long-term management responsibility for the ILF Project and will, to the extent practicable, prohibit incompatible uses that might otherwise jeopardize the objectives of the ILF Project. A copy of the recorded real estate instrument shall be furnished to the Parties and become part of the official Program record. If any action is taken to void or modify an ILF Project real estate instrument, Program Sponsor must notify the USACE in writing.

SECTION VI: PRE-EXISTING ILF PROJECTS

A. ILF Projects (A) previously approved for design under the 2003 Agreement and (B) fully funded (for construction through long term management) prior to the Program Effective Date shall be completed in accordance with the terms of the 2003 Agreement. If any of the ILF Projects approved under the 2003 Agreement are discontinued, abandoned, or completed and closed, any remaining monies shall become unobligated, placed in the Program Account, and managed in accordance with this Instrument.

B. ILF Projects previously approved for design under the 2003 Agreement but not fully funded as defined by Section VI A shall be completed in accordance with the terms of this Instrument. For ILF Projects subject to this Section VI B, any funds received prior to the Program Effective Date will be transferred to the Program Account within 10 days of the Program Effective Date.

C. Funds received under the 2003 Agreement that remain unobligated as of the Program Effective Date, will be transferred to the Program Account within 10 days of the Program Effective Date and managed in accordance with this Instrument.

Section VII: CREDIT ACCOUNTING

Summary of Existing Program

With the existing Program, between June 1997 to July 2010, the USACE has allowed the Program sponsor to accept fees from twenty-four project proponents associated with twenty-six, separate USACE permits. In summary, the USACE has required a total of 22.2 acres of compensatory mitigation for 10.4 acres of permanent impacts (losses) to waters of the U.S. To date, the Conservancy has implemented three restoration projects amounting to 10.64 acres, 2.14

acres of which has been credited by the USACE. At present, the current balance to be mitigated is 20.06 acres. The next planned mitigation project is the restoration and enhancement of streambed, freshwater wetland, riparian, and adjacent upland areas at Camarillo Regional Park. The Conceptual Mitigation Plan prepared by the Conservancy and approved in a July 2008 letter from the USACE, would result in the restoration, enhancement, and preservation of approximately 62.7 acres of aquatic resources, including streambed (~2 acres), deciduous riparian woodland (~24 acres), emergent freshwater wetlands (~2 acres) and riparian scrub (~35 acres). Additionally, up to 12 acres of Venturean coastal sage scrub could be re-established where fill dirt, removed from the wetlands, is proposed for placement on disturbed upland habitat on site. Based upon these initial estimates, upon satisfying the remainder of previously purchased mitigation credits (20.02 acres), the Conservancy estimates that this mitigation project would result in approximately 47 acres of aquatic resource mitigation. Upon reaching the final performance criteria, this project is expected to cover the balance of currently required mitigation, and to generate enough additional credits to cover a significant portion of the mitigation required by USACE Regulatory Division over the next five to ten years for the Calleguas Creek watershed. As described in the Prospectus, there are nine other additional sites that can be pursued for future restoration which would also result in substantial functional gain to the wetland and riparian areas of the Calleguas Creek Watershed.

A. Advance Credits

Upon the Program Effective Date, Program Sponsor is permitted to Transfer seven (7.0) Advance Credits. The number of Advance Credits that are approved for Transfer will be developed in coordination with the USACE and IRT and will be based on (1) the percentage of the projected mitigation opportunities within the Service Area as outlined in the compensation planning framework in **Exhibit A**, (2) the Program Sponsor's past performance for implementing Enhancement, Restoration, Establishment, and/or Preservation activities within the Service Area, and (3) the projected financing necessary to begin planning and implementation of ILF Projects. No more than 25%, or 1.75 Advance Credits, may be Transferred and later fulfilled as Preservation Credits. At least 75% of the Advance Credits must be fulfilled as Establishment, Enhancement, Buffer and/or Restoration Credits.

Once the Program Sponsor has sold all of its Advance Credits, no more Advance Credits may be sold until an equivalent number of Credits has been released in accordance with the approved Credit Release schedule outlined in an ILF Project-specific Development Plan. Once all Advance Credits are fulfilled, an equivalent number of Advance Credits may be made available for Transfer, at the discretion of the USACE, in consultation with the IRT.

Program Sponsor shall complete land acquisition and initial physical and biological improvements by the third full growing season after the Transfer of Advance Credits. If Program Sponsor fails to meet these deadlines, the USACE must either make a determination that more time is needed to plan and implement an ILF Project or, if doing so would not be in the

public interest, direct the Program Sponsor to disburse funds from the Program Account to provide alternative Compensatory Mitigation to fulfill those compensation obligations.

B. Generation of Credits

Each approved ILF Project Development Plan will include the method for determining the Credits generated by the individual ILF Project. Program Sponsor may only generate Credits from an ILF Project when there is a net benefit to aquatic resources at the site as determined by the difference between pre- and post-site conditions. Credit generation will be determined using the California Rapid Assessment Method or the functional assessment method as defined in the current USACE standard operating procedures. Preservation of existing waters of the United States that support a significant population of rare plant or animal species, or that are a rare aquatic resource type may be proposed to generate Credits. Credits may also be proposed for Preservation or improvements of riparian areas, Buffers and uplands if the resources in these areas are essential to maintain the ecological viability of a Water of the U.S. Credits generated for Preservation and Buffers will be determined on a case-by-case basis by the USACE, in consultation with the IRT, in accordance with 33 C.F.R. 332.3(h) and (i).

C. Credit Release

Each approved ILF Project Development Plan will include a Credit Release schedule referenced to Performance Standards. As milestones in an individual ILF Project's Credit Release schedule are reached (i.e., Restoration, Establishment, Enhancement and/or Preservation is implemented), Advance Credits are converted to released Credits. At a minimum, Credits will not be released until the Program Sponsor has obtained USACE approval of the Development Plan for the ILF Project site, has achieved the applicable milestones in the Credit Release schedule, and has submitted a request for Credit Release to the USACE along with documentation substantiating achievement of the criteria for release to occur and Credit Releases have been approved by the USACE. If the ILF Project does not achieve the performance-based milestones, the USACE may modify the Credit Release schedule, including reducing the number of Credits.

1. Establishment, Enhancement, Restoration Credits. In general, the Credits for Establishment, Enhancement, and Restoration areas may be released according to the following schedule:

a. Up to 25% of anticipated Credits may be released upon approval of a Development Plan andrecordation of a real estate instrument for the purpose of implementing an ILF Project.

b. Up to an additional 25% of anticipated Credits may be released upon completion of improvements per the approved Development Plan and USACE approval of the as-built report.

c. Up to an additional 25% of anticipated Credits may be released incrementally upon achievement of short term (i.e., Years 2-4) Performance Standards.

d. The remaining generated Credits may be released upon achievement of long-term (i.e., Year 5) Performance Standards.

2. Preservation and Buffer Credits. In general, because Preservation and Buffers do not involve construction of improvements or meeting short term Performance Standards, up to 80% of anticipated Credits associated exclusively with Preservation and Buffers may be released upon acquisition and full legal protection of the lands to be Preserved. Up to an additional 20% of anticipated Credits may be released upon achievement of long-term Performance Standards, which, under normal circumstances, will be no later than five (5) years after the approval of the Development Plan for the site.

D. Balance of Credits

The Program will have available for Transfer the number of available Advance Credits for the Program, plus any released Credits generated by ILF Projects beyond those required to fulfill Advanced Credit Transfers.

E. Fee Schedule

The cost per unit of Credit must include the expected costs associated with the Restoration, Establishment, Enhancement, and/or Preservation of aquatic resources in the Service Area. These costs must be based on full cost accounting, and include, as appropriate, expenses such as land acquisition (including, without limitation, options to purchase), project planning and design, construction, plant materials, labor, legal fees, monitoring, and remediation or adaptive management activities, as well as administration of the Program. This list is not meant to be exhaustive and may include other categories, as appropriate, as determined by the Program Sponsor on a case-by-case basis. The cost per unit of Credit must also take into account contingency costs appropriate to the stage of project planning, including uncertainties in construction and real estate expenses. The cost per unit of Credit must also take into account the resources necessary for the long-term management, protection of the ILF Project, and enforcement of the long-term instrument or other protection mechanism. In addition, the cost per unit of Credit must include financial assurances that are necessary to ensure successful completion of ILF Projects. These fees shall be reviewed at least annually and updated as appropriate.

F. Transfer of Credits

1. All activities regulated under section 404 and 401 of the Clean Water Act may be eligible to use the Program as Compensatory Mitigation for unavoidable Impacts.

2. Credits purchased may only be used in conjunction with a USACE permit authorization or resolution of an unauthorized activity.

3. Deposits for such Credits shall be placed in the Program Account.

4. The USACE will make decisions about the most appropriate Compensatory Mitigation on a case-by-case basis, during evaluation of a Department of the Army permit application. This Instrument does not guarantee that the USACE will accept the use of Program Credits for a specific project, and authority for approving use of the Program for Compensatory Mitigation lies with the USACE.

5. The responsibility to provide Compensatory Mitigation remains with the permittee unless and until Credits are purchased from the Program. Upon USACE approval of purchase of Credits from the Program, the permittee may contact the Program Sponsor to secure the necessary amount and resource type of Credits, as outlined in Department of the Army permit conditions. Upon Transfer of Credits, the Program Sponsor shall enter the Transfer into RIBITS.

6. Program Sponsor assumes all legal responsibility for fulfilling Compensatory Mitigation requirements for USACE-authorized activities for which fees have been accepted. The transfer of liability is established by: 1) the approval of this Instrument; 2) receipt by the USACE of a Credit sale certificate that is signed by the Program Sponsor and the permittee and dated (see **Exhibit G**); and 3) the transfer of fees from the permittee to the Program Sponsor. A copy of each certificate will be retained in the administrative and accounting records for the Program Instrument. Other than what is described in this paragraph, no other legal responsibility for the permit will transfer to the Program Sponsor, unless a separate agreement is entered into between the Program Sponsor and the permittee.

7. Debits will be reflected in annual accounting reports as outlined in Section VII.

8. Subject to the limitations on any duty of the Program Sponsor to remediate outlined in Section VIII.A, if a ILF Project site is damaged after the Program Establishment Date, and such damage materially impairs Waters of the U.S. or habitat values on such damaged ILF Project site, then the USACE, in consultation with the IRT, may, at its discretion, direct Program Sponsor to suspend the Transfer of Credits and/or reduce the number of Credits allocated to the ILF Project in proportion to such damaged area unless and until the Program Sponsor has reasonably restored such damaged area, if required, pursuant to a Remedial Action plan approved by the IRT.

SECTION VIII: PROGRAM REPORTING

A. Annual Report

Program Sponsor shall upload an annual report to RIBITS and furnish a copy to each member of the IRT, in hard copy and in editable electronic format, on or before September 30th of each year following the Program Establishment Date. Each annual report shall cover the period from July 1 of the preceding year (or if earlier, the Program Establishment Date for the first annual report) through June 30th of the current year (the "Reporting Period"). The annual report shall address the following:

1. ILF Project Development

   The annual report shall document the degree to which each ILF Project site in the Program is meeting its Performance Standards. The annual report shall describe any deficiencies in attaining and maintaining Performance Standards and any Remedial Action proposed, approved, or performed. If Remedial Action has been completed, the annual report shall also evaluate the effectiveness of that action.

2. Interim Management and Long-term Management

   The annual report shall contain an itemized account of the management tasks conducted during the reporting period in accordance with the Interim Management or Long-term Management Plan for each ILF Project site, including the following:

   a. The time period covered, i.e. the dates "from" and "to";

   b. A description of each management task conducted, the dollar amount expended and time required; and

   c. The total dollar amount expended for management tasks conducted during the reporting period.

3. Credit Ledger Report

   The annual report shall include an updated Credit Transfer Ledger (**Exhibit J**, for each ILF Project site) showing the beginning and end balance of available Credits and permitted impacts for each resource type, all additions and subtractions of Credits, and any other changes in Credit availability (e.g., additional Credits released, Credit sales suspended).

4. Program Account

   The annual accounting report in accordance with Section IV.C.3.

B. Credit Transfer Reporting

Upon the Transfer of each and every Credit, the Program Sponsor shall enter the Credit Transfer into RIBITS and submit to each member of the IRT:

1. A copy of the certification in the form provided at **Exhibit G** that identifies the permit number, a statement indicating the number and resource type of Credits that have been secured from the Program Sponsor, and that legal responsibility has transferred from the permittee to Program Sponsor; and

2. An updated Credit Transfer Ledger, in hard copy and in editable electronic format in the form provided at **Exhibit J**.

SECTION IX: OTHER PROVISIONS

A. Force Majeure

1. The Program Sponsor shall be responsible to maintain the ILF Project site and perform Remedial Action except for damage or non-compliance caused by Catastrophic Events, events of Force Majeure or Unlawful Acts. In order for such exception to apply, the Program Sponsor shall bear the burden of demonstrating all of the following:

   a. That the damage or non-compliance was caused by circumstances beyond the control of the Program Sponsor and any person or entity under the direction or control of the Program Sponsor, including its employees, agents, contractors and consultants;

   b. That neither the Program Sponsor, nor any person or entity under the direction or control of the Program Sponsor, including its employees, agents, contractors and consultants, could have reasonably foreseen and prevented such damage or non-compliance; and

   c. The period of damage or non-compliance was a direct result of such circumstances.

2. The Program Sponsor shall cease Transfer of Credits and notify the USACE and IRT within seventy-two (72) hours of occurrence of a Catastrophic Event, event of Force Majeure, or Unlawful Act, and as promptly as reasonably possible thereafter Program Sponsor, USACE, and the IRT shall meet to discuss the course of action in response to such occurrence. In the meantime, Program Sponsor shall continue to manage and maintain the ILF Project to the full extent practicable.

B. Default

1. *Notice of Violation*. In the event that the Program Sponsor is in violation of the terms of this Instrument or that a violation is threatened, any Party may demand the cure of such violation. In such a case, the Party shall issue a written notice to the Program Sponsor (hereinafter "Notice of Violation") informing the Program Sponsor of the actual or threatened violations and demanding cure of such violations.

2. *Time to Cure*. The Program Sponsor shall cure the noticed violation within thirty (30) days of receipt of said written Notice of Violation. If said cure reasonably requires more than thirty (30) days, the Program Sponsor shall, within the thirty (30) day period, submit to the other Parties for review and approval a plan and time schedule to diligently complete a cure. The Program Sponsor shall complete such cure in accordance with the approved plan. If the Program Sponsor disputes the notice of violation, it shall issue a written notice of such dispute (hereinafter "Notice of Dispute") to the other Parties within thirty (30) days of receipt of written Notice of Violation.

3. *Failure to Cure*. If the Program Sponsor fails to cure the violation within the time period(s) described in Section IXB. 2., the USACE may take appropriate action. Such actions may include, but are not limited to, suspending Credit sales, Adaptive Management, decreasing available Credits, directing funds to alternate locations, taking enforcement actions, or terminating the Instrument. The USACE cannot directly accept, retain, or draw upon funds in the Program Account in the event of a default. Any delay or failure of the Program Sponsor to comply with the terms of this Instrument or an approved Development Plan shall not constitute default if and to the extent that such delay or failure is primarily caused by any Force Majeure or other conditions beyond Program Sponsor's reasonable control and significantly adversely affects its ability to perform its obligations hereunder. Program Sponsor shall give written notice to the other Parties if the performance of its ILF Project is affected by any such event in accordance with Section IX.A.2.

4. *Notice of Dispute*.

a. If the Program Sponsor provides the other Parties with a Notice of Dispute, as provided herein, the other Parties shall meet and confer with the Program Sponsor at a mutually agreeable place and time, not to exceed thirty (30) days from the date that the other Parties receive the Notice of Dispute. The other Parties shall consider all relevant information concerning the disputed violation provided by the Program Sponsor and shall determine whether a violation has in fact occurred and, if so, whether the Notice of Violation and demand for cure issued by the USACE is appropriate in light of the violation.

b. If, after reviewing the Program Sponsor's Notice of Dispute, conferring with the Program Sponsor, and considering all relevant information related to the violation, the Parties determine that a violation has occurred, the Parties shall give the Program Sponsor notice

of such determination in writing. Upon receipt of such determination, the Program Sponsor shall have fifteen (15) days to cure the violation. If said cure reasonably requires more than fifteen (15) days, the Program Sponsor shall, within the fifteen (15) day period, submit to the Parties for review and approval a plan and time schedule to diligently complete a cure. The Program Sponsor shall complete such cure in accordance with the approved plan.

C. Dispute Resolution

Resolution of disputes concerning the Parties' compliance with this Instrument shall be in accordance with those stated in 33 C.F.R. 332.8. Disputes related to satisfaction of Performance Standards may be referred to independent review from government agencies or academia that are not part of the IRT. The Parties will evaluate any such input and determine whether the Performance Standards have been met.

D. *Modification, Amendment and Termination of Instrument*

1. *Modification and Amendment*. This Instrument, including its Exhibits, may be amended or modified only with the written approval of the Parties. Instrument modifications, including the addition or expansion of ILF Projects, will follow the process outlined in **Exhibit C**. The USACE may use a streamlined modification review process for changes reflecting Adaptive Management of an ILF Project site, Credit Releases, changes in Credit Releases and Credit Release schedules, and changes that the USACE determines are not significant (**Exhibit C**).

2. *Termination/Program Closure*. Any Party to this Instrument may terminate its participation in this Instrument by giving 60 days written notice to the other Parties. In the event that the Program operated by Program Sponsor is terminated (i.e., closed), Program Sponsor is responsible for fulfilling any remaining ILF Project obligations including the successful completion of ongoing mitigation projects, relevant maintenance, monitoring, reporting, and long-term management requirements. Program Sponsor shall remain responsible for fulfilling these obligations until such time as the long-term financing obligations have been met and the long-term ownership of all mitigation lands has been transferred to the party responsible for ownership and all long-term management of the ILF Project(s). Funds remaining in the Program Accounts after these obligations are satisfied must continue to be used for the Restoration, Establishment, Enhancement, and/or Preservation of aquatic resources within the Service Area. The USACE shall direct the Program Sponsor to use these funds to secure Credits from another source of third-party mitigation, such as another in-lieu fee program, mitigation bank, or another entity such as a governmental or non-profit natural resource management entity willing to undertake the compensation activities. The funds should be used, to the maximum extent practicable, to provide compensation for the amount and type of aquatic resource for which the fees were collected.

E. Controlling Language

The Parties intend the provisions of this Instrument and each of the documents incorporated by reference in it to be consistent with each other, and for each document to be binding in accordance with its terms. To the fullest extent possible, these documents shall be interpreted in a manner that avoids or limits any conflict between or among them. However, if and to the extent that specific language in this Instrument conflicts with specific language in any document that is incorporated into this Instrument by reference, the specific language within the Instrument shall be controlling. The captions and headings of this Instrument are for convenient reference only, and shall not define or limit any of its terms or provisions.

F. Entire Agreement

This Instrument, and all exhibits, appendices, schedules and agreements referred to in this Instrument, constitute the final, complete and exclusive statement of the terms of the agreement between and among the Parties pertaining to the Program, and supersede all prior and contemporaneous discussions, negotiations, understandings or agreements of the Parties. No other agreement, statement, or promise made by the Parties, or to any employee, officer, or agent of the Parties, which is not contained in this Instrument, shall be binding or valid. No alteration or variation of this instrument shall be valid or binding unless contained in a written amendment in accordance with Section IX.D. Each of the Parties acknowledges that no representation, inducement, promise or agreement, oral or otherwise, has been made by any of the other Parties or anyone acting on behalf of any of the Parties unless the same has been embodied herein.

G. Reasonableness and Good Faith

Except as specifically limited elsewhere in this Instrument, whenever this Instrument requires a Party to give its consent or approval to any action on the part of the other, such consent or approval shall not be unreasonably withheld or delayed. If a Party disagrees with any determination covered by this provision and reasonably requests the reasons for that determination, the determining Party shall furnish its reasons in writing and in reasonable detail within 30 days following the request.

H. Successors and Assigns

This Instrument and each of its covenants and conditions shall be binding on and shall inure to the benefit of the Parties and their respective successors and assigns subject to the limitations on transfer set forth in this Instrument.

I. Partial Invalidity

If a court of competent jurisdiction holds any term or provision of this Instrument to be invalid or unenforceable, in whole or in part, for any reason, the validity and enforceability of the remaining terms and provisions, or portions of them, shall not be affected unless an essential purpose of this Instrument would be defeated by loss of the invalid or unenforceable provision.

J. Notices

1. Any notice, demand, approval, request, or other communication permitted or required by this Instrument shall be in writing and deemed given when delivered personally, sent by receipt-confirmed facsimile, or sent by recognized overnight delivery service, addressed as set forth below, or five days after deposit in the U.S. mail, postage prepaid, and addressed as set forth below.

2. Notice by any Party to any other Party shall be given to all Parties. Such notice shall not be effective until it is deemed to have been received by all Parties.

3. Addresses for purposes of giving notice are set forth below. Any Party may change its notice address by giving notice of change of address to the other Parties in the manner specified in this Section IX.J.

Program Sponsor:

State Coastal Conservancy
1330 Broadway
Oakland, CA 94612
Attn: Calleguas Creek Watershed In-Lieu Program
Telephone: (510) 286 1015
Fax: (510) 286 0470

IRT Members:

U.S. Army Corps of Engineers
Los Angeles District
915 Wilshire Blvd.
Los Angeles, CA 90017
Attn: Chief, Regulatory Division
Telephone: (213) 452-3406
Fax: (213) 452-4196

U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105
Attn: Director, Water Division
Telephone: 415-947-8707
Fax: (415) 947-3549

K. Counterparts

This Instrument may be executed in multiple counterparts, each of which shall be deemed an original and all of which together shall constitute a single executed agreement.

L. No Third Party Beneficiaries

This Instrument shall not create any third party beneficiary hereto, nor shall it authorize anyone not a Party hereto to maintain any action, suit or other proceeding, including without limitation, for personal injuries, property damage or enforcement pursuant to the provisions of this Instrument. The duties, obligations and responsibilities of the Parties to this Instrument with respect to third parties shall remain as otherwise provided by law in the event this Instrument had never been executed.

M. Availability of Funds

Implementation of this Instrument by the Parties is subject to the requirements of the Anti-Deficiency Act, 31 U.S.C. § 1341, and the availability of appropriated funds. Nothing in this Instrument may be construed to require the obligation, appropriation, or expenditure of any money from the U.S. Treasury or the California State Treasury. No Parties are required under this Instrument to expend any appropriated funds unless and until an authorized official affirmatively acts to commit to such expenditures as evidenced in writing.

N. No Partnerships

This Instrument shall not make or be deemed to make any Party to this Instrument an agent for or the partner or joint venturer of any other Party.

O. Governing Law

This Instrument shall be governed by and construed in accordance with the Clean Water Act, 33 U.S.C. § 1251 *et seq*., and other applicable federal and state laws and regulations.

P. Headings and Captions

Any paragraph heading or captions contained in this Instrument shall be for convenience of reference only and shall not affect the construction or interpretation of any provisions of this Instrument.

Q. Right to Refuse Service

USACE approval of Transfer of Credits from the Program does not signify Program Sponsor's acceptance or confirmation of Program Sponsor's offer to Transfer. Program Sponsor reserves the right to refuse to Transfer Credits from the Program for any reason.

SECTION IX: EXECUTION

Each of the undersigned certifies that he or she has full authority to bind the Party that he or she represents for purposes of entering into this Instrument. This Instrument shall be deemed executed on the date of the last signature by the Parties.

IN WITNESS WHEREOF, the Parties have executed this Instrument as follows:

Program Sponsor
California State Coastal Conservancy

~~Joan Cardellino~~ Sam Schuchat — Date: 3/25/14
~~South Coast Program Manager~~ EO

U.S. Army Corps of Engineers, Los Angeles District

David J. Castanon — Date: 4-7-14
Chief, Regulatory Division

U.S. Environmental Protection Agency, Region IX

Jason Brush — Date: 3/31/14
Supervisor, Wetlands Office

Exhibit A: Prioritization and Compensation Planning Framework

Compensation Planning Framework

The required Comprehensive Planning Framework prospectus covers elements 1 through 10:

1) Service area (watershed-based);
2) Threats to aquatic resources in service area and how threats are addressed;
3) Historic aquatic resource loss in service area;
4) Current aquatic resource conditions in service area (w/ field verification);
5) Aquatic resource goals and objectives for service area;
6) Prioritize mitigation projects;
7) Use of preservation;
8) Description of stakeholder involvement;
9) Long-term protection and management; and,
10) Evaluation and reporting.

