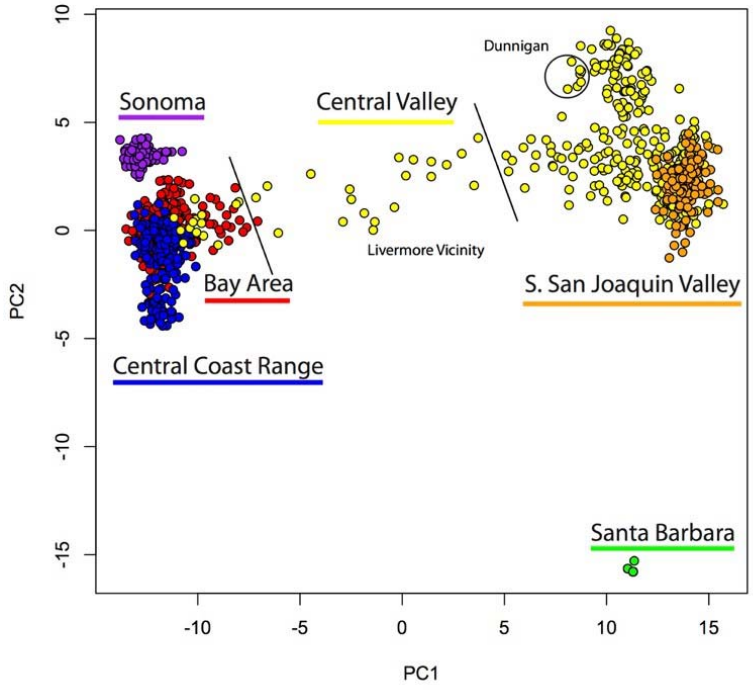
RECLAMATION
Managing Water in the West

Rangewide and Landscape Genomics of the Central DPS of California Tiger Salamander

Environmental Assessment



U.S. Department of the Interior
Bureau of Reclamation

September 2017

Mission Statements

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

List of Abbreviations and Acronyms

CTS	California tiger salamander
CVP	Central Valley Project
CVPCP	Central Valley Project Conservation Program
DPS	Distinct Population Segment
HRP	Habitat Restoration Program
SNP	Single nucleotide polymorphisms
UCLA	University of California, Los Angeles
USFWS	U.S. Fish and Wildlife Service

Contents

Page

Section 1 Introduction

1.1 Background

In conformance with the National Environmental Policy Act of 1969, Council on Environmental Quality regulations (40 CFR 1500-1508), and Department of the Interior Regulations (43 CFR Part 46), the Bureau of Reclamation (Reclamation) prepared this Environmental Assessment to evaluate and disclose potential environmental impacts associated with providing $350,865.32 to the University of California, Los Angeles (UCLA; Recipient) through a Cooperative Ecosystems Studies Unit (CESU) Agreement to conduct a project to improve conservation and management of the federally protected California tiger salamander (*Ambystoma californiense*; CTS) in the Central Valley Project service area and throughout its range.

Through the Agreement, UCLA would use its newly-developed 5,237-gene genomic target (genetic marker) capture array to study landscape resistance and the movement of native and non-native genes, including "super-invasive" (SI) genes, across the range of the Central Distinct Population Segment (DPS) of the CTS in four genetically distinct geographic management units: Santa Barbara County, Sonoma County, the western Central Valley (SF Bay Area and the Central Coast Range), and the eastern Central Valley (Central Valley and Southern San Joaquin County). The project would last 2 years and 6 months. Funding for the proposed action would be provided by the Central Valley Project (CVP) Conservation Program.

The Central Valley Project Conservation Program (CVPCP) was developed by Reclamation and the U.S. Fish and Wildlife Service (FWS) during the Endangered Species Act Section 7 consultation process associated with the Central Valley Project Improvement Act to ensure that the existing operation of the CVP and renewal of CVP water service contracts would not jeopardize listed or proposed species or adversely affect designated or proposed critical habitat. Accordingly, the CVPCP implements actions to protect, restore, and enhance special-status species and their habitats affected by the CVP.

On September 30, 2016, UCLA submitted to Reclamation an application under Funding Opportunity Announcement (FOA) BOR-MP-16-0004 requesting funds for a research project titled Rangewide and Landscape Genomics of the Central DPS of California Tiger Salamander. A significant threat to population conservation and recovery planning for the CVP-impacted federally threatened CTS is hybridization with the introduced non-native barred tiger salamander across much of central California. Through the project the Recipient would use its newly-developed genetic marker capture array to study landscape resistance and the movement of native and non-native genes, including SI genes, across the range of the Central Distinct Population Segment (cDPS) of the CTS in four genetically distinct geographic management units: Santa Barbara County, Sonoma County, the western Central Valley (SF Bay Area and the Central Coast Range), and the eastern Central Valley (Central Valley and Southern San Joaquin County). The project will provide information about the ways in which native and non-native

genes are distributed across the cDPS, how they came to have that distribution, and how to stop or reverse the spread of non-native genes. Such a project is a desirable activity that is consistent with the stated purposes of the CVPCP and Reclamation's authority under the Fish and Wildlife Coordination Act in that the project will support research and other field study programs including those involving a threatened species. The proposal was ranked among the highest of the proposals submitted under the Funding Opportunity Announcement after being reviewed by the CVPCP/Habitat Restoration Program (HRP) Technical Team, which includes Biologists and Natural Resource Specialists from Reclamation, FWS, and the California Department of Fish and Wildlife.

1.2 Need for the Proposal

Reclamation's CVP has impacted CTS and its habitat in the Central Valley and elsewhere through habitat loss due to agricultural and urban development. A significant threat to conservation and recovery planning for the CVP-impacted federally threatened CTS is hybridization with the introduced non-native barred tiger salamander across much of central California. The proposed research will provide information about the ways in which native and non-native genes are distributed across the cDPS, how they came to have that distribution, and recommendations to stop or reverse the spread of non-native genes. In June of 2017 the FWS released the *Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (Ambystoma californiense)*. The conservation strategy within the recovery plan is identified as "conservation of remaining aquatic and upland habitat that provides essential connectivity, reduces fragmentation, and sufficiently buffers against encroaching development and intensive agricultural land uses." The Proposed Action will work towards this conservation strategy (see Section 2.2 Proposed Action). Furthermore, the Proposed Action will contribute toward fulfilling the following Recovery Actions in the Recovery Plan for CTS (USFWS 2017):

- 7.4 – Conduct population viability analysis for Central California tiger salamander metapopulations throughout the range of the DPS. Population viability analysis are tools that can identify populations in need of recovery actions, as opposed to those that may be viable over the long-term without intervention.
- 7.7.2 – Conduct focused research on SI markers to determine how each non-native gene is physically expressed and the subsequent ecological impact of these genes.