Attached as an appendix to the Calleguas Watershed ILF Program document is the Calleguas Creek Watershed Wetland Restoration Plan (Appendix A).

CPF Elements 1 – 10:

1) SERVICE AREA (WATERSHED-BASED):

CALLEGUAS CREEK WATERSHED. The Calleguas Creek Watershed is located in coastal southern California, primarily in Ventura County, with the easternmost end of the watershed in western Los Angeles County. The watershed is surrounded by rugged mountainous terrain that reaches a maximum elevation of 1,128 meters [m] (3,700 feet [ft]) in the northeast in the Santa Susana Mountains. The watershed is approximately 48 kilometers [km] (30 miles) long and 22.4 km (14 miles) wide with a drainage area of approximately 550 square (sq.) km (344 sq. miles).

The Calleguas Creek Subwatershed is approximately 348.8 sq. km (218.0 sq. miles), draining the Simi Valley, Moorpark, Somis, eastern Camarillo, and eastern Oxnard Plain areas. The Arroyo Conejo Subwatershed is substantially smaller, comprising approximately 73.1 sq. km (45.7 sq. miles) and draining the Thousand Oaks area. However, gage records indicate that most of the Calleguas Creek flood flows, as measured at Lewis Road, come from the Arroyo Conejo Subwatershed. The gage on Calleguas Creek at CSU Channel Islands measures discharge for a watershed area of 396.8 sq. km (248 sq. miles) and includes the 102.7 sq. km (64.2 sq miles) measured by the gage on Arroyo Conejo above U.S. 101.

Runoff from the Calleguas Creek watershed flows to Mugu Lagoon and then to the Pacific Ocean. Currently, Mugu Lagoon receives surface water flow from four sources: Calleguas Creek, which drains approximately 422 sq. km (264 sq. miles), Revolon Slough, which drains approximately 94 sq. km (59 sq. miles), and the southwestern Oxnard Plain, which drains approximately 34 sq. km (21 sq. miles).

GEOLOGY. The mountainous terrain comprises various hard and soft sedimentary deposits primarily of marine origin along with some igneous deposits. Sedimentary formations exposed at the surface dominate the watershed, most of which are relatively young from the Tertiary Era. The oldest sedimentary formation in the watershed is the Chatsworth Formation, consisting predominantly of marine sandstones of the Cretaceous Era. The Chatsworth Formation is the primary formation of the Simi Hills, extending into the Santa Susana Mountains, with a few outcrops in the Santa Monica Mountains. Other sedimentary rock formations in the watershed include the Pico, Pio, Mugu, San Pedro, and Santa Barbara Formations, and Quarternary alluvial deposits and landslides. Tectonic activity has uplifted the terrain by as much as 76 centimeters [cm] (2.5 ft) per century, while erosion has denuded the terrain by as much as 23 cm (0.75 ft) per century (Scott and Williams 1978).

GEOMORPHIC HISTORY. The delta plain and the alluvial valleys have gone through periods of cutting and filling with rates of filling reaching 1.8 m (6 ft.) per century on the delta plain (USDA-NRCS 1995). The most recent sea level lowstand occurred during the late Pleistocene, approximately 18,000 years before present. During this period, streams were incised in valleys on the delta plain and it is likely that Calleguas Creek was connected to the Mugu Submarine Canyon. Sea level has risen steadily for the last 18,000 years, and incised stream valleys were filled and sediments deposited on the delta plain surface (Muto 1987, Muto and Blum 1989).

By the late 19th Century, streams were distributary in nature and, quite possibly, did not flow to the ocean except during extreme events. Instead, surface water recharged aquifers underlying the delta plain and sediment was deposited throughout the delta plain. The depths of the delta plain deposits have been increased through fore arc basin subsidence. As the hinterland was uplifted, the fore arc basin (e.g. the delta plain and continental shelf) subsided. A hinge point is likely somewhere around U.S. 101, where the hinterlands above uplifted and the fore arc basin below subsided.

It is not known to what extent this sea level-tectonic control model of down-cutting and filling applies to the alluvial valleys in the upper watershed. It is probable that periods of down-cutting and filling were translated far into the upper watershed as stream base profiles adjusted to increasingly lower or higher sea levels (Miall 1996, Quirk 1996). However, streams can accommodate subtle or slow changes in sea level by adjusting channel morphology, particularly sinuosity and slope (Schumm 1993, Ethridge et al. 1998). Additionally, variations in the discharge:sediment supply ratio become increasingly important in stream down-cutting and filling sequences with distance from the sea shore, so climate changes and tectonism may have played more prominent roles in alluvial valley down cutting and filling sequences in the hinterlands (see review of Lane 1954 in Bull 1991). Regardless, the stratigraphic architectures of

the alluvial valleys of the upper watershed are characterized by complex down cutting and filling sequence deposits.

SEDIMENT YIELD. The Calleguas Creek Watershed has one of the lowest sediment yields of the Transverse Range watersheds (Table 1, Sediment Yields of Selected California Watersheds) (Brown and Thorpe 1947, Scott and Williams 1978, Larson and Sidle 1980, Taylor 1983). Nevertheless, the topographic rejuvenation through tectonic uplift and the prevalence of highly erodable sedimentary deposits have maintained conditions conducive to reasonably high rates of erosion and sediment yield. This is evident when sediment yields of Calleguas Creek are compared to sediment yields of selected rivers in California (Table 1). The Calleguas Creek Watershed sediments are found throughout the alluvial valleys, the delta plain, and the near shore system (Scott and Williams 1978, USDA-NRCS 1995).

Although the Arroyo Conejo Subwatershed provides a disproportionate amount of the flood flows in the watershed, the Calleguas Creek and Revolon Slough Subwatersheds provide disproportionate amounts of the sediment. The USDA-NRCS (1995) designated 11 of the 37 subwatersheds as priority subwatersheds for sediment control treatment. Ten of these subwatersheds are located in the Calleguas Creek Subwatershed, and the other is located in the Revolon Slough Subwatershed.

Table 1. Sediment Yields of Selected California Watersheds

Watershed	Total Annual Sediment Yield (tons per year)	Annual Sediment Yield (tons per square mile per year)
Ventura River near the Pacific Ocean[1]	925,600	4100
Santa Clara River near the Pacific Ocean[1]	3,712,800	2300
Calleguas Creek near the Pacific Ocean[1]	259,000	800
Eel River near the Pacific Ocean[2]	31,248,300	10,000
Little Stony Creek at East Park Reservoir[3]	22,800	250
Stony Creek at Stony Gorge Reservoir[3]	45,600	250
Tuolumne at Don Pedro Reservoir[4]	281,600	300

CLIMATE . The climate is of the watershed is mediterranean, with warm, dry summers and mild, wet winters. Mean annual precipitation ranges from approximately 305 mm (12 inches) on the lower delta plain to approximately 533 mm (21 inches) in the mountainous terrain. Precipitation patterns in the Calleguas Creek Watershed follow those elsewhere in the Transverse Ranges, with a general trend of increased precipitation along and elevational and eastward gradient, with lower precipitation in the lowland areas of the valleys. In most years, precipitation is entirely rainfall. Approximately 85 percent of the precipitation falls between November and March.

Temperatures and temperature ranges are moderate. Thus, the growing season, as defined for agricultural crops, is approximately 350 days at the lower elevations and 300 days at the higher elevations in the watershed (Edwards et al. 1970). Since the soils in the Calleguas Creek watershed never drop below biological zero, the growing season in wetlands should be considered to be year-round (365 days if growing season is defined as the period with temperature at 20 inches depth to be at or above biological zero (40°F).) (Magney 1993).

HYDROLOGY- SURFACE WATER. The Natural Resources Conservation Service (NRCS) has stratified the Calleguas Creek Watershed into 37 subwatersheds (USDA-NRCS 1995) which can be grouped into four primary subwatersheds that vary in physiography, land use, and discharge characteristics (Table 2, Primary Subwatersheds in the Calleguas Creek Watershed).

Table 2. Primary Subwatersheds in the Calleguas Creek Watershed

Subwatershed	Area (sq. mi.)	Primary Drainages
Calleguas Creek	218.0	Arroyo Simi, Arroyo Las Posas, Arroyo Santa Rosa, Arroyo Conejo, Calleguas Creek
Arroyo Conejo	45.7	Arroyo Conejo
Revolon Slough	59.4	Beardsley Wash, Revolon Slough
SW Oxnard Plain	20.6	Surface and shallow subsurface drainage to Mugu Lagoon and the Pacific Ocean

The Calleguas Creek Subwatershed is approximately 348.8 sq. km (218.0 sq. miles), draining the Simi Valley, Moorpark, Somis, eastern Camarillo, and eastern Oxnard Plain areas. The Arroyo Conejo Subwatershed is substantially smaller, comprising approximately 73.1 sq. km (45.7 sq. miles) and draining the Thousand Oaks area. However, gage records indicate that most of the Calleguas Creek flood flows, as measured at Lewis Road, come from the Arroyo Conejo Subwatershed. The gage on Calleguas Creek at CSU Channel Islands measures discharge for a watershed area of 396.8 sq. km (248 sq. miles) and includes the 102.7 sq. km (64.2 sq miles) measured by the gage on Arroyo Conejo above U.S. 101. Much of the discharge, measured by the gage on Calleguas Creek at CSU Channel Islands, can be accounted for by discharge measured by the gage on Arroyo Conejo above U.S. 101.

The Calleguas Creek Subwatershed has large areas of undeveloped upper watershed and large groundwater recharge zones in broad, alluvial valleys (Izbicki and Martin 1997). The Arroyo Conejo Subwatershed is largely developed and lacks the broad, alluvial valleys that provide for flood plain storage and groundwater recharge. These characteristics may contribute to the observed discharge patterns.

The flow duration curve for Arroyo Simi (1933-1983) indicates that discharge is less than 0.02832 cubic meters per second [cms] (1 cubic feet per second [cfs]) for approximately 80 percent of the year. However, the flow duration curve for Arroyo Simi under recent development conditions (1970-1983) shows that discharge is less than 1 cfs for approximately 35 percent of the year. The precise sources of these increased base flows (i.e. nuisance flows) are unclear, but water treatment discharge, reservoir discharge, irrigation return flow, and general urban water discharge (e.g. lawn and garden irrigation return flow) all likely contribute to nuisance flows in the Calleguas Creek Watershed. The net result is that many streams currently flow for longer durations than under historical conditions, particularly in the lower reaches of the watershed.

HYDROLOGY- GROUNDWATER. Bookman-Edmonston Engineering, Inc. (1998) divided the Calleguas Creek Watershed into 11 groundwater basins, six of which were included in a groundwater basin characterization study (Table 3, Primary Ground Water Basins and Associated Aquifers in the Calleguas Creek Watershed [Bookman-Edmonston Engineering, Inc. 1998]).

Table 3. Primary Groundwater Basins/Associated Aquifers in the Calleguas Cr. Watershed[1]

Groundwater Basin	Area (sq. km [sq. mi.])	Aquifers
Eastern Oxnard Pressure Plain	116.2 [72.6]	Semiperched, Oxnard, Mugu, Hueneme, Fox Canyon, Grimes Canyon
Pleasant Valley	75.2 [47.0]	Recent Alluvium, Fox Canyon, Grimes Canyon, Conejo Volcanics
North Las Posas	86.1 [53.8]	Recent Alluvium, Fox Canyon, Grimes Canyon.
South Las Posas	23.7 [14.8]	Recent Alluvium, San Pedro Formation, Fox Canyon, Grimes Canyon
Santa Rosa	14.4 [9.0]	Recent Alluvium, San Pedro Formation, Santa Margarita Formation, Conejo Volcanics
Tierra Rejada	11.0 [6.9]	Topanga Formation Sandstone, Conejo Volcanics

[1] The six primary groundwater basins with 11 aquifers (Table 4, Characteristics of the Aquifers in the Calleguas Creek Watershed [Bookman-Edmonston Engineering, Inc. 1998]).

Table 4. Characteristics of the Aquifers in the Calleguas Creek Watershed

Aquifer	Characteristics
Conejo Volcanics	Confined except in outcrops (e.g. at alluvial fans); faulted in Santa Rosa Basin
Fox Canyon	Confined except in outcrops (e.g. at alluvial fans); considerable groundwater development
Grimes Canyon	Confined except in outcrops (e.g. at alluvial fans); considerable groundwater development
Hueneme	Confined; not laterally extensive in the Calleguas Creek Watershed
Mugu	Confined
Oxnard	Confined; considerable groundwater development; sea water intrusion due to overdraft in the Oxnard Pressure Plain Basin
Recent Alluvium	Shallow and unconfined; poor water quality; little groundwater development

The semi-perched and recent alluvial aquifers are reportedly shallow and unconfined. They likely are tightly linked to stream flows, particularly in the near channel areas. These aquifers are reportedly recharged by precipitation, stream runoff, irrigation return flows, and urban water runoff. Water quality is reportedly poor and there is little groundwater development.

The Fox Canyon, Grimes Canyon, Topanga Formation Sandstone, and Conejo Volcanics aquifers are reportedly unconfined at outcrops such as those occurring at alluvial fans. These aquifers also are recharged by precipitation, stream runoff, irrigation return flows, and urban water runoff at the outcrops. The remaining aquifers are confined and deep and receive little to no direct recharge from the stream network (Izbicki and Martin 1997, Bookman-Edmonston Engineering, Inc. 1998). The Fox Canyon and Grimes Canyon aquifers are reportedly extensively developed for groundwater extraction, so groundwater recharge from the stream network could represent an important source of future groundwater resources.

The semi-perched and recent alluvial aquifers, although not directly developed, clearly could be drawn down as a consequence of deeper aquifer development and depletion. No reference is required to support this statement. It is a statement of elementary hydrologic principles that groundwater moves down a potentiometric head gradient. Therefore, reductions in potentiometric head in underlying aquifers – through groundwater pumping, for example – clearly can result in reductions in potentiometric head in hydrologically-connected overlying aquifers. When this occurs, riparian vegetation can die, resulting in a loss of habitat and locally high rates of bank erosion (Kondolf and Curry 1986). However, agricultural and/or municipal return flows typically recharge shallow groundwater resources and can, therefore, result in locally higher potentiometric heads in overlying aquifers (reviewed in Postel 1999).

A detailed analysis of the interactions between surface water, shallow groundwater, and deep groundwater in the Calleguas Creek Watershed is beyond the scope of this study and, to the authors knowledge, has not been studied to date. Thus, the degree to which pumping and return flows affect shallow groundwater resources in the Calleguas Creek Watershed is unknown. This is unfortunate since understanding these interactions is a critical element of sustainable ecosystem management (Job and Simmons 1996).

SOILS. There are twelve broad soil associations in the watershed. Each soil association is strongly correlated with one of three landforms: 1) uplands; 2) terraces; and 3) alluvial fans, plains, and basins (Figure 11, Soil Associations in the Calleguas Creek Watershed) (Edwards et al. 1970). Upland soils cover approximately 35 percent of the watershed. The primary parent materials are residium and colluvium. Slopes are moderately sloping to very steep. Soils are shallow to very deep, well-drained to somewhat excessively-drained, various-textured deposits overlying sedimentary or igneous rock. Terrace soils also cover approximately 35 percent of the watershed. The primary parent material is alluvium. Slopes are level to moderately steep. Soils are very deep, moderately well-drained to well-drained, very fine sandy loams overlying sandy clays with slow to very slow permeability. Alluvial fan, plain, and basin soils cover approximately 30 percent of the watershed. The primary parent material is alluvium. Slopes are level to moderately sloping. Soils are very deep, poorly drained to excessively drained, various-textured deposits.

2) THREATS TO AQUATIC RESOURCES IN SERVICE AREA AND HOW THREATS ARE ADDRESSED:

EFFECTS OF WETLAND LOSSES. Wetlands provide many functions to the natural and human landscape (EPA 1995, USFWS 1991, Brinson et al. 1995). Modifying or impacting wetlands and floodplains result in direct and indirect reductions of wetland functions, which often adversely affect the human environment (EPA 1995, Brinson et al. 1995). Within the Calleguas Creek watershed, the effects of wetland and floodplain losses include:

- Reducing biodiversity, resulting in lower species richness and decreased wildlife habitat function;
- Increasing erosion of remnant habitats that are not completely established prior to any disturbance;
- Flooding and erosion of farmland;
- Flooding and destruction of roads, bridges, and building;
- Lowering water quality generally, via decreased pollutant attenuation; and
- Reducing water supply.

Each of these effects has economic consequences that could be cumulatively significant to Ventura County, from agricultural losses and public works costs, to reduced tourism. For example, as flood peaks increase in frequency and height, adjacent lands are more frequently flooded. Some of these lands contain prime and/or unique farmland and high-value crops. Other

lands adjacent to Calleguas Creek and its tributaries contain residences and commercial or industrial facilities. Significant amounts of farmland is damaged or lost as a result of flooding, sedimentation, or erosion in the Calleguas Creek watershed. Constructing larger flood control facilities, and maintaining them, is extremely expensive and a never-ending battle (McPhee 1989). The end result is a loss of wetland habitats and functions, as well as expensive infrastructure and maintenance costs.

3) HISTORIC AQUATIC RESOURCE LOSS IN SERVICE AREA:

The Calleguas Creek Watershed historically contained an extensive riverine wetland system, culminating in a highly productive and regionally important estuary at Mugu Lagoon. Comparable to elsewhere in California, over 90 percent of the wetlands in the Calleguas Creek watershed have been destroyed or significantly impacted since colonization by European settlement (1780s-1980s) (Dahl and Johnson 1989, Dahl 1990). Most of the losses of wetland habitats within the watershed have occurred during the last 50 years.

The riparian corridors and wetlands in the Calleguas Creek Watershed have been seriously reduced in area and function over the last 200 years, primarily during the last century. Agricultural and urban development have resulted in significant losses in natural habitats, both upland and wetland habitats. Overall, more than 90 percent of the historic wetlands have been lost.

Since European settlement of the region, the wetlands have been largely confined to narrow and incised channels, with adjacent wetlands eliminated and replaced with croplands and development. Along with the loss of wetlands, many of the functions provided by wetlands have also been lost, leading to an overall degradation of the environment, including adjacent upland habitats. The drastic changes and reduction in wetlands in the watershed have resulted significant increases in erosion, sedimentation, and flooding problems, and significantly reduced wildlife and native plant habitats, water supply, and water quality.

Agricultural and urban development have also increased the frequency and magnitude of high stream discharges and the rates of erosion and sediment delivery to the stream network. An aggressive policy of channel training – straightening, channelizing, and leveeing – has been employed throughout the 20th Century. Chemical constituents, some of which are now prohibited due to known or suspected harmful effects to human health and welfare, are found in the waters and biota of extensive portions of the stream network.

<u>HISTORICAL LAND USE IN THE WATERSHED.</u> Prior to the middle 16th Century, the Chumash tribe populated the region. They were a hunter-gatherer society who left few permanent marks on the watershed.

The Spanish, led by Juan Cabrillo, visited the region as early as 1542. However, permanent Spanish-Mexican settlements did not become established until the late 18th Century. The Mission San Buenaventura was established in 1782, and by the 1830s there were 19 land grant

ranches in the region. The land grant ranches were used primarily for grazing by cattle, sheep, horses, and mules.

California was ceded to the United States by Mexico in 1848 following the Mexican War. Soon thereafter, ranching was largely replaced by dry-farmed cropping. The Southern Pacific Railroad was completed in 1887 and facilitated cropping expansion as export markets were tapped. The large land grant ranches were subdivided and more settlers moved into the region. Irrigation was largely introduced in the latter part of the 19th Century and facilitated the expansion of agriculture. Orchards and row crops were introduced and gradually replaced dry-farmed crops.

Agricultural development has continued throughout the 20th Century, but urban expansion has gradually become more prominent. Population increased slowly during the first half of the 20th Century, and then surged following World War II. Population continues to surge and projections indicate that the population of Ventura County will increase from 671,600 in 1990 to 894,000 in 2010). The passage of the Save our Open Space and Agricultural Resources (SOAR) initiative may slow this surge; however, it will not reverse the general trend.

HISTORICAL ALTERATION OF STREAM FUNCTIONS. Prior to agricultural development, Calleguas Creek discharged to the delta plain through distributary channels near Camarillo. Surface waters recharged aquifers, and sediments were deposited on the upper fan surface. By 1889, residents had channelized Calleguas Creek to the confluence with Arroyo Conejo. By the 1920s, levees had been constructed below Lewis Road, which confined flows to the Mugu Lagoon. This initiated severe channel incision on the mainstem Calleguas Creek, which was translated up gradient to the alluvial plains, alluvial fans, and the uplands (USDA-NRCS 1995). Concomitantly, dry-farmed cropping moved onto the uplands. Increased runoff, vegetation removal, and soil disturbance resulted in the initiation of gullies, most of which can be observed today and the mechanisms of which are discussed below.

IMPACTS TO STREAMS AS A RESULT OF DEVELOPMENT. Many of the streams within the Calleguas Creek watershed have been impacted by development, from conversion of natural vegetation to agricultural crops or urban or commercial buildings (and associated flood control facilities and roads and highways). These development activities have altered natural wetland physical parameters, including the following, and are discussed in detail below:

- Stream discharge;
- Sediment supply;
- Channel morphology;
- Water quality; and
- Plant and wildlife habitat.

STREAM DISCHARGE, SEDIMENT SUPPLY, AND CHANNEL MORPHOLOGY.
Alteration of Stream Discharge Patterns. Grazing and orchard cultivation are characterized by vegetation removal and soil compaction. Canopy interception and evapotranspiration decrease so more water is available for runoff. Furthermore, infiltration is decreased so Hortonian overland

flow begins earlier in a storm event. Finally, vegetation removal results in increased overland flow velocities (Dabney et al. 1995, Meyer et al. 1995, Prosser et al. 1995). Thus, intensive grazing and orchard cultivation can result in higher peak flows earlier in a storm event (Likens et al. 1970, Davis 1984, McGurk and Davis 1996).

Orchard cultivation and row cropping typically require irrigation, particularly late in the growing season. Groundwater pumping can dewater streams, particularly where shallow, alluvial aquifers are tapped (Dunlap et al. 1985, McGurk and Davis 1996). Additionally, irrigation water can discharge to streams thereby maintaining base flows later into the dry season (i.e., nuisance flows). In some cases, ephemeral and seasonal streams can be transformed into perennial streams. This can result in the transition from drought-tolerant plant species to hydrophytic plant species. Often, this also is a transition from native plant species to nonnative plant species.

Urban development is characterized by the mass transition from pervious to impervious surfaces (e.g. permeable soils to concrete and asphalt). Furthermore, drainage is enhanced by way of gutters, storm water culverts, and straightened and leveed stream networks. The net effect is that infiltration is decreased and runoff is increased during storm events. Water is drained from the urban landscape and is discharged to the stream network more rapidly. Thus, urban development results in profound changes in stream hydrologic regimes. Direct measurements and hydrologic simulations have repeatedly demonstrated the results of urbanization: the peak discharge for a given rainfall intensity increases by a factor of 2 to 5 (Hollis 1975); the duration of a given flow magnitude increases by a factor of 5 to 10 (Barker et al. 1991); and channel instability, as measured by sudden changes in width and depth, occurs predictably when the effective impervious surface of the watershed exceeds 10 percent (Booth and Jackson 1997).

Urban flood flows are exacerbated by the construction of levees. Levees, by design, keep water in the floodway and off of the floodplain, so all of the additional water that is being discharged to the stream network must be passed by the narrow floodway. Rather than spreading some floodwaters onto a floodplain and, therefore, decreasing the amount of water in the channel at a given moment in time, the leveed stream network must pass all of the floodwaters that it receives. This occurs at the same time that local urban developments are adding additional water at increased rates. An analogy can be made to freeway vehicle traffic control. During peak travel hours, vehicle traffic on freeways may be moderated by the placement of traffic lights on freeway on-ramps. The traffic lights serve to limit the number of vehicles on a given stretch of freeway at a given time so that vehicle traffic proceeds smoothly. Floodplains provide a similar function for rivers. During peak travel times (i.e. floods), stream flow may be moderated by the existence of floodplains. The floodplains temporarily store water and, therefore, limit the amount of water in a given reach of river at a given time so that stream flow proceeds smoothly.

The effects of development activities in the Calleguas Creek Watershed are apparent in changes in mean daily discharges on Arroyo Simi near Simi Valley. The frequency and magnitude of moderate and high discharges increased steadily during the rapid development phase beginning in the post-World War II era. Assuming that climate has been in a state of quasi-equilibrium during this interval, the increases in frequency and magnitude of moderate and high discharges can only be explained as stream flow responses to development activities.

The effects of development activities in the Calleguas Creek watershed have been documented through stream flow modeling efforts, such as that conducted by USDA-NRCS in 1995 for Gabbert Canyon, an area that includes a substantial portion of the City of Moorpark. This modeling effort covered five land use periods: Native American settlement, Spanish-Mexican settlement, 1932, 1990, and 2010. The results of the modeling effort for Gabbert Canyon indicate that discharges of a given return interval have increased and will continue to increase as a result of watershed development. For example, the 2-year discharge is projected to increase approximately 850 percent from the Native American period to the year 2010, and the 5-year discharge in 2010 is project to be roughly equivalent to the 100-year discharge during the Native American period (Table 5, Modeled Flows in Cubic Feet per Second for Gabbert Canyon with Significant Urbanization) (USDA-NRCS 1995).

Table 5. Modeled Flows in Cubic Feet per Second for Gabbert Canyon with Significant Urbanization

Return Interval (years)	**Native American**	**Spanish-Mexican**	**Year**		
			1932	**1990**	**2010**
2	120	320	620	890	1,020
5	300	750	1,160	1,500	1,620
10	500	1,040	1,530	1,850	1,980
25	1,070	1,810	2,370	2,700	2,850
50	1,210	2,000	2,550	2,890	3,040
100	1,650	2,550	3,090	3,450	3,610

SEDIMENT SUPPLY. Each of the agricultural activities in the watershed results in the removal of the natural vegetation. Bare soils are common, even during active cultivation, i.e., between rows of crops and in orchard understories. Vegetation removal typically decreases precipitation interception. This enhances the effects of rain splash erosion and, thus, facilitates the mobilization of sediments (Dunne and Leopold 1978). Vegetation removal also decreases soil cohesion. Fine- and coarse-roots contribute to sediment cohesion by creating a composite material in which elastic fibers of relatively high tensile strength (i.e. roots) are embedded in a matrix of relatively plastic particle masses (i.e. sediments (Gray 1974, Gray and Leiser 1989). One result is that the critical shear stress, or the shear stress required to mobilize sediment, is substantially lower for unvegetated slopes (Prosser et al. 1995). The net result of vegetation removal can be increased sediment supply to stream networks (Roberts and Church 1986).

Rapidly developing urban areas, like those in the Calleguas Creek Watershed, also are characterized by large tracts of unfinished rough- and fine-graded lands (i.e. unfinished construction sites). Construction sites can be substantial sediment sources since they are characterized by unvegetated, unconsolidated deposits. Increased rain splash erosion (Dunne and Leopold 1978), decreased soil erosion resistance (Prosser et al. 1995), and higher overland flow

velocities (Dabney et al. 1995, Meyer et al. 1995, Prosser et al. 1995) contribute to increased sediment mobilization from construction sites.

The specific effects of development activities on sediment supply in the Calleguas Creek Watershed have been documented. Prior to development, the estimated gross erosion rate was 165,107,634 kilograms [kg] (182,000 tons) per year. Under 1990 land use conditions, the estimated gross erosion rate was 1,085,918,400 kg (1,197,000 tons) per year. Of this amount, an estimated 373,760,137 kg (412,000 tons) per year was delivered to the stream network. The primary sources of the stream network sediment yield are stream banks (137,892,090 kg [152,000 tons] per year), orchards (67,131,675 kg [74,000 tons per year], construction (48,080,794 kg [53,000 tons] per year), natural areas (40,823,316 kg [45,000 tons] per year), and roads other than orchard roads (20,865,250 kg [23,000 tons] per year) (USDA-NRCS 1995).

STREAM MORPHOLOGY. Stream morphology is determined, in part, by the balance between discharge and sediment supply (see review of Lane 1954 in Bull 1991). The maintenance of this balance results in stable channel morphology where morphological attributes such as width and depth remain reasonably constant over periods of decades. The alteration of the discharge:sediment supply ratio, through alterations to stream discharge and increases in sediment supply, can result in the alteration of stream morphology (e.g. Eschner et al. 1983, Hecht 1984, Bull 1991, Ligon et al. 1995, Booth and Jackson 1997, Johnson 1997).

The Calleguas Creek Watershed discharge:sediment supply ratio has been altered, and therefore, stream morphology is more varied. Sediment deposition in the floodway has occurred which can decrease channel capacity (i.e. increase flooding) (Griggs 1984) and/or increase channel width (i.e. increase rates of bank erosion) (Schumm 1961). Channel incision also has occurred which disconnects channels from floodplains. Floodplains provide accommodation space for short-term storage of floodwater and long-term storage of sediment (Wright and Marriott 1993, Allred et al. 1998, Blum and Price 1998, Dalrymple et al. 1998). Where channels and floodplains are disconnected, water and sediment are confined to the channel network and must be passed down stream or deposited in the channel. Another consequence of channel incision could be local declines in shallow groundwater. Streams and shallow alluvial aquifers often are tightly linked (Alden and Munster 1997, Rains 1999). Stream water elevations decline where channel incision occurs, and if the shallow alluvial aquifers are tightly linked to the stream water elevations, then local shallow groundwater elevations, which are in close proximity to the stream, may decline as well (Scott et al. 1998).

WATER QUALITY. Vegetation removal also has been correlated with increases in dissolved ion concentrations in stream water. The conversion of chaparral to grassland, a typical response to extensive grazing, can increase nitrate concentrations in stream water (Davis 1984). Deforestation has been linked to increases in the concentrations of most major ions (Likens et al. 1970). Phosphorus typically enters aquatic ecosystems attached to suspended sediments so phosphorus concentrations can increase concomitant with increased sediment input**.** Finally, irrigation return flow typically contains high concentrations of organic and inorganic chemical constituents.

In 1992, Mugu Lagoon, Calleguas Creek, Revolon Slough, and Beardsley Wash were identified as impaired water bodies by the California State Water Resources Control Board. Impaired water bodies are those bodies of surface water that cannot reasonably be expected to attain or maintain applicable water quality standards. They received said designation due to the occurrences of high levels of agricultural pesticides in sediments and fish tissues including the cancelled substances DDT, dieldrin, toxaphene, and chlordane. High levels of PCB's of undetermined origin, nitrates, and ions capable of forming salts also have been recorded (USDA-NRCS 1995).

The key ecosystem responses to poor water quality are increased primary productivity where the concentrations of nutrients such as nitrate and phosphorus are elevated, and reduced primary productivity where the concentrations of many other organic and inorganic chemical constituents are elevated (Welch 1980). Increased primary productivity in the water column, most notably through algal blooms, can rapidly deplete dissolved oxygen and cause shifts in aquatic species compositions and, in extreme cases, can result in the complete elimination of aquatic macroinvertebrates and vertebrates.

Decreased primary productivity clearly represents a reduction in the energy harvested from solar radiation and input into local food webs (Welch 1980). Functioning riparian ecosystems can moderate the effects of poor water quality through direct uptake by vegetation and/or by chemical transformations that render chemical constituents insoluble (Peterjohn and Correl 1984).

PLANT AND WILDLIFE HABITAT. Conversion, destruction, and fragmentation of plant and wildlife habitats are obvious consequences of agricultural and urban development. This is especially true in riverine systems, in which a common prerequisite for development is stream channelization and concomitant disconnection of channels and floodplains. Specific impacts to wetland functions include, but are not limited to, the following:

- Temporary or permanent losses of foraging and cover habitats for aquatic and semi-aquatic species including Western Aquatic Two-Stripped Garter Snake, and the Pacific Chorus Frog;
- Temporary or permanent losses of foraging and cover habitats for terrestrial wildlife including birds of prey and a variety of mammals;
- Disturbance of breeding and nesting activities of Spring-Summer resident birds, and fall migratory birds, depending on the timing of development construction; and
- Long-term changes in the composition of aquatic fauna due to permanent changes in morphology, channel substrate, and water chemistry.

A less obvious consequence of agricultural and urban development is that alterations to the physical and biological attributes and processes in the watershed can lead to further habitat degradation. Many riparian species have evolved life-history strategies that are tightly linked to stream flow regimes. For example, many riparian tree species time their seed release to coincide with annual flood flows (Walker et al. 1986, Scott et al. 1996). Riparian tree establishment depends upon the availability of bare, moist sediments created by flood scour or deposition, while riparian tree persistence depends upon access to shallow groundwater and protection from scouring flows (McBride and Strahan 1984, Scott et al. 1996). Furthermore, vegetation

establishment depends upon a source of propagules such as those provided by other local intact ecosystems. Thus, alterations to the physical attributes and processes, coupled with habitat conversion, destruction, and fragmentation, can reduce the resilience of remaining riparian habitats. These riparian habitats may be locally protected; however, they may not persist, which can lead to continued habitat degradation in the watershed.

Habitat destruction and fragmentation have occurred throughout the history of development in the Calleguas Creek Watershed. This trend likely will continue. Prior to the passage of SOAR (Save Open Space and Agriculture Resources Initiatives of 1999), the amount of the watershed in urban development was expected to increase, from 21 percent in 1990 to 38 percent in 2010, with most of the new urbanization resulting from the conversion of open space (USDA-NRCS 1995).

4) CURRENT AQUATIC RESOURCE CONDITIONS IN SERVICE AREA (INCLUDING FIELD VERIFICATION):

Generally, the state of the wetlands and adjacent floodplains in the watershed is poor; however, significant opportunities remain in the watershed for restoration of river and wetland functions. The restoration of river and wetland functions would achieve several goals pertaining to the biodiversity and function of the Calleguas Creek Watershed.

INVENTORY OF RIVERINE SYSTEMS. An inventory of the riverine system resources located in the Calleguas Creek Watershed was developed from basic geomorphic and habitat data collected at 49 representative sites sampled during March, June, and December 1999. The inventory was performed to:

- Provide an advanced identification and characterization of the watershed riverine systems;
- Document the myriad impacts to riverine system functions;
- Identify watershed-scale restoration and preservation objectives; and
- Identify potential restoration and preservation sites where objectives could best be attained.

GENERAL CHARACTERISTICS OF STREAMS IN THE CALLEGUAS CREEK WATERSHED. The physical characteristics of streams in the watershed can be described relative to four general topographic settings:

1) Streams In Rugged Topography. Streams in rugged topography occur in the upper watershed in high-gradient graded valleys. In- and off-channel soils are well drained to excessively drained silty clay loams to sands and are shallow to deep over consolidated sediments, shale, sandstone, or basic igneous rock. Runoff is rapid and erosion potential is high (Edwards et al. 1970). Upper watershed drainage areas typically are less than 1 square mile. At the 1:24000 scale, streams are Strahler Stream Order 1-2 (Strahler 1957). Streams are located in ravines and, thus, are confined by local relief. Floodplains, where present, are small. Flows are ephemeral, often lasting for a few days during and directly following winter rains. Slopes typically are greater than 2 percent

and may exceed 10 percent. Specific stream powers are moderate but can be locally high, particularly where slopes are high. Streams are supply limited, i.e. streams are incising.

2) Streams On Alluvial Fans. Streams on alluvial fans occur on foot slopes and toe slopes of the mountainous. Local topography is gently rolling to low slopes. In-channel sediments are very poorly drained to excessively drained fluvial deposits of sands, gravels, and cobbles. Runoff is rapid and erosion potential is severe. Off-channel soils are well drained to excessively drained silty clay loams to loamy sands that formed in alluvium derived primarily from sedimentary rocks. Runoff is slow to medium and erosion potential is none to moderate (Edwards et al. 1970). Drainage areas are variable, typically ranging from 1.6 to 80 sq. km (1 to 50 sq. mi.). At the 1:24000 scale, streams are Strahler Stream Order 2-4 (Strahler 1957). Most streams in this landscape position are located on fan and plain surfaces and, thus, are unconfined by local relief. However, streams often are entrenched into fan or plain surfaces to depths that may exceed 6 m (20 ft.) and, thus, may be confined by high terrace features. Floodplains, where present, are small. Flows are ephemeral to seasonal. Slopes typically are less than 2 percent. Specific stream powers are low to moderate, although locally high specific stream powers can occur where slopes are high. Streams are supply or transport limited, i.e. streams are incising, unchanging, or filling. Natural/range, citrus or avocado orchards, and low-density residential/commercial development are the predominant land uses. Some row cropping and mining occur adjacent to and/or above these sites. Intensified low to high-density residential/commercial development of these areas is an important recent trend.

3) Streams On Alluvial Valleys. Streams on alluvial valleys occur in low-gradient graded valleys. Local topography is level. In-channel sediments are very poorly drained to excessively drained fluvial deposits of sands, gravels, and cobbles. Runoff is rapid and erosion potential is severe. Off-channel soils are moderately well drained and very fine sandy loams to silty clay loams. Runoff is slow and erosion hazard is none to slight (Edwards et al. 1970). Drainage areas typically are greater than 80 sq. km (50 sq. mi.). At the 1:24000 scale, streams are Strahler Stream Order 3-4 (Strahler 1957). Streams in this landscape position are located on valley-bottom surfaces and, thus, are unconfined by local relief. However, streams often are entrenched into valley floor surfaces to depths that may exceed 6 m (20 ft.) and, thus, often are confined by high terrace features. Floodplains can be large. Flows are seasonal to perennial. Slopes are less than 2 percent. Specific stream powers are low to moderate. Streams are supply or transport limited, i.e. streams are incising, unchanging, or filling. Natural/range, row crop, citrus or avocado orchards, and low- and high-density residential/ commercial development are the predominant land uses. Many of these systems are cleared of vegetation, straightened, leveed, and riprapped or concrete lined for flood and erosion control purposes.

4) Streams On Delta Plains. The broad delta plain is located near the coast where local topography is level. In-channel sediments are very poorly drained to excessively drained fluvial deposits of sands, gravels, and cobbles. Runoff is rapid and erosion potential is severe. Off-channel soils are poorly drained silty clay loams to loamy sands. Runoff is slow to ponded and there is no erosion hazard (Edwards et al. 1970). Drainage areas typically are greater than 80 sq. km (50 sq. mi.). At the 1:24000 scale, streams are Strahler Stream Order 4-5 (Strahler 1957). Streams in this landscape position are located on plain surfaces and, thus, are unconfined by local relief. Floodplains can be large. Flows are seasonal to perennial. Slopes are less than 2

percent. Specific stream powers are low to moderate. Streams are predominantly transport limited; that is, most streams are filling. Streams on the delta plain probably interact extensively with the Semiperched Aquifer. Flows are seasonal to perennial in the streams that discharge to the delta plain. However, flows are often ephemeral to seasonal on the upper delta plain and seasonal to perennial on the lower delta plain. It is possible that the streams recharge the Semi-perched Aquifer on the upper delta plain, and that the Semi-perched Aquifer discharges to the stream on the lower delta plain. The discharge from the Semi-perched Aquifer on the lower delta plain is augmented by irrigation return flow from deep groundwater pumping. The influx of this irrigation return flow probably changes the chemical constituency of the stream water. The mainstem Calleguas Creek and Revolon Slough are tidally influenced on the low delta plain. Tidal influence extends up gradient from U.S. Highway 1. The bed elevation of Calleguas Creek is substantially higher than the bed elevation of Revolon Slough due to extensive sediment deposition in the Calleguas Creek floodway. Therefore, tidal influence extends further up Revolon Slough. Row crop and low- and high-density residential/commercial development are the predominant land uses. Many of these systems are cleared of vegetation, straightened, leveed, and riprapped or concrete lined for flood and erosion control purposes.

PLANT AND WILDLIFE HABITATS. During the field surveys performed throughout the watershed, a relatively diverse and rich flora was documented, consisting of at least 173 observed vascular plant species. The rich vascular plant flora of the watershed contributes to the diversity of the overall landscape and provides functional habitat for many wildlife and plant species, including threatened or rare plant and animal species. Forty land cover classes were mapped in the watershed. The natural plant communities of the watershed are generally categorized as the following 29 vegetation classes:

- 2 grassland types (annual and perennial);
- 11 scrub (Coastal Sage Scrub) types;
- 2 chaparral types (north-facing and burned;
- 2 upland woodland types (oak and eucalyptus);
- 3 transitional types (ecotonal and successional);
- 1 rock outcrop; and
- 8 wetland/riparian types.

Much of the watershed natural habitats are now converted landscapes, including the following 9 classes: Cropland, Hay Fields, Avocado Orchard, Citrus Orchard, Barren/Graded, Golf Course/Park, Developed Commercial/Industrial, Developed Residential, and Pavement. The remaining 2 classes, Water and Shallow Ocean/Kelp Beds, are not described here, as they are beyond the perimeters of watershed. The natural habitats of the watershed are described below.

WETLANDS. Wetlands are lands where saturation with water (at least periodically saturated or covered by water) is the dominant factor determining the nature of the soil development and the type of plant and animal communities occupying the land. Water creates severe physiological problems for most plants and animals, except for those adapted for life in water or saturated soil.

Wetlands are transitional between terrestrial and aquatic systems, where the water table is at or near the soil surface, or the land is covered by shallow water. Wetlands consist of one or more of the following three attributes: (1) the land supports predominantly hydrophytic vegetation (plants adapted to living in water), (2) the substrate is predominantly undrained hydric soil, and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season. (Cowardin et al. 1979.)

The wetland types (hierarchical wetland system) existing within the Calleguas Creek Watershed are briefly defined below according to Cowardin et al. (1979):

- Palustrine: generally includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5%.
- Riverine: includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents; and (2) habitats with water containing ocean-derived salts in excess of 0.5%.
- Estuarine: consists of deepwater tidal habitats and adjacent tidal wetlands that are usually semi-enclosed by land, but have open, partly obstructed, or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff.

HABITAT CLASSES. The eight mapped habitat classes established within these different wetland systems are:

- Floodplain Riparian Scrub, including

  Giant Reed Riparian Scrub,

  Scalebroom Scrub, and

  Floodplain Cobbles;
- Riparian Woodland;
- Marsh (Freshwater Marsh and Saltmarsh); and
- Sand Dunes.

The three additional floristic plant series included in Floodplain Riparian Scrub are Mulefat Scrub, Mixed Willow Scrub, and Blue Elderberry Scrub. The three floristic plant series included in Riparian Woodland are Arroyo Willow Woodland, California Sycamore Woodland, and Mixed Willow Woodland. These additional communities are not mapped classes; however, they are described, since they are mentioned in several of the watershed Conceptual Restoration Plans presented below in the Restoration and Preservation Recommendations section of this report.

Floodplain Riparian Scrub. Cowardin et al. (1997) describes this habitat type as Palustrine Scrub-Shrub Broad-leaved Deciduous Wetland, which includes areas dominated by woody, broadleaved, deciduous vegetation less than 6 m (20 ft) tall. The species include true shrubs that are small or stunted because of environmental conditions. Scrub-Shrub Wetlands may represent a successional stage leading to Forested Wetland, or they may be relatively stable communities.

They occur only in the Estuarine and Palustrine systems, but are one of the most widespread classes in the U.S. For practical reasons, riparian forests composed of young trees less than 6 m tall are also included. Floodplain Riparian Scrub is predominantly a mixed riparian scrub plant community that is predominated by several wetland shrub species. The Floodplain Riparian Scrub plant communities of the watershed include*: Giant Reed (*Arundo donax*) Scrub, Scalebroom (*Lepidospartum squamatum*) Scrub, Floodplain Cobbles, Mulefat (*Baccharis salicifolia*) Scrub, Mixed Willow (*Salix *spp.) Scrub, and Blue Elderberry (*Sambucus mexicana*) Scrub. In addition to the dominant species, Floodplain Riparian Scrub was observed as consisting of several important native associate species such as:* Juglans californica, Lotus scoparius, Typha domingensis *(Southern Cattail), and emergent* Platanus racemosa *(California Sycamore) and* Populus balsamifera *ssp.* trichocarpa *(Black Cottonwood) trees. The two predominant introduced riparian shrub species are* Ricinus communis *(Castor Bean) and* Nicotiana glauca *(Tree Tobacco). The native ground layer associates include:* Artemisia douglasiana, Astragalus douglasii *var.* parishii *(Parish Milkvetch),* Calystegia macrostegia, Clarkia unguiculata, Cryptantha echinella *(Prickly Forget-me-not),* Eriophyllum confertiflorum *(Golden Yarrow),* Eucrypta chrysanthemifolia *(Eucrypta),* Gnaphalium californicum, Marah fabaceus, Rumex salicifolius *var.* denticulatus *(Willow Dock),* Senecio douglasii, Urtica dioica *ssp.* holosericea *(Hoary Creek Nettle), and* Verbena lasiostachys.

Giant Reed Riparian Scrub. Giant Reed Riparian Scrub is a specific type of Floodplain Riparian Scrub, which is dominated by the highly invasive, nonnative *Arundo donax*. Giant Reed is a large, 8-m (26-ft) tall, introduced, perennial grass with thick rhizomes, and it is native to Europe (Hickman 1993). The National Inventory of Wetland Plants (Reed 1988) lists this species as a facultative wetland species (wetland indicator status of FACW) that is usually found in wetlands. Giant Reed is an extremely invasive grass (introduced into California in the 1880's) that establishes and persists in riparian areas by reducing and replacing native species by establishing dense monocultures (Sawyer and Keeler-Wolf 1995). It is often described as forming a ground layer, since *A. donax* is technically a grass; however, it is categorized here as forming scrub due to the secondary stratum it creates. Giant Reed Series (Sawyer and Keeler-Wolf 1995) consists of *A. donax* growing as the sole perennial grass forming a continuous scrubby ground layer with few other species present. Giant Reed Series requires permanently saturated freshwater wetland habitats, with a shallow water table, at elevations below 500 m (1,640 ft). Giant Reed Series was observed within the watershed predominantly as large thickets (patches), and within other riparian communities, and includes scattered native shrubs such as *Atriplex lentiformis* ssp. *breweri* (Big Saltbush), *Baccharis pilularis*, *B. salicifolia*, and *Salix lasiolepis* (Arroyo Willow).

Scalebroom Scrub. Scalebroom Scrub is dominated by *Lepidospartum squamatum*, and it is also important with several other associate shrubs. *L. squamatum* is a round-topped, woolly, broom-like native shrub (less than 3 m [10 ft] tall) with scale-like leaves and yellow flowers. It occurs in sandy or gravely washes and stream terraces at elevations below 1,800 m (Hickman 1993). Scalebroom has a wetland indicator status of (FACW). Parentheses around FACW, indicates wetland status as suggested by the author. Scalebroom Series (Sawyer and Keeler-Wolf 1995) forms a continuous to intermittent canopy growing under emergent trees and growing over a variable or grassy ground layer. This series occurs in rarely flooded slopes and in low-gradient deposits along streams. Species composition differs greatly among Scalebroom stands, and disturbance may account for this high variation. Magney (1992) further describes this series as

Scalebroom Floodplain Scrub, which is a broad-leaved, phreatophytic, evergreen scrub type with *Artemisia californica* and *Sambucus mexicana* as subdominant shrubs. This series is restricted to riverine cobbles, boulders, and sand of floodplain habitats (flooded every five to ten years), which is the driving force maintaining this phreatophytic vegetation type. Many upland species of Coastal Sage Scrub and chaparral communities become established in this streamside habitat. In addition to the typical riparian scrub species, Scalebroom Series was observed consisting of several important, more upland shrub components as well, including: *A. californica, B. pilularis, Baccharis salicifolia, Encelia californica, Eriogonum fasciculatum, Isomeris arborea* (Bladderpod), *Rosa californica* (California Wild Rose), *Salvia* spp., *Solanum xantii* (Chaparral Nightshade), *Toxicodendron diversilobum*, and *Yucca whipplei*.

Floodplain Cobbles. Floodplain Cobbles, or Riverine and Palustrine Unconsolidated Bottom Cobble-Gravel (Cowardin et al. 1979), is a sparsely vegetated gravelly area formed by a floodplain. Unconsolidated Bottom includes low-energy, unstable wetlands with at least 25 percent cover of particles smaller than stones (cobbles and gravel), and a vegetative cover less than 30 percent. These habitats are characterized by the lack of large stable surfaces for plant and animal attachment. In the riverine system, the substrate type is largely determined by current velocity, and plants and animals exhibit a high degree of morphological and behavioral adaptation to flowing water. Although this habitat type is generally sparsely vegetated, several species can be seen attempting to establish these areas. The scattered species observed in Floodplain Cobbles include many of the plants listed above in Floodplain Riparian Scrub and Scalebroom Scrub. In addition to the hydrophytes of riparian scrub, Floodplain Cobbles is generally predominated by several nonnative species such as those introduced species listed in California Annual Grassland Series (above).

Mulefat Scrub. Mulefat Scrub is a Floodplain Riparian Scrub type that is dominated by Baccharis salicifolia, which is a glabrous, often sticky shrub with many short, spreading branches. B. salicifolia has a wetland indicator status of FACW (Reed 1988). Mulefat Series (Sawyer and Keeler-Wolf 1995) is found at elevations below 1,250 m (4,101 ft), requires freshwater habitats that are seasonally flooded or saturated (i.e. canyon bottoms, irrigation ditches, and stream channels), and occurs in pure stands or may mix with other wetland species (such as those listed above in Floodplain Riparian Scrub).

Mixed Willow Scrub. A scrub form of Mixed Willow Series (Sawyer and Keeler-Wolf 1995) also may represent Floodplain Riparian Scrub, which consists of an array of shrub-sized willows (*Salix* spp.) such as *S. lasiolepis* (Arroyo Willow), *S. laevigata* (Red Willow), and/or *S. sessilifolia* (Sandbar Willow), with *Baccharis salicifolia* as an important contributor as well. All three species of willow are listed with a wetland indicator status of FACW (Reed 1988). Mixed Willow Series is a plant community in which no one dominant willow is present, and two or more willows are equally important in the canopy. This riparian scrub type typically includes emergent trees and forms a continuous canopy over scattered smaller shrubs and a sparse ground layer of herbs (such as the species listed above for Floodplain Riparian Scrub). Mixed Willow Series occurs in seasonally flooded or saturated, freshwater wetland habitats, such as floodplains and low-gradient depositions along rivers or streams, at elevations below 1,800 m (5,905 ft). (Sawyer and Keeler-Wolf 1995.)

Blue Elderberry Scrub. Blue Elderberry Scrub is dominated by *Sambucus mexicana*, which is a common large shrub that produces cream-colored flowers and bluish-black berries. This species is commonly found growing along streams at elevations below 3,000 m (9,842 ft) (Hickman 1993). Blue Elderberry is listed with a wetland indicator status of FAC, or a facultative species that is equally likely to occur in wetlands as in non-wetlands (Reed 1988). Blue Elderberry Scrub forms an intermittent tall shrub canopy, of less than 8 m tall, over an array of mixed riparian scrub shrubs and a grassy ground layer. This series occurs in intermittently flooded or seasonally saturated soils of freshwater wetlands, such as stream banks, floodplains, and open riparian forests at elevations below 300 m (984 ft.). *S. mexicana* is also common in many series, often as a small emergent tree over Coastal Sage Scrub, chaparral communities, and as an understory to woodlands. Blue Elderberry Scrub includes important shrub layer associates such as: *Baccharis pilularis, B. salicifolia, Encelia californica*, and *Solanum douglasii* (Douglas Nightshade). (Sawyer and Keeler-Wolf 1995.)

Riparian Woodland. The Riparian Woodland types, throughout the Calleguas Creek Watershed, generally include Arroyo Willow (*Salix lasiolepis*) Woodland, California Sycamore (*Platanus racemosa*) Woodland, and Mixed Willow Woodland. Only Arroyo Willow Woodland and California Sycamore Woodland are described below, since Mixed Willow Woodland, as a wooded plant community, is relatively the same as the Floodplain Riparian Scrub Mixed Willow Scrub (described above), except that the willows (*Salix lasiolepis, S. laevigata*, and/or *S. sessilifolia*) and associate species are predominantly trees rather than shrubs. In addition to the dominant trees of the watersheds' riparian woodlands, the three woodlands also consist of an extensive list of associate species, including: *Juglans californica*, *Phoradendron macrophyllum* (Bigleaf Mistletoe), *Populus balsamifera, Quercus* spp., and *Sambucus mexicana*. The nonnative tree associates are Eucalyptus globulus, Nicotiana glauca, *Schinus molle* (Peruvian Pepper Tree), *Tamarix* sp., and Washingtonia robusta (Mexican Fan Palm). Common understory scrub-shrub stratum associates include: Artemisia californica, Arundo donax, *Atriplex lentiformis* ssp. *breweri, Baccharis pilularis, B. salicifolia, Isocoma arborea, Malosma laurina, Prunus ilicifolia, Ricinus communis, Toxicodendron diversilobum, and Typha domingensis*. The typical native herbaceous layer of the watershed riparian woodlands include: *Amsinckia menziesii* var. *intermedia, Ambrosia psilostachya* var. *californica, Artemisia douglasiana, Calystegia macrostegia, Cyperus eragrostis* (Umbrella-sedge), *Gnaphalium californicum, Phacelia cicutaria* (Caterpillar Phacelia*), P. ramosissima, Rorippa nasturtium-aquaticum* (Water Cress), *Urtica dioica* ssp. *holosericea, Verbena lasiostachys*, and *Xanthium strumarium*. The introduced and often invasive ground layer species are *Apium graveolens* (Celery), *Carduus pycnocephalus, Chenopodium murale* (Nettle-leaved Goosefoot), *Conium maculatum, Foeniculum vulgare, Hirschfeldia incana, Lepidium latifolium* (Broadleaf Peppergrass), *Melilotus* spp. (White Sweetclover, Sourclover), *Piptatherum miliaceum* (Smilo Grass), *Polypogon monspeliensis, Senecio mikanioides* (Cape Ivy), *Urtica urens* (Dwarf Nettle), and *Veronica anagallis-aquatica*.

Arroyo Willow Woodland. Arroyo Willow Woodland is a riparian woodland habitat that is dominated by *Salix lasiolepis*. Arroyo Willow is a winter deciduous tree with shinny dark green (upper surface) and white tomentose (lower surface) leaves. This is an abundant species of shores, marshes, meadows, springs, and bluffs (Hickman 1993). Arroyo Willow Series (Sawyer and Keeler-Wolf 1995) was frequently recorded during the Calleguas Creek Watershed field survey. Arroyo Willow Series forms a continuous canopy that grows over a sparse lower shrub

layer, consisting of many of the species listed above in Riparian Woodland, and an absent to abundant ground layer (depending on canopy thickness). This series occurs in seasonally flooded or saturated, fresh water, wetland habitats, such as flood plains and low-gradient depositions along rivers and streams, at elevations below 1,800 m.

California Sycamore Woodland. California Sycamore Woodland is dominated by *Platanus racemosa*. This common, monoecious, wind-pollinated, winter-deciduous tree has large, hairy, palmately lobed leaves and occurs along streamsides and in canyons below 2,000 m (6,562 ft) in elevation (Hickman 1993). California Sycamore Series (Sawyer and Keeler-Wolf 1995) occurs as a widely spaced, 35-m (115-ft) canopy growing above a shrubby thicket of evergreen and deciduous shrubs and a grassy groundlayer (see the species listed above in Riparian Woodland). California Sycamore grows in wetland habitat soils that are permanently saturated at depth. It is common along freshwater riparian corridors, braided depositional channels of intermittent streams, gullies, springs, seeps, stream- and river-banks, and terraces adjacent to floodplains subject to high intensity seasonal flooding (elevations below 2,400 m [7,874 ft]).

Marsh. Marsh, or Emergent Wetland, (Cowardin et al 1979), is characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation usually consists of perennial plants and is present for most of the growing season. In areas with relatively stable climatic conditions, Emergent Wetlands maintain the same appearance year after year. Emergent Wetlands are found throughout the U.S., in all system except Marine, but are primarily of the Palustrine and Estuarine systems in the Calleguas Creek Watershed. The two Marsh types observed in the watershed are Freshwater Marsh (Palustrine Emergent Wetland Persistent) and Saltmarsh (Estuarine Intertidal Emergent Wetland Persistent). These persistent marsh types are specifically characterized as being dominated by species that normally remain standing at least until the beginning of the next growing season (Cowardin et al 1979). Freshwater Marsh and Saltmarsh are described below.

Freshwater Marsh, or Palustrine Emergent Wetland Persistent, contains a vast array of grass-like plants, but is primarily represented in the watershed by two similar plant communities: Cattail Series, dominated by *T. domingensis*; and Bulrush Series, dominated by *S. californicus* (Sawyer and Keeler-Wolf). Cattail Series and Bulrush Series are important contributors to each other's vegetative cover, and they include other important associate species, such as *Anemopsis californica* (Yerba Mansa), *Carex* spp. (sedges), *Cyperus eragrostis*, and *Distichlis spicata* (Saltgrass). These series form variable herbaceous scrubby covers (continuous to open) less than 4 m (13 ft) tall, and they occur in peaty soils of variably-flooded habitats, with water chemistry of freshwater, mixohaline, hyperhaline, and mixosaline, at elevations below 2,100 m (6,890 ft).

Saltmarsh. Saltmarsh, or Estuarine Intertidal (substrate exposed and flooded by tides) Emergent Wetland Persistent, within the watershed is dominated by *Salicornia virginica* (Virginia Pickleweed), which is a glabrous, green, fleshy perennial herb (subshrub) with inconspicuous flowers. *S. virginica* is typical of saltmarshes and alkaline flats at elevations below 100 m (328 ft) (Hockman 1993). Pickleweed Series (Sawyer and Keeler-Wolf 1995) occurs in estuary habitats with water chemistries of mixohaline, euhaline, hyperhaline, or saline and that are regularly/irregularly flooded or permanently saturated (with a shallow water table). Associate

species of Pickleweed Series include: *Disticlis spicada*, *Frankenia salina* (Alkali Heath), *Scirpus* spp., and *Suaeda californica* (Sea-blite).

Sand Dunes. Sand Dunes is represented in the Calleguas Creek Watershed by Sand-verbena-Beach Bursage Series (Sawyer and Keeler-Wolf 1995), which is co-dominated by *Abronia* spp. and *Ambrosia chamissonis* (Beach Bursage), with several important associates including *Camissonia cheiranthifolia* (Sun Cups), *Croton californicus* (California Croton), *Disticlis spicata*, *Eriogonum latifolium* (Dune Buckwheat), and *Lupinus chamissonis* (Dune Lupine). Individual emergent shrubs (such as *Baccharis pilularis*) may be present throughout the open or continuous ground cover created by this series. Sand-verbena-Beach Bursage Series occurs on upland habitats, such as sand dunes of coastal bars, river mouths, and spits along the immediate coastline, and is typically only found at sea level.

5) AQUATIC RESOURCE GOALS AND OBJECTIVES FOR SERVICE AREA:

OBJECTIVES. The overall goal of the Calleguas Creek Watershed Wetlands Restoration Plan is to preserve, maintain, restore, and improve wetland functions. The primary objectives to achieve this goal are to:

1) Characterize and understand the state of the wetland functions in the watershed;

2) Identify suitable and specific restoration sites, which will generally, and locally, have the greatest benefit to wetland functions for an overall improvement in wetland habitats throughout the watershed.

This study has identified numerous opportunities to correct many of the degraded conditions for the wetlands and water quality of the Calleguas Creek Watershed. Partnerships by government agencies at all levels with property owners are necessary for successful wetland and floodplain restoration. The end-results of implementation of this study's recommendations will benefit the citizens, plants, and wildlife of the watershed and eventually reduce maintenance costs and costs resulting from flooding and erosion.

Data gathered on the wetlands of the watershed as part of this study will provide a foundation for a regional watershed riverine hydrogeomorphic model that may be developed in the near future.

The recommendations outlined herein represent excellent opportunities to accomplish the overall goal of improving watershed-scale ecological integrity. However, the emphasis in this document is on an approach based on basic hydrological and ecological principles and not on the specific restoration site recommendations. Any activities that lead to the restoration of natural stream flow regimes, natural sediment delivery and transport rates, natural water quality, and natural plant and wildlife habitats should be considered to be consistent with the philosophical approach of this plan. The end result will be a watershed that has higher wetland and floodplain functions

than occurring in the watershed today, and reductions in damage and maintenance costs to protect resources and property.

Planning. The Ventura County general plan (for the unincorporated portions of the County) contains policies that recognize the importance and significance of riparian wetland habitats, with restrictions on activities within 30 m (100 ft.) from riparian areas for discretionary projects; however, ministerial projects have no such protection policies, except what may be regulated by other agencies.

Resource Agencies: Resources agencies, including the U.S. EPA, U.S. Army Corps of Engineers (Corps), U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), California Coastal Commission, Coastal Conservancy, National Park Service, Los Angeles Regional Water Quality Control Board, and regional and local governments, and nonprofit conservation organizations (California Native Plant Society [CNPS], Surfrider Foundation, Environmental Defense Center, League of Woman Voters, and others) have all expressed concerns about a large number of wetland-related problems associated with the loss and degradation of the region's wetlands. The Conservancy is particularly concerned with sedimentation and degradation of the Mugu Lagoon and the loss of riparian plant and wildlife habitat throughout the watershed.

Calleguas Creek Watershed Management Plan Committee. Primarily concerned with water quality degradation and regulatory constraints, as well as a general degradation of the human and natural environment, a large number of interested parties formed an informal group, known as the Calleguas Creek Watershed Management Plan Committee, to develop a strategic management plan for the Calleguas Creek watershed. This committee, made up of many different stakeholders, is committed to develop a comprehensive management plan addressing many of the environmental and development issues of concern in the watershed. Sedimentation, erosion, flood control, water quality, and habitat are several of the biggest issue areas for which the Committee wishes to resolve, which directly relates to many functions wetlands provide, or can provide.

CONSERVATION AND RESTORATION GOALS FOR AQUATIC RESOURCES IN THE WATERSHED. The essence of this approach is the restoration of physical, chemical, and biological integrity to the stream network, largely through the preservation of headwaters and uplands in the upper watershed and the restoration of channel-floodplain interactions throughout the middle and lower watershed. The general recommendations include:

- Preserve headwaters and upland portions of the upper watershed, groundwater recharge zones, and large, intact channel floodplain systems.
- Manage storm water facilities for plant and wildlife habitat, including threatened and endangered species.
- Stabilize stream banks using bioengineering and stream bank vegetation restoration.
- Reduce sediment discharges from orchards.
- Redesign and replace undersized culverts and bridge spans.

- Restore channel-floodplain interactions to ten sites located throughout the middle to lower watershed.

A. PRESERVE KEY PORTIONS OF THE WATERSHED.

1) Upland Portions Of The Upper Watershed. Development imposes a variety of changes on stream networks. These changes have profound physical and biological implications, many of which are obvious even to the casual observer. Unfortunately, most restoration attention is directed toward the channel and floodplain systems. It is rarely recognized that the stream network itself drains a watershed and, therefore, the specific characteristics of a stream reach are products of the cumulative impacts in the contributing area. Thus, the cumulative impacts to the upland portions of the contributing areas are commonly ignored in spite of the fact that the National Research Council has clearly articulated a position stating that changes in uplands are important in determining overall stream function (National Research Council 1992).

Large areas of the upper Calleguas Creek Watershed are currently undeveloped. Access is difficult and slopes are steep, so these areas often are of low priority insofar as development is concerned. However, development of these areas is an important recent trend, in part due to the scarcity of undeveloped land in the lowlands. Unfortunately, these upland areas are characterized by rapid runoff and high erosion potential, even in their undisturbed states (Edwards et al. 1970), and development of these areas exacerbates these problems. For example, stream discharge in Gabbert Canyon, a rapidly urbanizing upper watershed area, has increased markedly as a function of increased agricultural and urban land development (USDA-NRCS 1995). Thus, the preservation of large tracts of upper watershed is critical to the effective, long-term maintenance of the physical processes of the stream network. Pursuant to 33 CFR 332.3(c)(2) of the Corps-EPA Compensatory Mitigation Rule, a watershed approach to compensatory mitigation may include the protection and maintenance of terrestrial resources, such as non-wetland riparian areas and uplands (i.e., “buffers”), when those resources contribute to or improve the overall ecological functioning of aquatic resources in the watershed. However, with respect to the ILF program, pursuant to 33 CFR 332.3(h) and 33 CFR 332.3(f)(2) the Conservancy recognizes that in general, preservation is to be performed in conjunction with aquatic resource restoration, enhancement, and/or establishment and is only allowed as mitigation for Corps impacts under exceptional circumstances, and generally at substantially higher mitigation ratios.

2) Groundwater Recharge Zones. Surface water recharge to unconfined aquifers is a function of three parameters: a) the amount of surface water that is not lost to evapotranspiration or runoff, b) the vertical hydraulic conductivity of the recharge zone, and c) the transmissivity and the potentiometric gradient of the unconfined aquifer which determines the rate at which the recharge zone is evacuated of recently recharged water. Surface water recharge to confined aquifers occurs as a function of these same three parameters in locations where confining layers are absent (e.g. at outcrops)(Fetter 1994).

The development of recharge zones profoundly affects the first two parameters. The construction of concrete-lined channels and levees that reduce over bank flows increase runoff and limit the availability of surface water to recharge zones. Soil compaction and/or other soil disturbances reduce vertical hydraulic conductivities, while the construction of impervious surfaces eliminates infiltration completely. The net effect is two-fold. The reduction in ground water recharge must necessarily be coupled with an increase in evapotranspiration and/or runoff. Additionally, the

reduction in groundwater recharge could result in a reduction in the availability of future groundwater resources.

Surface water is recharging the unconfined Semiperched Aquifer on the eastern Oxnard Pressure Plain Basin and the unconfined recent alluvium aquifers throughout the watershed. Most surface waters recharge to deeper aquifers, including the extensively developed Fox Canyon and Grimes Canyon aquifers, and occurs at outcrops in the South Las Posas, Santa Rosa, and Tierra Rejada Basins (Izbicki and Martin 1997, Bookman-Edmonston Engineering, Inc. 1998). Limited surface water recharge to aquifers also occurs at outcrops in the North Las Posas Basin (Table 5, Recharge and Discharge Characteristics of the Primary Groundwater Basins in the Calleguas Creek Watershed). The exact locations and hydrogeologic characteristics of these recharge zones is beyond the scope of this effort. However, their identification and preservation could provide important watershed-scale benefits. Furthermore, the restoration of some of the channel-floodplain connections could stimulate additional groundwater recharge during overbank flow events.

Table 5. Recharge and Discharge Characteristics of the Primary Groundwater Basins in the Calleguas Creek Watershed.

Groundwater Basin	Primary Recharge Mechanism	Primary Discharge Mechanism
Eastern Oxnard Pressure Plain	Surface and subsurface inflow	Pumping; subsurface outflow
Pleasant Valley	Subsurface inflow	Pumping; subsurface outflow infrequent
North Las Posas	Limited infiltration of precipitation and stream runoff	Pumping; subsurface outflow probable
South Las Posas	Infiltration of precipitation, stream runoff, irrigation return flow, and urban water runoff; some subsurface inflow	Pumping; subsurface outflow
Santa Rosa	Infiltration of precipitation, stream runoff, irrigation return flow, and urban water runoff; some subsurface inflow	Pumping; subsurface outflow
Tierra Rejada	Infiltration of precipitation, stream runoff, irrigation return flow, and urban water runoff; some subsurface inflow	Pumping; subsurface outflow

3) Large, Intact Channel-Floodplain Systems. Throughout this document we have emphasized the importance of restoring and maintaining channel-floodplain connections. Indeed, the basic tenet of this watershed-scale restoration approach is that the restoration and maintenance of channel-floodplain connections is fundamental to the overall success of this effort. Thus, it is

considered essential for the few remaining large, relatively intact channel-floodplain systems and adjacent riparian and upland buffers to be preserved.

There are few large, relatively intact channel-floodplain systems remaining in the Calleguas Creek Watershed. Some of the more prominent examples include Arroyo Simi between Simi Valley and Moorpark and Arroyo Las Posas near Somis. Portions of these systems are included as restoration sites, below. However, their mere preservation will continue to provide watershed-scale benefits regardless of the extent of the restoration activities. With respect to the ILF program, the Conservancy recognizes that in general, preservation is to be accompanied by restoration, enhancement, and/or establishment and is only allowed as mitigation for Corps impacts under exceptional circumstances, and generally at substantially higher mitigation ratios.

B. Manage Storm Water Facilities for Plant and Wildlife Habitat. As previously noted, the Conservancy believes that successful ecosystem management requires multiple-element approaches that recognize interconnections between physical and biological attributes and processes. Typically, storm water management strategies suffer from a single-element focus, which often results in systems that are functional in one way (e.g. flood control) but dysfunctional in many others (e.g. plant and wildlife habitat). In this regard, the DMEC team proposes that some storm water management strategies can serve as multiple-element approaches that can reduce flood risks while providing critical habitat for plants and wildlife, including State and Federal listed species such as least Bell's vireo, arroyo chub, flycatcher, gnatcatcher, SW pond turtle, two striped garter, Santa Susanna tarplant, and Conejo Dudleya,

This approach has been successfully implemented in portions of the Sacramento Valley. In its natural condition, the Sacramento Valley flooded annually and an "inland sea" formed and remained throughout much of the wet season. Early attempts to contain floodwaters focused on the construction of levees. However, natural flood basins - the Butte, Sutter, and Yolo Basins - directly up stream from Sacramento continued to flood through annual and permanent levee breaches.

Ultimately, these natural flood basins were developed as floodwater bypass facilities. Flood waters are removed from the Sacramento River above Sacramento through weirs, channeled through the Butte, Sutter, and Yolo Bypasses, and discharged to the Sacramento-San Joaquin Delta below Sacramento near Rio Vista (Fischer 1994, Kelley 1997). Farmed during the dry season, these areas are flooded and abandoned during the wet season when they form critical habitat for numerous wildlife species including migratory waterfowl and anadromous fish.

In 1989, local citizens initiated an effort to manage portions of the Yolo Bypass for plant and wildlife habitat. In 1991, the California Department of Fish and Game purchased 1,275 ha (3,150 acres) of farmland in the Yolo Bypass. Since that time, additional acreage has been purchased or annexed to bring the total acreage up to 1,498 ha (3,700 acres). In 1995, Ducks Unlimited contracted the U.S. Army Corps of Engineers to design the hydrologic specifications for a highly managed plant and wildlife preserve. The plan was implemented over the following years, and on 15 November 1997, the Yolo Bypass Wildlife Area was dedicated. The result is a 1,498-ha plant and wildlife preserve that also serves as critical flood control for hundreds of thousands of Sacramento Valley residents.

D. Restore and Stabilize Stream Banks. The USDA-NRCS (1995) estimates that stream bank erosion contributes 137,892,090 kg (152,000 tons) of sediment annually to the Calleguas Creek stream network. This constitutes more than 35 percent of the current annual sediment delivery to the stream network. Thus, the long-term strategy for the restoration and preservation of the Calleguas Creek Watershed should include restoration and stabilization of stream banks.

There are numerous manuals detailing bank stabilization procedures (see The Federal Interagency Stream Restoration Working Group 1998 and references therein). Traditional approaches to stream bank stabilization involve the construction and maintenance of artificial structures. Current solutions in the Calleguas Creek Watershed are trapezoidal-shaped channels without additional modification, pipe and wire bank revetment, trapezoidal-shaped channels with soft beds and riprapped banks, trapezoidal- and rectangular-shaped concrete channels, and underground concrete box and pipe culverts. Unfortunately, these management strategies suffer from a single-element focus and represent missed opportunities to stabilize banks while restoring other physical and biological function to the river system.

Vegetating stream banks can be an important element in a bank stabilization effort. Steinman (1992), citing mathematical models, flume experiments, and in situ measurements, showed that bank vegetation reduces velocity and boundary shear stress in the near bank environment. The effects of this have been extensively documented by field observations and experiments. In situ experimentation on braided rivers indicates that banks with lush herbaceous and scrub-shrub vegetation are 20,000 times more resistant to erosion than comparable banks without vegetation (Smith 1976). Using aerial photography, Beeson and Doyle (1995) noted that unvegetated bends were nearly 5 times more likely than vegetated bends to have detectable erosion following a single flood. Furthermore, major bank erosion was 30 times more prevalent on the unvegetated bends.

McKenney et al. (1995) monitored channel morphology and vegetation on 89 channel cross-sections for 3 to 4 years. Their study determined that, during high flows, vegetated beds and banks can accrete sediment while unvegetated beds and banks typically experience high rates of erosion. Finally, Shields (1991) showed that vegetated riprap provided substantially more bank protection than unvegetated riprap along the Sacramento River.

In addition to the plethora of published literature on the subject of stream bank stability, the Ventura Resource Conservation District in conjunction with the USDA Natural Resources Conservation Service has an ongoing demonstration project in the Calleguas Creek Watershed. The project is located on Long Canyon upstream from the Stockton Road crossing. The Ventura RCD (Telephone: 805/386-4685) leads periodic tours detailing successful implementation of a variety of bank stabilization products.

E. Reduce Sediment Discharges from Orchards. The USDA-NRCS (1995) estimates that orchard erosion contributes 74,000 tons of sediment annually to the Calleguas Creek stream network. This constitutes more than 15 percent of the current sediment delivery to the stream network. Thus, the long-term strategy for the restoration and preservation of the Calleguas Creek Watershed should include alternative orchard management strategies.

The typical orchard has little understory vegetation, and young orchards also lack extensive canopy coverage and ground litter. Prosser et al. (1995) performed in situ flume experiments to study the effects of herbaceous vegetation on surface wash erosion and channel incision by overland flow. Their study determined pruning of the surface biomass reduces critical shear stress by as much as 90 percent. Thus, sediments are much more easily mobilized where surface vegetation is removed. Similarly, flume experiments have shown that stiff-grass hedges trap and retain sediment by altering flow hydraulics (Meyer et al. 1995, Dabney et al. 1995). Given these results, it is not surprising that sheet and rill erosion are the primary mechanisms of sediment delivery from orchards to the stream network (USDA-NRCS 1995). Thus, orchard restoration and management strategies should be focused on the reduction of sheet and rill erosion.

The USDA-NRCS (1995) developed an extensive orchard restoration and management strategy. The strategy utilizes understory vegetation, contour grading, and subsurface drainage features to limit the amount of sediment production. The Conservancy agrees with the general approach outlined therein and, therefore, the reader is referred to that document for further details regarding implementation and costs. These recommendations are general in nature and could be applied to virtually any orchard in the Calleguas Creek Watershed.

F. Redesign and Replace Undersized Culvert and Bridge Spans. The California Rivers Assessment (CARA), a cooperative project organized by the California Resources Agency, estimates that there are 832 stream crossings in the Calleguas Creek Watershed (California Rivers Assessment). The CARA study was conducted at a 1:100,000 scale, so the true number of road crossings in the Calleguas Creek Watershed undoubtedly is much greater than this.

Culvert and bridge spans in the Calleguas Creek Watershed are chronically undersized. Perhaps the most important influence of undersized culverts and bridge spans is their profound effect on up and down stream flow velocities. This is most simply explained with respect to the following equation for discharge at a cross-section:

$$Q = Au$$

where

Q = *discharge*

A = *cross-sectional area*

u = *flow velocity*

Undersized culverts and bridge spans decrease cross-sectional areas so, to maintain discharge, flow velocities must increase. These high velocity waters have high stream powers and high sediment transport capacities. Therefore, bed scour and bank erosion typically occur under and directly downstream of undersized culverts and bridge spans (Dunne and Leopold 1978). However, there are limits to the degree to which flow velocities can increase. If velocities cannot increase to the extent that all of the available discharge can be passed through the undersized culvert or bridge span, then water is “stacked up” just as if a dam were constructed across the floodway.

Stacking water up stream increases stream stage (i.e. stream water surface elevation) and can lead to increased flood hazards. Additionally, stacked waters have lower flow velocities, reduced stream powers, and reduced sediment transport capacities (Dabney et al. 1995, Meyer et al. 1995). Thus, sediment is deposited upstream from undersized culverts and bridge spans leading to a reduction in channel capacity.

Undersized culverts and bridge spans are chronic problems throughout the Calleguas Creek Watershed. In fact, the inventory data set has numerous examples of undersized culverts and bridge spans including, but not limited to, Sites 9, 10, 12, and 36. Removal or redesign and reconstruction of these crossings using sound hydraulic analyses can provide incremental benefits at the watershed-scale. Furthermore, the use of sound hydraulic analyses in the construction of new culverts and bridge spans can prevent further degradation.

Clearly, the cost of culverts and bridge spans is proportional to their size, in that large culverts and bridge spans are more costly than small culverts and bridge spans. However, large culverts and bridge spans may in fact be cumulatively less expensive when considered in the context of the costs of increased flood risk and sediment removal upstream of the constriction, bank protection and land loss downstream of the constriction, and recurrent maintenance of the structure itself.

OVERVIEW OF RESTORATION AND PRESERVATION RECOMMENDATIONS. The wetlands and floodplains in the Calleguas Creek watershed are considered to be significantly degraded, particularly in the lowland areas. Urbanization of the lowland areas, and agricultural practices of the past century have significantly degraded many of the watersheds wetlands. Degradation of watershed wetland functions generally increases downstream as a result of upstream impacts of urbanization and agriculture.

However, these degradations provide opportunities for wetland function restoration, especially since large areas adjacent to Calleguas Creek and it major tributaries are not completely constrained by permanent structures or housing and commercial development. Since impacts such as sedimentation and erosion, flooding, and loss of habitat generally increase downstream as the watershed wetlands have been degraded upstream, our general approach to wetland function restoration is concentrated in the lower portions of the watershed.

Example Design Rationale. This effort provides order of magnitude design specifications for purposes of facilitating planning discussions and efforts. These data should not be interpreted as final design specifications, which are beyond the scope of this effort. The example design criteria included herein include bankfull width, mean bankfull depth, and surface water slope. These minimal design criteria were used to develop the example design figures, below. Final design criteria will be far more inclusive and accurate, and will be the result of more focused hydrological, geomorphological, and ecological analyses at each site.

Width, depth, and velocity vary with discharge as simple power functions (Leopold and Maddock 1953, Leopold et al. 1992, Eschner 1983). At-a-station hydraulic geometry is the practice of exploring these relationships. At-a-station hydraulic geometry shows that natural

channels conform to consistent geometric patterns and that deviations from these geometric patterns will result is erosion and deposition as channels trend toward the quasi-equilibrium form (Dunne and Leopold 1978). Thus, at-a-station hydraulic geometry equations commonly are used to generally predict the width, mean depth, and velocity at a range of discharges. Specifically, a design discharge is selected and used to develop design channel widths and depths through the application of the hydraulic geometry equations.

The most commonly used design discharge is the bankfull discharge. Bankfull discharge is the discharge that results in the maintenance of natural channel morphology (Wolman and Leopold 1957). The bankfull discharge is typically considered to be the discharge that, on the average and over many years, performs the most work on the river system. The primary geomorphic response to that work is sediment transport, and therefore, channel morphology maintenance. Small discharges occur frequently but move small amounts of sediment; large discharges move large amounts of sediment but occur infrequently. The moderate discharges occur moderately frequently and move moderate amounts of sediment, and it is these moderate discharges that typically dominate sediment transport and channel morphology maintenance over long periods of time (Wolman and Miller 1960). There are many methods by which bankfull discharge can be estimated (Williams 1978). In many circumstances, however, numerous methods return the same range of values (Larsen et al. unpublished data). For the purposes of this effort, bankfull discharge was assumed to have a 1.5-year recurrence interval based upon an annual flood series. The true bankfull discharge may occur more or less frequently than this, but a 1.5-year recurrence interval based upon the annual flood series is quite typical (Wolman and Leopold 1957, Williams 1978) and will suffice for this planning-level effort.

River response to changing discharge depends upon a variety of factors including, but not limited to, climate, geology, and land use. Thus, at-a-station hydraulic geometry relationships are regionally specific and should be performed with data from within the same hydrophysiographic region. At-a-station hydraulic geometry analyses were performed using data from two stream gaging stations in the Calleguas Creek Watershed. Calleguas Creek at Camarillo State Hospital (Water Year 1998) was used to develop a Delta Plain Hydraulic Geometry Model, and Arroyo Simi at Madeira Road Bridge (Water Year 1983) was used to develop an Alluvial Valley Hydraulic Geometry Model.

At all gage locations, width, mean depth, and velocity increase with discharge in log-linear fashion. The relationships can be modeled as simple power functions.

Calleguas Creek at Camarillo State Hospital (Delta Plain Hydraulic Geometry Model):

$$w = 15.27\ Q^{0.33}$$

$$H = 0.11\ Q^{0.42}$$

$$u = 0.55\ Q^{0.26}$$

Arroyo Simi at Madeira Road Bridge (Alluvial Valley Hydraulic Geometry Model):

$$w = 4.21\ Q^{0.46}$$

$$H = 0.27\ Q^{0.27}$$

$$u = 0.86\ Q^{0.28}$$

where:

w = width (ft)

H = mean depth (ft)

u = mean velocity (fs)

Q = discharge (cfs)

It must be emphasized that these relationships are simple power functions based upon field observations made during the stated water years. Certainly, each channel cross-section was modified prior to and during the collection of these data. The channel response to varying discharge was measured in the context of these modifications which likely included, but were not necessarily limited to, sediment delivery above natural background rates, vegetation removal, and channel training.

The natural channel response to varying discharge in the absence of channel modification cannot be ascertained from these data via this method. Furthermore, the episodic nature of the climate, and therefore stream discharge throughout southern California, renders quasi-equilibrium concepts such as bankfull channel dimensions less useful than in some other physiographic regions (see "Notes on Limitations", above). Nevertheless, this effort was undertaken since the data do provide adequate planning-level information.

6) PRIORITIZATION OF MITIGATION PROJECTS:

SITE SELECTION CRITERIA. Site selection criteria were used to screen the list of potential restoration and preservation sites. Initial sampling took place at 49 sites throughout the watershed (see Figure 12, Reference Site Locations). Recall that these sites were selected to represent the range of conditions in the watershed to facilitate a watershed analysis and were not simply an initial pool of sites from which to select restoration sites. Thus, initial screening identified 27 sites of the 49 reference sites that could clearly benefit from technically and economically feasible restoration (Table 6, List of Reference Sites and Preliminary Action Recommendations).

The site selection criteria outlined below were applied to each of the 27 sites. The 10 sites selected for further analysis were those sites that best fit the site selection criteria when those criteria were applied at a watershed scale. For example, an effort was made to space the sites throughout the watershed and, in particular, to locate sites in agricultural and wildland landscapes between high-density urban centers. This last criterion does not reflect an opinion as to the relative value of agricultural and wildland versus urban land uses. Rather, this last criterion

reflects an operational paradigm wherein it is substantially easier to acquire and restore agricultural and wildland resources than it is to acquire and restore urban resources.

Site selection criteria are outlined below.

- Preservation and Restoration of Existing Suburban/Rural Areas in Proximity to Urban Centers. Some sites were selected to ameliorate the impacts of development. Amelioration activities are focused on a) restoring channel-floodplain interactions to provide accommodation space for floodwaters and sediment deposition, and b) restoring large tracts of plant and wildlife habitat in the urban-suburban-rural matrix. Development in the Calleguas Creek Watershed is characterized by major urban centers embedded in a suburban-rural matrix. Large suburban-rural areas between the major urban centers provide ample opportunities to preserve and restore riverine wetlands. Thus, impacts of the major urban centers (e.g. peak discharge and sediment supply increases, local habitat degradation and destruction) can be ameliorated between the major urban centers.
- Substantial Source Control. Some sites were selected to provide source control benefits. Source control activities are focused on controlling peak discharges and sediment production through the restoration and preservation of key portions of the watershed. Key portions of the undeveloped upper watershed have been identified and singled out for preservation. Additionally, potentially destabilizing and/or habitat degrading influences in and adjacent to streams are identified for removal. For example, stream bank stabilization and alternative orchard management strategies are recommended to reduce the influx of sediment into the stream network.
- Substantial Restoration and/or Preservation of Physical and Biological Processes, including Habitat for Threatened and Endangered Species. All sites selected will facilitate the restoration or preservation of key physical and biological processes in the watershed. The restoration and preservation of physical and biological processes is critical for the sustainability of riverine ecosystem functions. The mere enhancement of selected attributes, without restoration of the processes, can result in the development of dysfunctional systems that cannot perpetuate themselves.
- Landscape-Scale Relationships. Some sites were selected to provide connectivity between adjacent ecosystems. For example, preference was given to sites that would connect relatively undisturbed riparian and/or upland habitats. Additionally, some sites were selected to provide unique ecosystem functions to a region. For example, some sites were selected to provide channel-floodplain connectivity between high-density urban development centers.
- Size and Restoration Potential. All sites that were selected will provide substantial watershed-scale benefits following restoration. This criterion includes issues such as the size of the site and the need for restoration (i.e. the need to ameliorate for upstream and/or onsite impacts).
- Feasibility. All sites were generally assessed for technical and financial feasibility. Sites where restoration did not appear to be feasible were not selected. Feasibility from a political perspective was not assessed for two reasons. First, the DMEC team was contracted to provide *technical* assistance to this effort. Political assessment of the restoration recommendations was not a part of the project scope, nor is it our expertise. Second, politics can change rapidly, and certainly could change within the lifespan of this document. Thus,

this document is intended to provide technical assistance to policymakers in a changing political landscape.

• Cost Savings. Some sites were selected to provide cost savings in the watershed. For example, some sites were selected to provide flood control, to reduce in-channel sedimentation, or to improve internal drainage of agricultural fields.

Table 6. List of Reference Sites and Preliminary Action Recommendations

Site No.	Site Name	Potential
1	Calleguas Creek at CSU Channel Islands	Restore
2	Calleguas Creek at U.S. Highway 1 Crossing	Restore
3	Revolon Slough at Hueneme Road Crossing	No Action
4	Revolon Slough at Laguna Road Crossing	No Action
5	Beardsley Wash at Central Avenue Crossing	No Action
6	Beardsley Wash at Wright Road near New Golf Course	Restore
7	Unnamed at La Vista Avenue Crossing	No Action
8	Milligan Barranca at La Loma Avenue Crossing	Restore
9	Fox Barranca at Barylwood Road Crossing, Up-Gradient	Preserve
10	Fox Barranca at Barylwood Road, Down-Gradient	Restore
11	Long Grade Canyon Creek at CSU Channel Islands	Restore
12	Coyote Canyon at Bradley Road Crossing	Restore
13	Long Canyon at Stockton Road Crossing, Down-Gradient	Preserve
14	Long Canyon at Stockton Road Crossing, Up-Gradient	Restore
15	Unnamed on Grimes Road near Watershed Boundary	Preserve
16	Arroyo Simi at end of Spring Road, Moorpark	No Action
17	Arroyo Simi near Oak County Park	Restore
18	Arroyo Simi near Simi Recycling Center	Restore
19	Arroyo Simi at Madera Road Crossing	No Action
20	Sycamore Canyon at Wood Ranch	Restore
21	Meier Canyon at end of Tapo Canyon Road	Restore
22	Gillibrand Canyon at Tapo Canyon Park	Restore
23	Gillibrand Canyon at Bennett Road Crossing	Preserve
24	Calleguas Creek at Adolfo Road Crossing	No Action
25	Calleguas Creek at Upland Road	Restore

26	Unnamed below Lang Ranch	Preserve
27	Unnamed across U.S. 101 from T.O. Civic Center	Preserve
28	Unnamed above Los Robles Country Club	Preserve
29	Unnamed on Los Robles Country Club	No Action
30	Arroyo Santa Rosa at Arroyo Conejo	Restore
31	Arroyo Conejo at Fitzgerald Ranch (Santa Rosa Valley)	Restore
32	Calleguas Creek/Revolon Slough Confluence	Restore
33	Calleguas Creek/Revolon Slough Confluence	Restore
34	Calleguas Creek at Camarillo Regional Park	Restore
35	Arroyo Conejo at Winding Brook Farm/Pancho Road	Restore
36	Arroyo Conejo in Hill Canyon	Preserve
37	Arroyo Las Posas near Somis	Restore
38	Arroyo Simi at Corriganville Park	No Action
39	Arroyo Simi at Corriganville Park	Preserve
40	Arroyo Simi/Junipero Channel Confluence	Restore
41	Arroyo Simi/Junipero Channel Confluence	Restore
42	Happy Camp Canyon	Preserve
43	Arroyo Conejo at U.S. 101	Restore
44	Arroyo Conejo tributary at SR 23 and Janss Road	Restore
45	South Branch Arroyo Conejo at Santa Monica Mountains Park	Preserve
46	South Branch Arroyo Conejo Tributary in Conejo Valley	Preserve
47	South Branch Arroyo Conejo at Borchard Road	Restore
48	Unnamed Drainage at Santa Clara Avenue	Restore
49	Orchard at Barylwood and Aggen Roads	Restore

SPECIFIC RESTORATION SITE RECOMMENDATIONS. The Conservancy selected ten specific sites within the Calleguas Creek watershed for restoration. These ten sites provide excellent opportunities to accomplish watershed-scale restoration of ecosystem function, and may represent the highest restoration potential. Other sites not identified by this document may also provide similar opportunities. Conceptual designs for restoration have been developed for the ten sites below:

Calleguas Creek/Revolon Slough Confluence (Sites 32/33);
Calleguas Creek at California State University Channel Islands (Site 1);
Calleguas Creek at Camarillo Regional Park (Site 34);
Arroyo Conejo at Winding Brook Farm (Site 35);
Arroyo Conejo at U.S. 101 (Site 43);
Calleguas Creek from Somis to Upland Road (Sites 25/37);
Arroyo Santa Rosa at Arroyo Conejo (Site 30);

Arroyo Simi at Simi Recycling Center (Site 18);
Arroyo Conejo at Borchard Road (Site 47); and
Arroyo Simi/Junipero Channel Confluence at Kuehner Road (Sites 40/41)

Of the ten sites examined for restoration in this plan, the Conservancy attempted to identify and assess sites throughout the watershed. Since the watershed wetlands have been so severely degraded in the past, numerous potential restoration sites exist throughout the watershed. The ten sites recommended for restoration provide excellent restoration potential and provides an efficient approach to watershed wetland function restoration.

The existing conditions at each of these sites have been assessed for potential restoration, from the site-specific and watershed scales. These 10 sites represent some of the best potential restoration sites, providing excellent opportunities to restore integrity to the Calleguas Creek Watershed. The restoration designs presented below are conceptual in nature, and should not be considered final or suitable for implementation without specification details first being prepared.

Benefits. These projects, except for Arroyo Conejo at Arroyo Santa Rosa (Site 30), are focused on the restoration of channel-floodplain interactions. The deleterious effects of the disconnection of channels from floodplains have been enumerated throughout this document. Thus, a complete understanding of the rationale behind the site-specific and watershed-scale benefits of these projects can be obtained only through a careful reading of this document. However, a brief summary of the projected changes in ecosystem functions as a result of the completion of these projects can be outlined using the HGM approach explained above (Table 7, Rationale for Projected Increases in Ecosystem Functions).

Table 7. Rationale for Projected Increases in Ecosystem Functions

Wetland Function	Example Rationale
	Hydrology/Geomorphology
Maintain Alluvial Corridor Integrity	Levee removals and/or setbacks allow channels to freely meander, and freely meandering channels are subject to more natural physical processes that result in characteristic channel morphologies.
Maintain Surface Water Hydrology	Channel-floodplain reconnection provides accommodation space for short- and long-term storage of flood waters, which removes water from the active floodway during high flows and decreases peak flows in down stream reaches.
Maintain Subsurface Water Hydrology	Channel-floodplain reconnection provides surface water for shallow ground water recharge during and directly following overbank flow events. Levee removals and/or setbacks allow for bank exchange between surface water in the channel and ground water in the shallow alluvial aquifers.

Sediment Mobilization, Transport, and Storage	Channel-floodplain reconnection provides accommodation space for short- and long-term storage of sediment on the floodplain surface rather than in the active floodway. Furthermore, restored channels with vegetated banks can improve sediment transport, since sediment transport is more efficient in narrow, deep channels than in broad, shallow washes.

Biogeochemistry

Element and Compound Cycling	Plant and animal association restoration provides plants and animals that process nutrients through uptake, conversion, storage, release, and decay processes.
Organic Carbon Export	Plant association restoration provides plants that fix organic carbon through photosynthetic processes. This organic carbon may be slowly exported to down stream ecosystems where it provides fuel for a variety of ecosystem processes.

Plant Habitat

Maintain Native Plant Association	Plant associations will be restored using native stock. Long-term trends in species composition are, in part, determined by initial conditions. In other words, native plant associations typically beget native plant associations.
Maintain Spatial Structure of Plant Association	Channel-floodplain reconnection restores natural physical processes such as flooding, sediment deposition, and channel meandering, which can maintain complex mosaics of emergent marsh, wet meadow, scrub-shrub, and/or riparian forest of varied maturities.
Maintain Characteristic Detrital Biomass	Plant association restoration provides detrital biomass. Furthermore, channel-floodplain reconnection provides accommodation space for the storage of vegetation mobilized during high flow events.
Maintain Interspersion and Connectivity for Plant Populations	Plant association restoration can provide a local source of propagules that can be available to establish and persist in up- and down-stream areas.

Wildlife Habitat

Maintain Native Vertebrate Associations	Plant association restoration provides resting, refuge, feeding, and nesting opportunities for vertebrates, particularly those that utilize floodplains for all or part of their life history.
Maintain Native Invertebrate Associations	Channel and plant association restoration provides habitat as well as autochthonous and allochthonous carbon sources for aquatic macroinvertebrates.
Maintain Interspersion and Connectivity for Animal Populations	Plant association restoration may provide linkages from the active floodway, across the floodplain, and into adjacent upland habitats.

7) USE OF PRESERVATION:

Preservation means the removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions (33 CFR 332.2).

Pursuant to 33 CFR 332.3(h)(2) and 33 CFR 332.3(e)(2), where preservation is used to provide compensatory mitigation, to the extent appropriate and practicable the preservation shall be done in conjunction with aquatic resource restoration, establishment, and/or enhancement activities. This requirement may be waived by the DE where preservation has been identified as a high priority using a watershed approach described in paragraph (c) of this section, but compensatory ratios shall be greater than one-to-one where necessary to account for the method of compensatory mitigation (e.g., preservation), the likelihood of success…"

Pursuant to 33 CFR 332.2 (f)(3)(h),preservation may be used to provide compensatory mitigation for activities authorized by DA permits when all of the following criteria are met:

(i) The resource to be preserved provides physical, chemical, or biological function for the watershed.
(ii) The resource to be preserved contributes significantly to the ecological sustainability of the watershed
(iii) The resources are under threat of destruction or adverse modifications
(iv) The preserved sites will be permanently protected through a legal instrument.
(v) District Engineer determines the compensatory mitigation is necessary to offset unavoidable impacts to aquatic habitat.

The essence of the Conservancy's approach is the restoration of physical, chemical, and biological integrity to the stream network, largely through the preservation of headwaters and uplands in the upper watershed and the restoration of channel-floodplain interactions throughout the middle and lower watershed. With respect to preservation, the Conservancy seeks to preserve headwaters and upland portions of the upper watershed, groundwater recharge zones, and large, intact channel floodplain systems.

PRESERVE KEY PORTIONS OF THE WATERSHED.

1) *Upland Portions Of The Upper Watershed*. Development imposes a variety of changes on stream networks. These changes have profound physical and biological implications, many of which are obvious even to the casual observer. Unfortunately, most restoration attention is directed toward the channel and floodplain systems. It is rarely recognized that the stream network itself drains a watershed and, therefore, the specific characteristics of a stream reach are products of the cumulative impacts in the contributing area. Thus, the cumulative impacts to the upland portions of the contributing areas are commonly ignored in spite of the fact that the National Research Council has clearly articulated a position stating that changes in uplands are important in determining overall stream function (National Research Council 1992).
Large areas of the upper Calleguas Creek Watershed are currently undeveloped. Access is difficult and slopes are steep, so these areas often are of low priority insofar as development is concerned. However, development of these areas is an important recent trend, in part due to the scarcity of undeveloped land in the lowlands. Unfortunately, these upland areas are characterized by rapid runoff and high erosion potential, even in their undisturbed states (Edwards et al. 1970), and development of these areas exacerbates these problems. For example, stream discharge in Gabbert Canyon, a rapidly urbanizing upper watershed area, has increased markedly as a function of increased agricultural and urban land development (USDA-NRCS 1995). Thus, the preservation of large tracts of upper watershed is critical to the effective, long-term maintenance of the physical processes of the stream network. Pursuant to 33 CFR 332.3(c)(2) of the Corps-EPA Compensatory Mitigation Rule, a watershed approach to compensatory mitigation may include the protection and maintenance of terrestrial resources, such as non-wetland riparian areas and uplands (i.e., "buffers"), when those resources contribute to or improve the overall ecological functioning of aquatic resources in the watershed. However, with respect to the ILF program, pursuant to 33 CFR 332.3(h) and 33 CFR 332.3(f)(2) the Conservancy recognizes that in general, preservation is to be performed in conjunction with aquatic resource restoration, enhancement, and/or establishment and is only allowed as mitigation for Corps impacts under exceptional circumstances, and generally at substantially higher mitigation ratios.

2) *Groundwater Recharge Zones*. Surface water recharge to unconfined aquifers is a function of three parameters: a) the amount of surface water that is not lost to evapotranspiration or runoff, b) the vertical hydraulic conductivity of the recharge zone, and c) the transmissivity and the potentiometric gradient of the unconfined aquifer which determines the rate at which the recharge zone is evacuated of recently recharged water. Surface water recharge to confined aquifers occurs as a function of these same three parameters in locations where confining layers are absent (e.g. at outcrops)(Fetter 1994). The development of recharge zones profoundly affects the first two parameters. The construction of concrete-lined channels and levees that reduce over bank flows increase runoff and limit the availability of surface water to recharge zones. Soil compaction and/or other soil disturbances reduce vertical hydraulic conductivities, while the construction of impervious surfaces eliminates infiltration completely. The net effect is two-fold. The reduction in ground water recharge must necessarily be coupled with an increase in evapotranspiration and/or runoff. Additionally, the reduction in groundwater recharge could result in a reduction in the availability of future groundwater resources**.**

Surface water is recharging the unconfined Semiperched Aquifer on the eastern Oxnard Pressure Plain Basin and the unconfined recent alluvium aquifers throughout the watershed. Most surface waters recharge to deeper aquifers, including the extensively developed Fox Canyon and Grimes Canyon aquifers, and occurs at outcrops in the South Las Posas, Santa Rosa, and Tierra Rejada Basins (Izbicki and Martin 1997, Bookman-Edmonston Engineering, Inc. 1998). Limited surface water recharge to aquifers also occurs at outcrops in the North Las Posas Basin (see Table 5, Recharge and Discharge Characteristics of the Primary Groundwater Basins in the Calleguas Creek Watershed). The exact locations and hydrogeologic characteristics of these recharge zones is beyond the scope of this effort. However, their identification and preservation could provide important watershed-scale benefits. Furthermore, the restoration of some of the channel-floodplain connections could stimulate additional groundwater recharge during overbank flow events.

3) *Large, Intact Channel-Floodplain Systems*. Throughout this document we have emphasized the importance of restoring and maintaining channel-floodplain connections. Indeed, the basic tenet of this watershed-scale restoration approach is that the restoration and maintenance of channel-floodplain connections is fundamental to the overall success of this effort. Thus, it is considered essential for the few remaining large, relatively intact channel-floodplain systems and adjacent riparian and upland buffers to be preserved. There are few large, relatively intact channel-floodplain systems remaining in the Calleguas Creek Watershed. Some of the more prominent examples include Arroyo Simi between Simi Valley and Moorpark and Arroyo Las Posas near Somis. Portions of these systems are included as restoration sites, below. However, their mere preservation will continue to provide watershed-scale benefits regardless of the extent of the restoration activities. With respect to the ILF program, the Conservancy recognizes that in general, preservation is to be accompanied by restoration, enhancement, and/or establishment and is only allowed as mitigation for Corps impacts under exceptional circumstances, and generally at substantially higher mitigation ratios.

A list of potential restoration and preservation sites and discussion of site selection criteria are available under “Prioritization of Mitigation Projects.”

8) DESCRIPTION OF STAKEHOLDER INVOLVEMENT:

Both private and public stakeholders were involved in the development of the plan for riparian restoration of then Calleguas Creek Watershed. As part of its leadership role in the Calleguas Creek Watershed Management Plan collaborative process, the Coastal Conservancy prepared a study with the aid of consultants to analyze and compare thirty five potential riparian habitat restoration sites in the watershed. The result was the *Calleguas Creek Watershed Wetland Restoration Plan* (David Magney Environmental Consulting, 2000).

The sites were ranked according to the ability to meet a variety of objectives, including the following: substantial amelioration restoring channel-floodplain interactions to accommodate floodwaters and sediment deposition; control of peak discharges; restoration of large tracts of plant and wildlife habitat in the urban-suburban matrix; physical and biological process restoration; landscape scale relationships providing connectivity to upland habitats and adjacent ecosystems (buffers); restoration of riparian habitat; reconnection of the creek and its floodplain; removal of exotic vegetation and replacement with native vegetation; increase in wildlife

corridor movement opportunities; overall reduction in downstream sedimentation in Mugu Lagoon; and elimination of the need for additional channelization of Calleguas Creek and its tributaries.

Based upon the ranking results, ten priority sites were selected. Nine sites were endorsed for implementation by the Calleguas Creek Watershed Plan Steering Committee. Future proposals will be reviewed with the Committee and with the Southern California Wetlands Recovery Project (SCWRP) Ventura County Wetland Task Force.

9) LONG TERM PROTECTION AND MANAGEMENT:

Mitigation projects will be undertaken on land that is permanently protected via public ownership, conservation easements, deed restrictions, or other appropriate instruments substantially in the form of Exhibit H. To ensure permanent protection of these compensatory mitigation sites, the Conservancy or a qualified organization designated by the Conservancy and approved by the Corps, shall obtain and record in-perpetuity conservation easements or deed restrictions on each compensatory mitigation site prior to or concurrent with compensatory mitigation site construction at the Ventura County Registry of Deeds. Prior to recordation, the Conservancy shall submit a draft copy of the conservation easement or grant deed restriction and all exhibits to the Corps, and shall not proceed with recordation until receiving written approval from the Corps. The Conservancy then shall forward to the Corps copies of the recorded conservation easements or deed restrictions. Specific long-term ownership arrangements, monitoring programs, financial support, and management strategies will be provided in each mitigation plan, reviewed by the IRT, and subject to prior approval by the District Engineer. Any project proposals will include identification of the responsible party, and how long-term maintenance will be funded.

10) EVALUATION AND REPORTING:

The State Coastal Conservancy will submit programmatic annual reports and project specific progress reports in accordance with the following Reporting Protocols:

***Annual Reports*:**

Consistent with 33 CFR 332.8(i)(3), the sponsor will provide annual reports to the District Engineer and the IRT, which will include the following information:

Program Account (Financial) Report:

- Summary of income: Income received, disbursed, and interest earned for the overall program by service area
- List of all permits for which ILF program funds were accepted: Permit number, service area in which authorized impacts occurred, amounts of authorized impacts, amount of compensatory mitigation, amount paid to the ILF program, and date funds were received
- ILF program expenditures: Costs of acquisition, planning, construction, monitoring, maintenance, contingencies, adaptive management, administration.

Ledger (Credit) Report:

- Credit balance: Balance of advance and released credits for the overall program and by service area
- Permitted impacts for each resource type
- Additions and subtractions of credits
- Other changes in credit availability

Financial Assurances and Long-Term Management:

- Beginning and ending balances of the accounts providing funds for financial assurances and long-term management
- Deposits into and any withdrawals from the accounts providing funds for financial assurance and long-term management
- Information on the amount of required financial assurances and the status of those assurances, including the potential expiration for each individual project.

Specific Mitigation Project Reports:

The sponsor will submit monitoring reports for each compensatory mitigation project per the schedule set out in each project-specific mitigation plan (will vary depending on type and complexity of project).

Project-specific mitigation plans will detail the parameters to be monitored and the monitoring schedule, the overall length of the monitoring period, the frequency and dates that the reports must be submitted, the party responsible for conducting the monitoring, and the party responsible for submitting the monitoring reports.

Credit Transaction Notifications:

The ILF program instrument will establish the terms by which the legal responsibility for compensation requirements is transferred from the permittee to the sponsor. These terms require the sponsor to submit a credit sale form/letter/certificate to the District Engineer that specifies the permit number(s) for which the sponsor is accepting fees, the number of credits being purchased, the resource type(s) of credits being purchased, and that is signed (and dated) by the sponsor and the permittee. The sponsor will notify the District Engineer within ten days each time the sponsor accepts fees from a permittee in exchange for advance or released credits (a model letter or form will be included in the draft instrument).

Default and Closure Provisions

As required in the instrument, the sponsor will provide language regarding default and closure provisions.

Exhibit B: Program Service Area Map

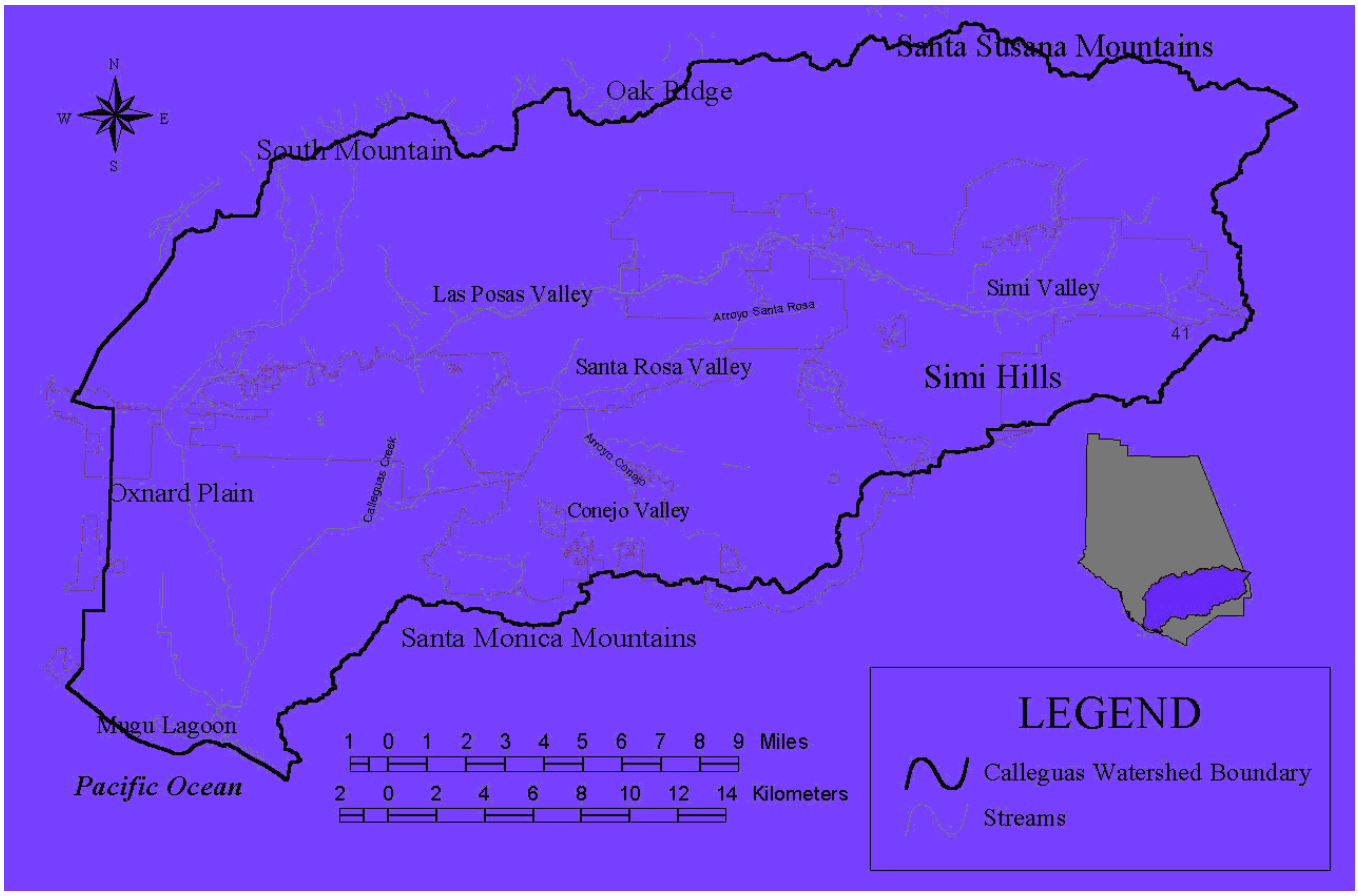

Exhibit C: Instrument Modifications

Instrument Modifications

As ILF Projects are identified, Program Sponsor will submit a written request to the USACE to modify the Instrument according to the process outlined in this Exhibit (33 C.F.R. 332.8). Other forms of Instrument modifications, including expansion of approved ILF Projects, will also follow the process outlined herein.

Requests for Instrument modifications will be accompanied by the appropriate supporting documentation as determined by the District Engineer. The Parties expect that requests for addition of an ILF Project will include the following information:

- The river basin and watershed (hydrologic unit code) of the site
- The goals and objectives of the site related to the watershed compensation planning framework
- Proposed service area
- Site conditions and location
- Proposed preliminary concept plan and/or feasibility study (if complete/available)
- How the project meets the project selection criteria outlined in Exhibit A
- Estimate of proposed acreage/linear footage and type of mitigation
- Proposed protection and long-term management strategy
- Other information as needed

Program Sponsor may elect to ask for a preliminary review and consultation of a modification request. In this case, the USACE will provide copies of the draft request to the IRT and will provide comments back to Program Sponsor within 30 days. Within 30 days of receipt of Program Sponsor's formal request for an Instrument modification, the USACE will notify Program Sponsor whether the Instrument modification request is complete. Within 30 days of receipt of a complete modification request, the USACE will provide public notice of the request that summarizes the project documentation provided by Program Sponsor, and makes this information available to the public upon request. The comment period will be 30 days, unless otherwise determined and justified by the USACE. The USACE and IRT members may also provide comments to the Program Sponsor at this time. The USACE will provide copies of all comments to IRT members and Program Sponsor within 15 days of the close of the public comment period.

Program Sponsor will prepare a draft amendment and submit it to the District Engineer for a completeness review. The draft amendment will include the following information as required by 33 C.F.R. Part 332.4(c)):

- Information included in the initial modification request.
- Development Plan with a legend and scale
- Estimate of proposed acreage/linear footage and type of Compensatory Mitigation
- Description of existing functions and services and how they will be improved or enhanced through specific mitigation measures
- Project budget
- Determination of Credits and the Credit Release plan

- Interim and Long-term Management Plans
- Performance Standards
- Property Assessment
- Phase I Environmental Site Assessment of the ILF Project site
- Draft Site Protection Instrument
- Other information as needed

The USACE will notify Program Sponsor within 30 days of receipt of the amendment whether it is complete, or will request additional information. Once any additional information is received and the amendment is complete, the USACE will notify Program Sponsor. Program Sponsor will provide copies of the amendment for the USACE to distribute to the IRT for a 30 day comment period. This comment period begins 5 days after the copies of the amendment are distributed. Following the comment period, the USACE will discuss any comments with the appropriate agencies and Program Sponsor to seek to resolve any issues using a consensus based approach, to the extent practicable. Within 90 days of receipt of the complete amendment, the USACE must indicate to Program Sponsor whether the amendment is generally acceptable and what changes, if any, are needed. Program Sponsor will submit a final amendment to the USACE for approval, with supporting documentation that explains how the final amendment addresses the comments provided by the IRT. Program Sponsor will also provide copies directly to IRT members. Within 30 days of receipt of the final amendment, the USACE will notify the IRT members whether or not it intends to approve the amendment. If no IRT members object by initiating the dispute resolution process within 45 days of receipt of the final amendment, the USACE will notify Program Sponsor of his final decision, and if approved, arrange for signing by the appropriate parties.

Streamlined Review Process

The USACE may use a streamlined modification review process for changes to the Program reflecting Adaptive Management of the Program, Credit releases, changes in Credit Releases and Credit Release schedules, and changes that the USACE determines are not significant. In this event, the USACE will notify the IRT members and Program Sponsor of this determination and provide them with copies of the proposed modification. IRT members and Program Sponsor will have 30 days to notify the USACE if they have concerns with the proposed modification. If IRT members or Program Sponsor notify the USACE of such concerns, the USACE will attempt to resolve those concerns. The USACE will notify the IRT members and Program Sponsor of his intent regarding the proposed modification within 60 days of providing the notice to the IRT members. If no IRT member objects, by initiating the dispute resolution process (33 C.F.R. 332.8) within 15 days of receipt of the notification, the USACE will notify the Program Sponsor of its final decision and, if approved, arrange for it to be signed by the appropriate parties.

Exhibit D: Development Plans

As individual ILF Projects are proposed and Development Plans approved by formal Instrument Modifications per Exhibit C, they will be incorporated into Exhibit D as subparts beginning with Exhibit D1 and continuing sequentially.

Exhibit E: Interim Management Plans

As individual ILF Projects are proposed and Interim Management Plans approved by formal Instrument Modifications per Exhibit C they will be incorporated into Exhibit E as subparts beginning with Exhibit E1and continuing sequentially.

Exhibit F: Long-term Management Plans

As individual ILF Projects are proposed and Long-Term Management Plans approved by formal Instrument Modifications per Exhibit C they will be incorporated into Exhibit F as subparts beginning with Exhibit F1and continuing sequentially.

Exhibit G: Statement of Sale of Credit Form

California State Coastal Conservancy letterhead

[date]

U.S. Army Corps of Engineers
Los Angeles District – Regulatory Division
915 Wilshire Blvd.
Los Angeles, CA 90017

Subject: Statement of Sale for [Number] Credits from the [insert name] In-Lieu Fee Program to [Permittee Name]

The California State Coastal Conservancy has an agreement with the U.S. Army Corps of Engineers – Los Angeles District to operate an In-Lieu-Fee Program. This letter confirms the sale of [Number of Credits] credits of [Resource Type A], and [Number of Credits] credits of [Resource Type B]. These credits are being used as compensatory mitigation for [Number of Acres] acres of impact to [Resource Type A], and [Number of Acres] acres of impact to [Resource Type B] in the [Impact HUC] as authorized by DA permit [DA permit number]. By selling credits to the above permittee, California State Coastal Conservancy is the party responsible for fulfilling the mitigation aspect of Special Condition(s) _____ of the Permit(s) listed above.

Signed

Exhibit H: Real Estate Instrument*

*Attached is a template Conservation Easement. Long-term protection of an ILF Project pursuant to Section V.B.5 of this Instrument may also be secured through the recording of a Restrictive Covenant drafted substantially in the same form as the Conservation Easement attached and as approved for each ILF Project by the IRT pursuant to V.B.5.

RECORDING REQUESTED BY:)
AND WHEN RECORDED MAIL TO:)
)
)
)
)
)
)
_____)_____
Space Above Line for Recorder's Use Only

CONSERVATION EASEMENT

THIS CONSERVATION EASEMENT is made this _____ day of _____, 20__ by [insert name], a _____ company, ("**Grantor**"), in favor of the [ILF Sponsor name], a _____ ("**Grantee**") with reference to the following facts:

R E C I T A L S

A. Grantor is the sole owner in fee simple of certain real property containing approximately ____ acres, located in the City of _____, County of _____, State of California, designated Assessor Parcel Number(s) _____(the "**Property**"). The Property is legally described on **Exhibit "A"** attached hereto and incorporated by this reference. Grantor intends to grant a conservation easement over a ____–acre portion of the Property (the "**Easement Area**"). The Easement Area is legally described and depicted on **Exhibit "B"** attached hereto and incorporated herein by this reference.

B. The Easement Area possesses wildlife and habitat values of great importance to Grantee, the people of the State of California and the people of the United States. The Easement Area will provide high quality natural, restored and/or enhanced habitat for [***specify listed and sensitive plant and/or animal species***] and contain [***list habitats; native and/or non-native***], [***include the following phrase only if there are jurisdictional wetlands:*** and restored, created, enhanced and/or preserved jurisdictional waters of the United States]. Individually and collectively, these wildlife and habitat values comprise the "**Conservation Values**" of the Easement Area.

C. Grantee is authorized to hold conservation easements pursuant to Civil Code Section 815.3 [and Government Code 65966]. Specifically, Grantee is an entity identified in Civil Code Section 815.3 and otherwise authorized to acquire and hold title to real property.

D. The United States Army Corps of Engineers ("**USACE**") is the Federal agency charged with regulatory authority over discharges of dredged and fill material in waters of the United States pursuant to Section 404 of the Clean Water Act, and is a third party beneficiary of this Conservation Easement.

E. This Conservation Easement is granted pursuant to the In-Lieu Fee Enabling Instrument (the "**ILFEI**") by and between Grantee, the Los Angeles District of USACE, Region IX of the United States Environmental Protection Agency ("**USEPA**"), and [list all agencies who are signatory to ILFEI] dated _____, and the Development Plan (the "**Development Plan**"), and the Interim Management Plan and Long-Term Management Plan (as applicable, the "**Management Plan**") created under the ILFEI. USACE, USEPA, and [include the other agencies] are together referred to in this Conservation Easement as the "**Signatory Agencies**." The ILFEI, the Development Plan and the Management Plan are incorporated by this reference into this Conservation Easement as if fully set forth herein.

F. All section numbers referred to in this Conservation Easement are references to sections within this Conservation Easement, unless otherwise indicated.

COVENANTS, TERMS, CONDITIONS AND RESTRICTIONS

In consideration of the above recitals and the mutual covenants, terms, conditions, and restrictions contained herein, and pursuant to the laws of the United States and State of California, including Civil Code Section 815, *et seq.*, Grantor hereby voluntarily grants and conveys to Grantee a conservation easement in perpetuity over the Easement Area of the nature and character and to the extent hereinafter set forth ("**Conservation Easement**"). This Conservation Easement shall run with the land and be binding on Grantor's heirs, successors, administrators, assigns, lessees, and other occupiers or users of the Easement Area or any portion of it.

1. Purposes.

(a) The purposes of this Conservation Easement are to ensure that the Easement Area will be retained in perpetuity in its natural, restored, or enhanced condition as contemplated by the ILFEI, the Development Plan, and the Management Plan, and to prevent any use of the Easement Area that will impair or interfere with the Conservation Values of the Easement Area. Grantor intends that this Conservation Easement will confine the use of the Easement Area to activities that are consistent with such purposes, including, without limitation, those involving the preservation, restoration and enhancement of native species and their habitats implemented in accordance with the ILFEI, the Development Plan and the Management Plan.

(b) The term "**Natural Condition**," as referenced in the preceding paragraph and other portions of this Conservation Easement, shall mean the condition of the Easement Area, as it exists at the time this Conservation Easement is executed, as well as future enhancements or changes to the Easement Area that occur directly as a result of the following

activities:

(1) Compensatory mitigation activities, including implementation, maintenance and monitoring as described in the Development Plan and Interim Management Plan; or

(2) In-perpetuity maintenance obligations ("**Long-Term Maintenance**") that occur on the Easement Area as described in Section 14 herein; or

(3) Activities described in Sections 4 through 6 herein.

(c) Grantor represents and warrants that there are no structures or improvements existing on the Easement Area at the time this grant is executed. Grantor further represents and warrants that there are no other previously granted easements existing on the Easement Area that interfere or conflict with the Purposes of this Conservation Easement as evidenced by the Title Report attached at **Exhibit "C."** The present Natural Condition is evidenced in part by the depiction of the Easement Area attached on **Exhibit "D,"** showing all relevant and plottable property lines, easements, dedications, improvements, boundaries and major, distinct natural features such as waters of the United States. Grantor has delivered further evidence of the present Natural Condition to Grantee and USACE consisting of (1) a color aerial photograph of the Easement Area at an appropriate scale taken as close in time as possible to the date this Conservation Easement is executed; (2) an overlay of the Easement Area boundaries on such aerial photograph; and (3) on-site color photographs showing all man-made improvements or structures (if any) and the major, distinct natural features of the Easement Area.

(d) If a controversy arises with respect to the present Natural Condition of the Property, Grantor, Grantee or USACE or any designees or agents of Grantor, Grantee, and USACE shall not be foreclosed from utilizing any and all other relevant documents, surveys, photographs or other evidence or information to assist in the resolution of the controversy.

(e) The term "**Biological Monitor**" shall mean an independent third-party consultant or an employee of the Grantee with knowledge of aquatic resources in the County area and expertise in the field of biology or related field.

2. Grantee's Rights. To accomplish the Purpose of this Conservation Easement, Grantor, its successor and assign hereby grants and conveys the following rights to Grantee. These rights are also granted to the USACE or its designees as third party beneficiaries of this Conservation Easement:

(a) To preserve and protect the Conservation Values of the Easement Area; and

(b) To enter upon the Property and Easement Area at reasonable times in order to monitor compliance with and to otherwise enforce the terms of this Conservation Easement, the ILFEI, the Development Plan and the Management Plan, to implement at Grantee's sole discretion Development Plan and Management Plan activities that have not been implemented, and for scientific research and interpretive purposes by Grantee or its designees, provided that Grantee shall not unreasonably interfere with Grantor's authorized use and quiet

enjoyment of the Easement Area; and

(c) To prevent any activity on or use of the Easement Area that is inconsistent with the Purposes of this Conservation Easement and to require the restoration of such areas or features of the Easement Area that may be damaged by any act, failure to act, or any use that is inconsistent with the Purposes of this Conservation Easement; and

(d) To require that all mineral, air and water rights as Grantee deems necessary to preserve and protect the biological resources and Conservation Values of the Easement Area shall remain a part of and be put to beneficial use upon the Easement Area, consistent with the Purposes of this Conservation Easement.

(e) All present and future development rights allocated, implied, reserved or inherent in the Easement Area; such rights are hereby terminated and extinguished, and may not be used on or transferred to any portion of the Property, nor any other property adjacent or otherwise; and

(f) The right to enforce by any means, including, without limitation, injunctive relief, the terms and conditions of this Conservation Easement; and

(g) The right to enhance native plant communities, including the removal of non-native species, the right to plant trees and shrubs of the same type as currently existing on the Easement Area, or other appropriate native species. Habitat enhancement activities shall not conflict with the preservation of the Natural Condition of the Easement Area or the Purposes of this Conservation Easement and shall be performed in compliance with all applicable laws, regulations, and permitting requirements.

3. Prohibited Uses. Any activity on or use of the Easement Area that is inconsistent with the Purposes of this Conservation Easement is prohibited. Without limiting the generality of the foregoing, the following uses and activities by Grantor, Grantee, and their respective agents, and third parties are expressly prohibited:

(a) Introduction of nuisance water, such as any drainage or overflow, including but not limited to water from pools, aquariums, waterbeds and fountains, and unseasonable and supplemental watering, except nuisance water associated with irrigation outside the Easement Area by adjacent homeowners or others and the natural drainage of rainfall and water related to Grantee's habitat enhancement activities as set forth in the Development Plan;

(b) Use of herbicides, pesticides, biocides, fertilizers, or other agricultural chemicals or weed abatement activities, except weed abatement activities necessary to control or remove invasive, exotic plant species except as set forth in the Development Plan or Management Plan;

(c) Use of off-road vehicles and use of any other motorized vehicles except in the execution of management duties;

(d) Grazing or other agricultural activity of any kind;

(e) Recreational activities including, but not limited to, horseback riding, biking, hunting or fishing;

(f) Residential, commercial, retail, institutional, or industrial uses;

(g) Any legal or de facto division, subdivision or partitioning of the Easement Area;

(h) Construction, reconstruction or placement of any building, road, wireless communication cell towers, billboard, sign, or any other structure or improvement of any kind except those signs specifically allowed under Section 5(e) or as specifically provided for in the Development Plan or Management Plan;

(i) Dumping soil, trash, ashes, refuse, waste, bio-solids, garbage or any other material;

(j) Planting, gardening, or introduction or dispersal of non-native plant or animal species;

(k) Filling, dumping, excavating, draining, dredging, mining, drilling, removing or exploring for or extraction of minerals, loam, gravel, soil, rock, sand or other material on or below the surface of the Easement Area;

(l) Altering the surface or general topography of the Easement Area, including but not limited to any alterations to habitat, building roads or trails, paving or otherwise covering the Easement Area with concrete, asphalt or any other impervious material except for those habitat management activities specified in the Development Plan or Management Plan;

(m) Removing, destroying, or cutting of trees, shrubs or other vegetation, except for (1) emergency fire breaks as required by fire safety officials, (2) prevention or treatment of disease, (3) control of invasive species which threaten the integrity of the habitat, (4) completing the Development Plan and Management Plan, or (5) activities described in Section 2;

(n) Manipulating, impounding or altering any natural watercourse, body of water or water circulation on the Easement Area, and activities or uses detrimental to water quality, including but not limited to degradation or pollution of any surface or sub-surface waters except for as specifically provided for in the Development Plan or Management Plan;

(o) Creating, enhancing, and maintaining fuel modification zones (defined as a strip of mowed land or the planting of vegetation possessing low combustibility for purposes of fire suppression) or other activities that could constitute fuel modification zones;

(p) Without the prior written consent of Grantee, which Grantee may withhold, transferring, encumbering, selling, leasing, or otherwise separating the mineral, air or water rights for the Easement Area; changing the place or purpose of use of the water rights; abandoning or allowing the abandonment of, by action or inaction, any water or water rights,

ditch or ditch rights, spring rights, reservoir or storage rights, wells, round water rights, or other rights in and to the use of water historically used on or otherwise appurtenant to the Easement Area, including but not limited to: (1) riparian water rights; (2) appropriative water rights; (3) rights to waters which are secured under contract with any irrigation or water district, to the extent such waters are customarily applied to the Easement Area; and (4) any water from wells that are in existence or may be constructed in the future on the Easement Area;

(q) Engaging in any use or activity that may violate, or may fail to comply with, relevant federal, state, or local laws, regulations, or policies applicable to Grantor, the Easement Area, or the use or activity in question; and

(r) No use shall be made of the Easement Area, and no activity thereon shall be permitted, that is or is likely to become inconsistent with the Purposes of this Conservation Easement. Grantor and Grantee acknowledge that, in view of the perpetual nature of this Conservation Easement, they are unable to foresee all potential future land uses, future technologies, and future evolution of the land and other natural resources, and other future occurrences affecting the Purposes of this Conservation Easement. Grantee, therefore, in its sole discretion, may determine whether (1) proposed uses or proposed improvements not contemplated by or addressed in this Conservation Easement or (2) alterations in existing uses or structures, are consistent with the Purposes of this Conservation Easement.

4. Grantor's Duties. To accomplish the Purposes of this Conservation Easement as described in Section 1, Grantor, its successors and assigns shall:

(a) Undertake all reasonable actions to prevent the unlawful entry and trespass by persons whose activities may degrade or harm the Conservation Values of the Easement Area. In addition, Grantor shall undertake all necessary actions to perfect Grantee's rights under Section 2 of this Conservation Easement;

(b) Cooperate with Grantee in the protection of the Conservation Values;

(c) Repair and restore damage to the Easement Area directly or indirectly caused by Grantor, Grantor's guests, representatives, employees or agents, and third parties within Grantor's control; provided, however, Grantor, its successors or assigns shall not engage in any repair or restoration work on the Easement Area without first consulting with the Grantee and USACE; and

(d) Obtain any applicable governmental permits and approvals for any activity or use permitted by this Conservation Easement, and any activity or use shall be undertaken in accordance with all applicable federal, state, local and administrative agency statutes, ordinances, rules, regulations, orders or requirements.

5. Grantee's Duties. To accomplish the Purposes of this Conservation Easement as described in Section 1, Grantee, its successors and assigns shall:

(a) Perform, at a minimum on an annual basis, compliance monitoring

inspections of the Easement Area; and

(b) Prepare reports on the results of the compliance monitoring inspections, and provide these reports to the Signatory Agencies on an annual basis; and

(c) Undertake construction, maintenance and monitoring of mitigated areas pursuant to the Development Plan and Interim Management Plan until issuance of final approval from the USACE confirming that Grantee has successfully completed construction, maintenance and monitoring of mitigated areas pursuant to said plans ("**Final Approval**"). This duty is non-transferable;

(d) Upon receipt of Final Approval, perform long-term management of the Easement Area pursuant to the Long-term Management Plan;

(e) Within 120 days of recordation of this Conservation Easement, install signs and other notification features saying "Natural Area Open Space," "Protected Natural Area," or similar descriptions. Prior to erection of such signage, the Grantee shall submit plans showing the location and language of such signs to the USACE for review and approval;

(f) Repair and restore damage to the Easement Area directly or indirectly caused by Grantee, Grantee's guests, representatives, employees or agents, and third parties within Grantee's control provided, however, Grantee, its successors or assigns shall not engage in any repair or restoration work on the Easement Area without first consulting with USACE.

6. Reserved Rights. Grantor reserves to itself, and to its personal representatives, heirs, successors, and assigns, all rights accruing from its ownership of the Easement Area, including the right to engage in or to permit or invite others to engage in all uses of the Easement Area that are not prohibited or limited by, and are consistent with, the Purposes of this Conservation Easement.

7. Enforcement.

(a) Right to Enforce. Grantor, its successors and assigns, grant to the USACE, the U.S. Department of Justice, and the State Attorney General a discretionary right to enforce this Conservation Easement in a judicial or administrative action against any person(s) or other entity(ies) violating or attempting to violate this Conservation Easement; provided, however, that no violation of this Conservation Easement shall result in a forfeiture or reversion of title. The USACE, U.S. Department of Justice, and the State Attorney General shall have the same rights, remedies and limitations as Grantee under this Section 7. The rights under this Section are in addition to, and do not limit rights conferred in Section 2 above. The term "Party" means Grantor or Grantee, as the case may be. Grantor, Grantee, and any third party beneficiaries, when implementing any remedies under this easement, shall provide timely written notice to each other of any actions taken under this section, including, but not limited to copies of all notices of violation and related correspondence.

(b) Notice of Violation. In the event that either Party or its employees, agents, contractors or invitees is in violation of the terms of this Conservation Easement or that a

violation is threatened, the non-violating Party and/or third party beneficiaries may demand the cure of such violation. In such a case, the non-violating Party and/or third party beneficiaries shall issue a written notice to the violating Party (hereinafter "**Notice of Violation**") informing the violating Party of the actual or threatened violations and demanding cure of such violations. The Notice of Violation shall be sent to the other Party and third party beneficiaries listed under Section 15 of this Conservation Easement.

(c) Time to Cure. The violating Party shall cure the noticed violation within thirty (30) days of receipt of said written Notice of Violation. If said cure reasonably requires more than thirty (30) days, the violating Party shall, within the thirty (30) day period, submit to the non-violating Party and/or third party beneficiaries, as the case may be, for review and approval a plan and time schedule to diligently complete a cure. The violating Party shall complete such cure in accordance with the approved plan. If the violating Party disputes the notice of violation, it shall issue a written notice of such dispute (hereinafter "**Notice of Dispute**") to the appropriate Party and/or third party beneficiary within thirty (30) days of receipt of written Notice of Violation.

(d) Failure to Cure. If the violating Party fails to cure the violation within the time period(s) described in Section 7(c), above, or Section 7(e)(2), below, the non-violating Party and/or third party beneficiaries may bring an action at law or in equity in a court of competent jurisdiction to enforce compliance by the violating Party with the terms of this Conservation Easement. In such action, the non-violating Party and/or third party beneficiaries may:

(1) Recover any damages to which they may be entitled for violation by the violating Party of the terms of this Conservation Easement or for any injury to the Conservation Values of the Easement Area. The non-violating Party shall first apply any damages recovered to the cost of undertaking any corrective action on the Easement Area. Prior to implementation of any remedial or restorative actions pursuant to this paragraph, USACE shall be consulted.

(2) Enjoin the violation by temporary or permanent injunction without the necessity of proving either actual damages or the inadequacy of otherwise available legal remedies.

(3) Obtain other equitable relief, including, but not limited to, the restoration of the Easement Area to the condition in which it existed prior to any such violation or injury.

(e) Notice of Dispute.

(1) If the violating Party provides the non-violating Party and/or third party beneficiaries with a Notice of Dispute, as provided herein, the non-violating Party and/or third party beneficiaries shall meet and confer with the violating Party at a mutually agreeable place and time, not to exceed thirty (30) days from the date that the non-violating Party and/or third party beneficiaries receive the Notice of Dispute. The non-violating Party and/or third party beneficiaries shall consider all relevant information concerning the disputed violation provided by the violating Party and shall determine whether a violation has in fact occurred and, if so, whether the Notice of Violation and demand for cure issued by the non-violating Party and/or third party beneficiaries is appropriate in light of the violation.

(2) If, after reviewing the violating Party's Notice of Dispute,

conferring with the violating Party, and considering all relevant information related to the violation, the non-violating Party and/or third party beneficiaries determine that a violation has occurred, the non-violating Party and/or third party beneficiaries shall give the violating party notice of such determination in writing. Upon receipt of such determination, the violating Party shall have fifteen (15) days to cure the violation. If said cure reasonably requires more than fifteen (15) days, the violating Party shall, within the fifteen (15) day period, submit to the non-violating Party and/or third party beneficiaries for review and approval a plan and time schedule to diligently complete a cure. The violating Party shall complete such cure in accordance with the approved plan.

(f) Conflicting Notices of Violation.

(1) If any Party receives a Notice of Violation that is in material conflict with one or more prior written Notices of Violation that have not yet been cured by the Party (hereinafter "Active Notice(s) of Violation") such that the conflict makes it impossible for the Party to carry out the cure consistent with all prior Active Notices of Violation, the Party shall give written notice (hereinafter "Notice of Conflict") to the non-violating Party and/or third party beneficiaries issuing the later, conflicting Notice(s) of Violation. The Party shall issue said Notice of Conflict to the appropriate non-violating Party and/or third party beneficiaries within fifteen (15) days of the receipt of each such conflicting Notice of Violation. A valid Notice of Conflict shall describe the conflict with specificity, including a description of how the conflict makes compliance with all Active Notices of Violation impossible.

(2) Upon issuing a valid Notice of Conflict to the appropriate non-violating Party and/or third party beneficiaries, as described above, the violating Party shall not be required to carry out the cure described in the conflicting Notice or Notices of Violation until such time as the non-violating Party responsible for said conflicting Notice(s) of Violation issue(s) a revised Notice of Violation that is consistent with prior Active Notices of Violation. Upon receipt of a revised, consistent Notice of Violation, the violating Party shall carry out the cure recommended in such notice within the time period(s) described in Section 7(c) above. Notwithstanding Section 7(g), failure to cure within said time period(s) shall entitle the non-violating Party to the remedies described in Section 7(d) and Section 7(h).

(3) The failure of the violating Party to issue a valid Notice of Conflict within fifteen (15) days of receipt of a conflicting Notice of Violation shall result in a waiver of the violating Party's ability to claim a conflict.

(g) Immediate Action. In the event that circumstances require immediate action to prevent or mitigate significant damage to the Conservation Values of the Property, the Party and/or third party beneficiary seeking enforcement pursuant to Section 7(b) above may immediately pursue all available remedies, including injunctive relief, available pursuant to both this Conservation Easement and state and federal law after giving the violating Party at least twenty four (24) hours' written notice before pursuing such remedies. So long as such twenty-four (24) hours' notice is given, the non-violating Party may immediately pursue all available remedies without waiting for the expiration of the time periods provided for cure or Notice of Dispute as described in Section 7(c). The written notice pursuant to this paragraph may be transmitted to the violating Party by facsimile and shall be copied to the other Party and/or third party beneficiaries listed in Section 15 of this Conservation Easement. The rights of the non-

violating Party and/or third party beneficiaries under this paragraph apply equally to actual or threatened violations of the terms of this Conservation Easement. The violating Party agrees that the remedies at law for any violation of the terms of this Conservation Easement are inadequate and that the non-violating Party and third party beneficiaries shall be entitled to the injunctive relief described in this section, both prohibitive and mandatory, in addition to such other relief to which they may be entitled, including specific performance of the terms of this Conservation Easement, without the necessity of proving either actual damages or the inadequacy of otherwise available legal remedies. The remedies described in this Section 7(g) shall be cumulative and shall be in addition to all remedies now or hereafter existing at law or in equity, including but not limited to, the remedies set forth in Civil Code Section 815, *et seq.*, inclusive.

(h) Costs of Enforcement. All costs incurred by a Party, where that Party is the prevailing party, in enforcing the terms of this Conservation Easement against the other Party, including, but not limited to, costs of suit and attorneys' and experts' fees, and any costs of restoration necessitated by negligence or breach of this Conservation Easement, shall be borne by the non-prevailing Party.

(i) Enforcement Discretion. Enforcement of the terms of this Conservation Easement by a Party and/or third party beneficiary shall be at the discretion of the Party and/or third party beneficiary, and any forbearance by such Party and/or third party beneficiary to exercise its rights under this Conservation Easement in the event of any breach of any term of the Conservation Easement by a Party or any subsequent transferee shall not be deemed or construed to be a waiver by the non-violating Party and third party beneficiary of such terms or of any subsequent breach of the same or any other term of this Conservation Easement or of any of the rights of the non-violating Party and third party beneficiary under this Conservation Easement. No delay or omission by the non-violating Party and/or third party beneficiaries in the exercise of any right or remedy upon any breach by the violating Party shall impair such right or remedy or be construed as a waiver. Further, nothing in this Conservation Easement creates a non-discretionary duty upon the non-violating Party and/or third party beneficiaries to enforce its provisions, nor shall deviation from these terms and procedures, or failure to enforce its provisions give rise to a private right of action against the non-violating Party and/or third party beneficiaries by any third parties.

(j) Acts Beyond Grantor's Control. Nothing contained in this Conservation Easement shall be construed to entitle Grantee to bring any action against Grantor for any injury to or change in the Easement Area resulting from:

(1) Any natural cause beyond Grantor's control, including without limitation, fire not caused by Grantor, flood, storm, and earth movement;

(2) Any prudent action taken by Grantor under emergency conditions to prevent, abate, or mitigate significant injury to the Easement Area resulting from such causes;

(3) Acts by Grantee, USACE, or their employees, directors, officers, agents, contractors, or representatives; or

(4) Acts of third parties (including any governmental agencies) that are beyond Grantor's control.

Notwithstanding the foregoing, Grantor must obtain any applicable governmental permits and approvals for any emergency activity or use permitted by this Conservation Easement, and undertake any activity or use in accordance with all applicable federal, state, local and administrative agency statutes, ordinances, rules, regulations, orders or requirements.

(k) Acts Beyond Grantee's Control. Nothing contained in this Conservation Easement shall be construed to entitle Grantor to bring any action against Grantee for any injury to or change in the Easement Area resulting from:

(1) Any natural cause beyond Grantee's control, including without limitation, fire not caused by Grantee, flood, storm, and earth movement;

(2) Any prudent action taken by Grantee under emergency conditions to prevent, abate, or mitigate significant injury to the Easement Area resulting from such causes;

(3) Acts by Grantor, USACE or their employees, directors, officers, agents, contractors, or representatives; or

(4) Acts of third parties (including any governmental agencies) that are beyond Grantee's control.

Notwithstanding the foregoing, Grantee must obtain any applicable governmental permits and approvals for any emergency activity or use permitted by this Conservation Easement, and undertake any activity or use in accordance with all applicable federal, state, local and administrative agency statutes, ordinances, rules, regulations, orders or requirements.

8. Access. This Conservation Easement does not convey a general right of access to the public.

9. Costs and Liabilities.

(a) Grantor, its successors and assigns retain all responsibilities and shall bear all costs and liabilities of any kind related to the ownership, operation, upkeep, and maintenance (except Long-Term Maintenance by Grantee) of the Easement Area. Grantor agrees Grantee and ACOE shall not have any duty or responsibility for the operation, upkeep, or maintenance (except Long-Term Maintenance by Grantee) of the Easement Area, the monitoring of hazardous conditions thereon, or the protection of Grantor, the public or any third parties from risks relating to conditions on the Property. Grantor, its successor or assign remains solely responsible for obtaining any applicable governmental permits and approvals for any activity or use permitted by this Conservation Easement, and any activity or use shall be undertaken in accordance with all applicable federal, state, local and administrative agency statutes, ordinances, rules, regulations, orders and requirements.

(b) Hold Harmless.

(1) Grantor shall hold harmless, protect and indemnify Grantee and its directors, officers, employees, agents, contractors, and representatives and the heirs, personal representatives, successors and assigns of each of them (each a "**Grantee Indemnified Party**"

and collectively, "**Grantee's Indemnified Parties**") from and against any and all liabilities, penalties, costs, losses, damages, expenses (including, without limitation reasonable attorneys' fees and experts' fees), causes of action, claims, demands, orders, liens or judgments (each a "**Claim**" and, collectively, "**Claims**"), arising from or in any way connected with: (i) injury to or the death of any person, or physical damage to any property, resulting from any act, omission, condition, or other matter related to or occurring on or about the Easement Area, regardless of cause, except that this indemnification shall be inapplicable to any Claim due solely to the negligence of Grantee or any of its employees; (ii) the obligations or rights specified in Sections 4, 6, 9(a), 10, and 19(l); and (iii) the existence or administration of this Conservation Easement. If any action or proceeding is brought against any of the Grantee's Indemnified Parties by reason of any such Claim, Grantor shall, at the election of and upon written notice from Grantee, defend such action or proceeding by counsel reasonably acceptable to the Grantee's Indemnified Party or reimburse Grantee for all charges incurred in defending the action or proceeding.

(2) Grantor shall hold harmless, protect and indemnify USACE and their respective directors, officers, employees, agents, contractors, and representatives and the heirs, personal representatives, successors and assigns of each of them (each a "**Third-Party Beneficiary Indemnified Party**" and collectively, "**Third-Party Beneficiary Indemnified Parties**") from and against any and all Claims arising from or in any way connected with injury to or the death of any person, or physical damage to any property, resulting from any act, omission, condition, or other matter related to or occurring on or about the Easement Area, regardless of cause, except that any indemnification under this Section 9(b) shall be inapplicable to Third-Party Beneficiary Indemnified Parties with respect to any Claim due to the negligence or intentional acts only of USACE or any of its employees.

10. Taxes, No Liens. Grantor, its successors and assigns shall pay before delinquency all taxes, assessments, fees, and charges of whatever description levied on or assessed against the Easement Area by competent authority, including any taxes imposed upon, or incurred as a result of, this Conservation Easement, and shall furnish Grantee and USACE with satisfactory evidence of payment upon request. Grantor, its successors and assigns shall keep the Easement Area free from any liens.

11. Condemnation. The Purposes of the Conservation Easement is presumed to be the best and most necessary public use as defined in Civil Procedure Code Section 1240.680 notwithstanding of Civil Procedure Code Sections 1240.690 and 1240.700. Nevertheless, if the Easement Area is taken, in whole or in part, by exercise of the power of eminent domain, Grantor and Grantee shall be entitled to compensation in accordance with applicable law.

12. Transfers of Conservation Easement or Easement Area.

(a) Conservation Easement. This Conservation Easement may be assigned or transferred by Grantee upon written approval of the Signatory Agencies, which approval shall not be unreasonably withheld or delayed, but Grantee shall give Grantor and the Signatory Agencies at least sixty (60) days prior written notice of the proposed assignment or transfer. Grantee may assign or transfer its rights under this Conservation Easement only to an entity or organization: (i) authorized to acquire and hold conservation easements pursuant to California Civil Code Section 815.3 and Government Code Section 65966 (and any successor or other provision(s) then applicable), or the laws of the United States; and (ii) otherwise reasonably

acceptable to the Signatory Agencies. Grantee shall require the assignee to record the assignment in the county where the Easement Area is located. The failure of Grantee to perform any act provided in this section shall not impair the validity of this Conservation Easement or limit its enforcement in any way. Any transfer under this section is subject to the requirements of Section 13.

(b) Easement Area. Grantor agrees to incorporate the terms of this Conservation Easement by reference in any deed or other legal instrument by which Grantor divests itself of any interest in all or any portion of the Easement Area, including, without limitation, a leasehold interest. Grantor agrees that the deed or other legal instrument shall also incorporate by reference the ILFEI, the Development Plan, the Management Plan, and any amendment(s) to those documents. Grantor further agrees to give written notice to Grantee and the Signatory Agencies of the intent to transfer any interest at least sixty (60) days prior to the date of such transfer. Grantee or the Signatory Agencies shall have the right to prevent any transfers in which prospective subsequent claimants or transferees are not given notice of the terms, covenants, conditions and restrictions of this Conservation Easement (including the exhibits and documents incorporated by reference in it). The failure of Grantor to perform any act provided in this section shall not impair the validity of this Conservation Easement or limit its enforceability in any way. Any transfer under this section is subject to the requirements of Section 13.

13. Merger. The doctrine of merger shall not operate to extinguish this Conservation Easement if the Conservation Easement and the Easement Area become vested in the same party. If, despite this intent, the doctrine of merger applies to extinguish the Conservation Easement then, unless Grantor, Grantee, and the Signatory Agencies otherwise agree in writing, a replacement conservation easement or restrictive covenant containing the same protections embodied in this Conservation Easement shall be recorded against the Easement Area.

14. Additional Interests. Grantor shall not grant any additional easements, rights of way or other interests in the Easement Area (other than a security interest that is expressly subordinated to this Conservation Easement), nor shall Grantor grant, transfer, abandon or relinquish (each a "**Transfer**") any mineral, air, or water right or any water associated with the Easement Area, without first obtaining the written consent of Grantee and the Signatory Agencies. Such consent may be withheld if Grantee or the Signatory Agencies determine(s) that the proposed interest or Transfer is inconsistent with the Purposes of this Conservation Easement or will impair or interfere with the Conservation Values of the Easement Area. This Section 14 shall not limit the provisions of Section 2(d) or 3(p), nor prohibit transfer of a fee or leasehold interest in the Easement Area that is subject to this Conservation Easement and complies with Section 12. Grantor shall provide a copy of any recorded or unrecorded grant or Transfer document to the Grantee and Signatory Agencies.

15. Notices. Any notice, demand, request, consent, approval, or other communication that Grantor or Grantee desires or is required to give to the other shall be in writing, with a copy to each of the Signatory Agencies, and served personally or sent by recognized overnight courier that guarantees next-day delivery or by first class United States mail, postage fully prepaid, addressed as follows:

To Grantor: [INSERT NAME AND ADDRESS]

To Grantee: [INSERT NAME AND ADDRESS]

With a copy to: District Counsel

U.S. Army Corps of Engineers
Los Angeles District
915 Wilshire Boulevard, Room 1535
Los Angeles, CA 90017-3401

U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105
Attn: Director, Water Division

or to such other address a party or a Signatory Agency shall designate by written notice to Grantor, Grantee and the Signatory Agencies. Notice shall be deemed effective upon delivery in the case of personal delivery or delivery by overnight courier or, in the case of delivery by first class mail, three (3) days after deposit into the United States mail.

The parties agree to accept facsimile signed documents and agree to rely upon such documents as if they bore original signatures. Each party agrees to provide to the other parties, within seventy-two (72) hours after transmission of such a facsimile, the original documents that bear the original signatures.

16. Amendment. This Conservation Easement may be amended only by mutual written agreement of Grantor and Grantee and written approval of the USACE, which approval shall not be unreasonably withheld or delayed. Any such amendment shall be consistent with the Purposes of this Conservation Easement and California law governing conservation easements, and shall not affect its perpetual duration or qualification under state or federal laws, and must be consistent with the OVLC Easement Amendment Policy. Any such amendment shall be recorded in the official records of the county in which the Easement Area is located, and Grantee shall promptly provide a conformed copy of the recorded amendment to the Grantor and the Signatory Agencies.

17. Recordation. Grantor shall promptly record this instrument in the official records of Ventura County, California and immediately notify the Grantee and USACE through the mailing of a conformed copy of the recorded easement. Grantee may re-record this Conservation Easement at any time as Grantee deems necessary to preserve its rights in this Conservation Easement.

18. Estoppel Certificate. Upon request, Grantee shall within fifteen (15) days execute and deliver to Grantor, its successors and assigns any document, including an estoppel certificate, which certifies compliance with any obligation of Grantor, its successors and assigns contained in this Conservation Easement and otherwise evidences the status of this Conservation Easement as may be requested by Grantor, its successors and assigns.

19. General Provisions.

(a) Controlling Law. The laws of the United States and the State of California, disregarding the conflicts of law principles of such state, shall govern the interpretation and performance of this Conservation Easement.

(b) Liberal Construction. Any general rule of construction to the contrary notwithstanding, this Conservation Easement shall be liberally construed in favor of and to effect the Purposes of this Conservation Easement and the policy and purpose set forth in California Civil Code Section 815, *et seq*. If any provision in this instrument is found to be ambiguous, an interpretation consistent with the Purposes of this Conservation Easement that would render the provision valid shall be favored over any interpretation that would render it invalid.

(c) Change of Conditions. If one or more of the Purposes of this Conservation Easement may no longer be accomplished, such failure of purpose shall not be deemed sufficient cause to terminate the entire Conservation Easement as long as any other purpose of the Conservation Easement may be accomplished. In addition, the inability to carry on any or all of the permitted uses, or the unprofitability of doing so, shall not impair the validity of this Conservation Easement or be considered grounds for its termination or extinguishment. Grantor and Grantee agree that global warming and climate change-caused effects shall not be a basis for termination of this Conservation Easement.

(d) Severability. If a court of competent jurisdiction voids or invalidates on its face any provision of this Conservation Easement, such action shall not affect the remainder of this Conservation Easement. If a court of competent jurisdiction voids or invalidates the application of any provision of this Conservation Easement to a person or circumstance, such action shall not affect the application of the provision to other persons or circumstances.

(e) Entire Agreement. This document (including its exhibits and ILFEI, the Development Plan, and the Management Plan incorporated by reference in this document) sets forth the entire agreement of the parties and the Signatory Agencies with respect to the Conservation Easement and supersedes all prior discussions, negotiations, understandings, or agreements of the parties relating to the Conservation Easement. No alteration or variation of this Conservation Easement shall be valid or binding unless contained in an amendment in accordance with Section 15.

(f) No Forfeiture. Nothing contained herein will result in a forfeiture or reversion of Grantor's title in any respect.

(g) Successors and Assigns. The covenants, terms, conditions, and restrictions of this Conservation Easement shall be binding upon, and inure to the benefit of, the parties hereto and their respective personal representatives, heirs, successors, and assigns and shall constitute a servitude running in perpetuity with the Easement Area. The covenants hereunder benefiting Grantee shall also benefit the USACE as a third party beneficiary.

(h) Termination of Rights and Obligations. Except as otherwise expressly set forth in this Conservation Easement and provided the transfer was consistent with the terms of

this Conservation Easement, a party's rights and obligations under this Conservation Easement shall terminate upon transfer of the party's interest in the Conservation Easement or Property (respectively), except that liability for acts or omissions occurring prior to transfer shall survive transfer.

(i) Captions. The captions in this instrument have been inserted solely for convenience of reference and are not a part of this instrument and shall have no effect upon its construction or interpretation.

(j) Counterparts. The parties may execute this instrument in two or more counterparts, which shall, in the aggregate, be signed by all parties; each counterpart shall be deemed an original instrument as against any party who has signed it. In the event of any disparity between the counterparts produced, the recorded counterpart shall be controlling.

(k) Exhibits. All Exhibits referred to in this Conservation Easement are attached and incorporated herein by reference.

(l) No Hazardous Materials Liability.

(1) Grantor represents and warrants that there has been no release or threatened release of Hazardous Materials (defined below) or underground storage tanks existing, generated, treated, stored, used, released, disposed of, deposited or abandoned in, on, under, or from the Easement Area, or transported to or from or affecting the Easement Area.

(2) Without limiting the obligations of Grantor under Section 9(b), Grantor hereby releases and agrees to indemnify, protect and hold harmless the Grantee Indemnified Parties (defined in Section 9(b)(1)) from and against any and all Claims (defined in Section 9(b)(1)) arising from or connected with any Hazardous Materials or underground storage tanks present, alleged to be present, released in, from or about, or otherwise associated with the Easement Area at any time, except any Hazardous Materials placed, disposed or released by Grantee or any of its employees. This release and indemnification includes, without limitation, Claims for (i) injury to or death of any person or physical damage to any property; and (ii) the violation or alleged violation of, or other failure to comply with, any Environmental Laws (defined below). If any action or proceeding is brought against any of the Grantee's Indemnified Parties by reason of any such Claim, Grantor shall, at the election of and upon written notice from the applicable Grantee Indemnified Party, defend such action or proceeding by counsel reasonably acceptable to the Grantee Indemnified Party or reimburse Grantee for all charges incurred in defending the action or proceeding.

(3) Without limiting the obligations of Grantor under Section 9(b)(2) herein, Grantor hereby releases and agrees to indemnify, protect and hold harmless the Third Party Beneficiary Indemnified Parties (defined in Section 9(b)(2)) against any and all Claims (defined in Section 9(b)(1)) arising from or connected with any Hazardous Materials present, alleged to be present, or otherwise associated with the Easement Area at any time, except that this release and indemnification shall be inapplicable to the Third Party Beneficiary Indemnified Parties with respect to any Hazardous Materials placed, disposed or released by third party beneficiaries, their employees or agents. This release and indemnification includes, without limitation, Claims for (i) injury to or death of any person or physical damage to any property; and (ii) the violation or alleged violation of, or other failure to comply with, any Environmental

Laws (defined below).

(4) Despite any contrary provision of this Conservation Easement, the parties do not intend this Conservation Easement to be, and this Conservation Easement shall not be, construed such that it creates in or gives Grantee and ACOE any of the following:

(i) The obligations or liabilities of an "owner" or "operator," as those terms are defined and used in Environmental Laws (defined below), including, without limitation, the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (42 U.S.C. Section 9601 et seq.; hereinafter, "**CERCLA**"); or

(ii) The obligations or liabilities of a person described in 42 U.S.C. Section 9607(a)(3) or (4); or

(iii) The obligations of a responsible person under any applicable Environmental Laws; or

(iv) The right to investigate and remediate any Hazardous Materials associated with the Property; or

(v) Any control over Grantor's ability to investigate, remove, remediate or otherwise clean up any Hazardous Materials associated with the Easement Area.

The term "**Hazardous Materials**" includes, without limitation, (a) material that is flammable, explosive or radioactive; (b) petroleum products, including by-products and fractions thereof; and (c) hazardous materials, hazardous wastes, hazardous or toxic substances, or related materials defined in CERCLA; Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.); the Hazardous Materials Transportation Act (49 U.S.C. Section 5101 et seq.); the Hazardous Waste Control Law (California Health & Safety Code Section 25100 et seq.); the Hazardous Substance Account Act (California Health & Safety Code Section 25300 et seq.), and in the regulations adopted and publications promulgated pursuant to them, or any other applicable federal, state or local laws, ordinances, rules, regulations or orders now in effect or enacted after the date of this Conservation Easement.

The term "**Environmental Laws**" includes, without limitation, any federal, state, local or administrative agency statute, ordinance, rule, regulation, order or requirement relating to pollution, protection of human health or safety, the environment or Hazardous Materials. Grantor represents, warrants and covenants to Grantee and USACE that Grantor's activities upon and use of the Easement Area will comply with all Environmental Laws.

(m) Extinguishment. If circumstances arise in the future that render the preservation of Conservation Values, [***include this phrase only if there are jurisdictional wetlands:*** including wetland functions and services,] or other Purposes of this Conservation Easement impossible to accomplish, this Conservation Easement can only be terminated or extinguished, in whole or in part, by judicial proceedings in a court of competent jurisdiction.

(n) Warranty. Grantor represents and warrants that Grantor is the sole owner of the Easement Area. Grantor also represents and warrants that, except as specifically disclosed to and approved by the Grantee and USACE pursuant to the Property Assessment signed by Grantor and attached as an exhibit to the ILFEI, [***choose applicable statement***: there are no outstanding mortgages, liens, encumbrances or other interests in the Bank Property (including,

without limitation, mineral interests) which may conflict or are inconsistent with this Conservation Easement or the holder of any outstanding mortgage, lien, encumbrance or other interest in the Easement Area (including, without limitation, mineral interest) which conflicts or is inconsistent with this Conservation Easement has expressly subordinated such interest to this Conservation Easement by a recorded Subordination Agreement approved by Grantee and the USACE].

(o) Third-Party Beneficiary. Grantor and Grantee acknowledge that the USACE (the "**Third-Party Beneficiary**") is a third party beneficiary of this Conservation Easement with the right of access to the Easement Area and the right to enforce all of the obligations of Grantor and Grantee under this Conservation Easement.

(p) Funding. Funding for the perpetual management, maintenance and monitoring of the Easement Area is specified in and governed by the ILFEI and the Long-term Management Plan.

IN WITNESS WHEREOF Grantor and Grantee have executed this Conservation Easement the day and year first above written and have agreed to be bound by the terms and provisions hereof.

GRANTOR:
[insert name]

By:

By:_____
Name:_____
Title:_____

[attach notary acknowledgment]

CERTIFICATE OF ACCEPTANCE

This is to certify that the interest in real property conveyed by the Conservation Easement by _____, a _____ company, dated _____ __, 20__, to the_____, is accepted by the undersigned officers on behalf of Grantee.

GRANTEE:

By: _____
Name:_____
Title: _____
Date: _____

Attest:

By: _____
Name:_____
Title: _____
Date: _____

Exhibit A

Legal Description of Property

[See attached]

Exhibit B

Legal Description and Depiction of Easement Area

[See Attached]

Exhibit C

Title Report

[See Attached]

Exhibit D

Map of plotted encumbrances and the major, distinct natural features on the Easement Area

[See Attached]

Exhibit E

Annual Inspection Report Form

[See Attached]

Annual Review of the Easement Area

(All actions shall be undertaken at the discretion of the _____, as deemed necessary, a minimum of one time per year.)

PART I – EASEMENT MANAGEMENT ACTIVITIES

(To be modified based on approved Management Plan)

Time period covering _____ to _____
dd/mm/yy dd/mm/yy

☐ 1. REMOVAL OF TRASH OR MAN MADE DEBRIS:

Date(s) Performed:_____

Corrective Action/Response Taken:_____

_____

_____

_____

_____

_____

☐ 2. MAINTENANCE OF ANY INFORMATIVE SIGNAGE:

Date(s) Performed:_____

Corrective Action/Response Taken:_____

_____

_____

_____

_____

_____

☐ 3. MAINTENANCE AND REPAIR OF EXISTING FENCING FOR THE EASEMENT AREA AS NEEDED:

Date(s) Performed:_____

Corrective Action/Response Taken:_____

_____

_____

_____

_____

☐ 4. INVASIVE WEED CONTROL (includes removal of parasitic (as it relates to the health of C___guas Creek Watershed In-Lieu Fee Program

the host plant) and non-native or exotic plants or animal species):

Date(s) Performed:_____

Corrective Action/Response Taken:_____

_____

_____

_____

_____

_____

_____

☐ 5. CHECK FOR USE OF EASEMENT AREA INCONSISTENT WITH THE TERMS OF THE CONSERVATION EASEMENT (See Part II):

Date(s) Performed:_____

Corrective Action/Response Taken:_____

_____

_____

_____

_____

_____

Additional Notes:_____

_____

_____

_____

_____

_____

_____

_____

_____

PART II

PROHIBITED ACTIVITIES

		(Circle One)		
1.	Supplemental Watering	NOT OBSERVED	OBSERVED	N/A

_____
_____
_____
_____
_____

(If observed, describe corrective action or response taken)

2.	Use of herbicides, pesticides, biocides, fertilizers, or other agricultural chemicals, except as vector control or to control invasive plant species.	NOT OBSERVED	OBSERVED	N/A

_____
_____
_____
_____
_____
_____

(If observed, describe corrective action or response taken)

3.	Fire Protection activities.	NOT OBSERVED	OBSERVED	N/A

_____
_____
_____
_____
_____
_____

(If observed, describe corrective action or response taken)

4.	Off-Road Vehicle use.	NOT OBSERVED	OBSERVED	N/A

_____
_____
_____
_____
_____

(If observed, describe corrective action or response taken)

		NOT OBSERVED	OBSERVED	N/A
5.	Grazing or agriculture.			

_____
_____
_____
(If observed, describe corrective action or response taken)

		NOT OBSERVED	OBSERVED	N/A
6.	Horseback riding, bicycling, hunting or fishing.			

_____
_____
_____
_____
(If observed, describe corrective action or response taken)

		NOT OBSERVED	OBSERVED	N/A
7.	Construction or placement of any building, billboard or sign.			

_____
_____
_____
(If observed, describe corrective action or response taken)

		NOT OBSERVED	OBSERVED	N/A
8.	Dumping or accumulation of trash.			

_____
_____
_____
_____
(If observed, describe corrective action or response taken)

		NOT OBSERVED	OBSERVED	N/A
9.	Planting of non-native plants.			

_____
_____
_____
_____
(If observed, describe corrective action or response taken)

		NOT OBSERVED	OBSERVED	N/A
10.	Excavation or extraction of minerals/soil.			

_____

_____

_____

(If observed, describe corrective action or response taken)

		NOT OBSERVED	OBSERVED	N/A
11.	Recent alterations of topography/grading.			

_____

_____

_____

_____ (If observed, describe corrective action or response taken)

		NOT OBSERVED	OBSERVED	N/A
12.	Recently removed or destroyed trees or shrubs.			

_____

_____

_____

_____(If observed, describe corrective action or response taken)

		NOT OBSERVED	OBSERVED	N/A
13.	Activities detrimental to water quality.			

_____

_____

_____

_____

_____ (If observed, describe corrective action or response taken)

Additional Notes:_____

_____

_____

_____

_____

_____

_____

Exhibit I: Property Assessment Form

This Property Assessment (Property Assessment") is made as of this ___ day of _____, 20__, by [insert property owner full legal name(s)] ("Property Owner"), for the benefit of the California State Coastal Conservancy (SCC) and the Los Angeles District of the U.S. Army Corps of Engineers, and Region IX of the U.S. Environmental Protection Agency, which agencies are jointly referred to in this Property Assessment as the "Signatory Agencies." Property Owner acknowledges that this Property Assessment and the statements in it may be conclusively relied upon by the Signatory Agencies in entering into a conservation easement or other appropriate real property conveyance document ("Conservation Easement") for the Calleguas Creek Watershed In-Lieu Fee Program (CCWILF).

This Property Assessment provides a summary and explanation of each recorded or unrecorded lien or encumbrance on, or interest in, the Property (as defined below), including, without limitation, each exception listed in the Preliminary Report issued by [insert title company name], [insert title report date], [insert title report number] (the "Preliminary Report"), covering the Property, as described in Attachments 1 and 2 attached hereto and incorporated by this reference. Specifically, this Property Assessment includes a narrative explaining each lien, encumbrance or other exception to title and the manner in which it may affect the Conservation Easement to be recorded upon the Property pursuant to the CCWILF Program.

Property Owner covenants, represents and warrants to each of the Signatory Agencies as follows:

1. Property Owner is the sole owner in fee simple of certain real property containing approximately _____acres located in the City of _____[insert city name], County of _____[insert county name], State of California, designated as Assessor's Parcel Number(s) [insert parcel number(s)] (the "Property"), as legally described in the Preliminary Report. Property Owner has, and upon the recordation of the Conservation Easement Property Owner shall have, good, marketable and indefeasible fee simple title to the Property subject only to any exceptions approved in advance of recordation, in writing, by the Signatory Agencies.
2. The Property is available to be burdened by the Conservation Easement for the conservation purposes identified in the Conservation Easement, in accordance with the CCWILF Program Instrument.
3. The Property includes legal access to and from [insert name of public street or road]. [If special access rights are required to reach the Property, those access rights must also be addressed in this Property Assessment.]
4. A true, accurate and complete listing and explanation of each recorded or unrecorded lien or encumbrance on, or possessory or non-possessory interest in, the Property is set forth in Attachment 3 attached to and incorporated by reference in this Property Assessment. Except as disclosed in Attachment 3, there are no outstanding mortgages, liens, encumbrances or other interests in the Property (including, without limitation, mineral interests). Attachment 4, attached hereto and incorporated by reference in this Property Assessment, depicts all relevant and plottable property lines, easements, dedications, etc. on the Property.
5. Prior to recordation of the Conservation Easement, Property Owner shall certify to the

Signatory Agencies in writing that this Property Assessment remains true, accurate and complete in all respects.

6. Property Owner has no knowledge or notice of any legal or other restrictions upon the use of the Property for conservation purposes, or affecting its Conservation Values, as described in the Conservation Easement, or any other matters that may adversely affect title to the Property or interfere with the establishment and implementation of an In-Lieu Fee Program thereon.

7. Property Owner has not granted any options, or committed or obligated to sell the Property or any portion thereof, except as disclosed in writing to and agreed upon in writing by the Signatory Agencies.

8. The following Appendix and attachments are incorporated by reference in this Property Assessment:

a) Attachment 1 – Preliminary Report;
b) Attachment 2 - Encumbrance Documents;
c) Attachment 3 – Summary and Explanation of Encumbrances; and
d) Attachment 4 - Map(s).

[Note: Attachment 2 shall include copies from the Official Records of the county recorder's office of all recorded exceptions to title (e.g., leases or easements). Attachment 4 shall include a map(s), preferably in GIS Format, illustrating the area of the Property affected by each exception to title.]

PROPERTY OWNER

_____ _____

[Insert property owner full legal name(s)] Date

Attachment 1
Preliminary Report
[Attached]
Attachment 2 - Encumbrance Documents
[Attached]
Attachment 3 - Sample Format for: Summary and Explanation of Encumbrances

MONETARY LIENS
Note: Any deeds of trust or other monetary lien(s) must be released or subordinated to the Conservation Easement by a recorded Subordination Agreement approved by the Signatory Agencies.

- Preliminary Report Exception or Exclusion #:
- Amount or Obligation secured:
- Term:
- Date:
- Trustor:
- Trustee:
- Beneficiary:
- Description:

____ acres of Property subject to lien
____ acres of Property not subject to lien

EASEMENTS AND RIGHTS OF WAY

- Preliminary Report Exception or Exclusion #:
- Date:
- Grantor:
- Grantee:
- Holder (if different from Grantee):
- Description:
- Analysis: [whether and how this exception will affect the Conservation Easement or the Conservation Values of the Property]

____ acres of Property subject to easement
____ acres of Property not subject to easement

LEASES

- Preliminary Report Exception or Exclusion #:
- Date:
- Landlord/Lessor:
- Tenant/Lessee:
- Premises:
- Term:
- Description:
- Analysis: [whether and how this exception will affect the Conservation Easement or the Conservation Values of the Property]

____ acres of Property subject to lease
____ acres of Property not subject to lease

COVENANTS, CONDITIONS, RESTRICTIONS AND RESERVATIONS

- Preliminary Report Exception or Exclusion #:
- Dated:
- Grantor or Declarant:
- Grantee (if applicable):
- Description:
- Analysis: [whether and how this exception will affect the Conservation Easement or the Conservation Values of the Property]

____ acres of Property subject to exception/exclusion
____ acres of Property not subject to exception/exclusion

OTHER INTERESTS (INCLUDING MINERAL OR OTHER SEVERED INTERESTS)

- Holder
- Description: [must address whether or not the interest includes any surface rights and, if applicable, a description of those rights]
- Analysis: [whether and how this exception will affect the Conservation Easement or the Conservation Values of the Property]

____ acres of Property subject to interest
____ acres of Property not subject to interest

Attachment 4 - Map(s)
[Attached]

Exhibit J: Credit Ledger Report Form

Exhibit J: Credit Ledger							
Calleguas Creek Watershed ILF Program							
		Advanced Credits in Service Area				Project Site	
		Advanced Credits Initially Awarded By ACOE	Advanced Credits Sold By SCC	Advanced Credits Available for Sale by SCC		Credits Awarded by ACOE from approved Development Plan	Number of Credits Released
	Re-establishment						
	Rehabilitation						
	Establishment						
	Enhancement						
	Buffer						
	Total						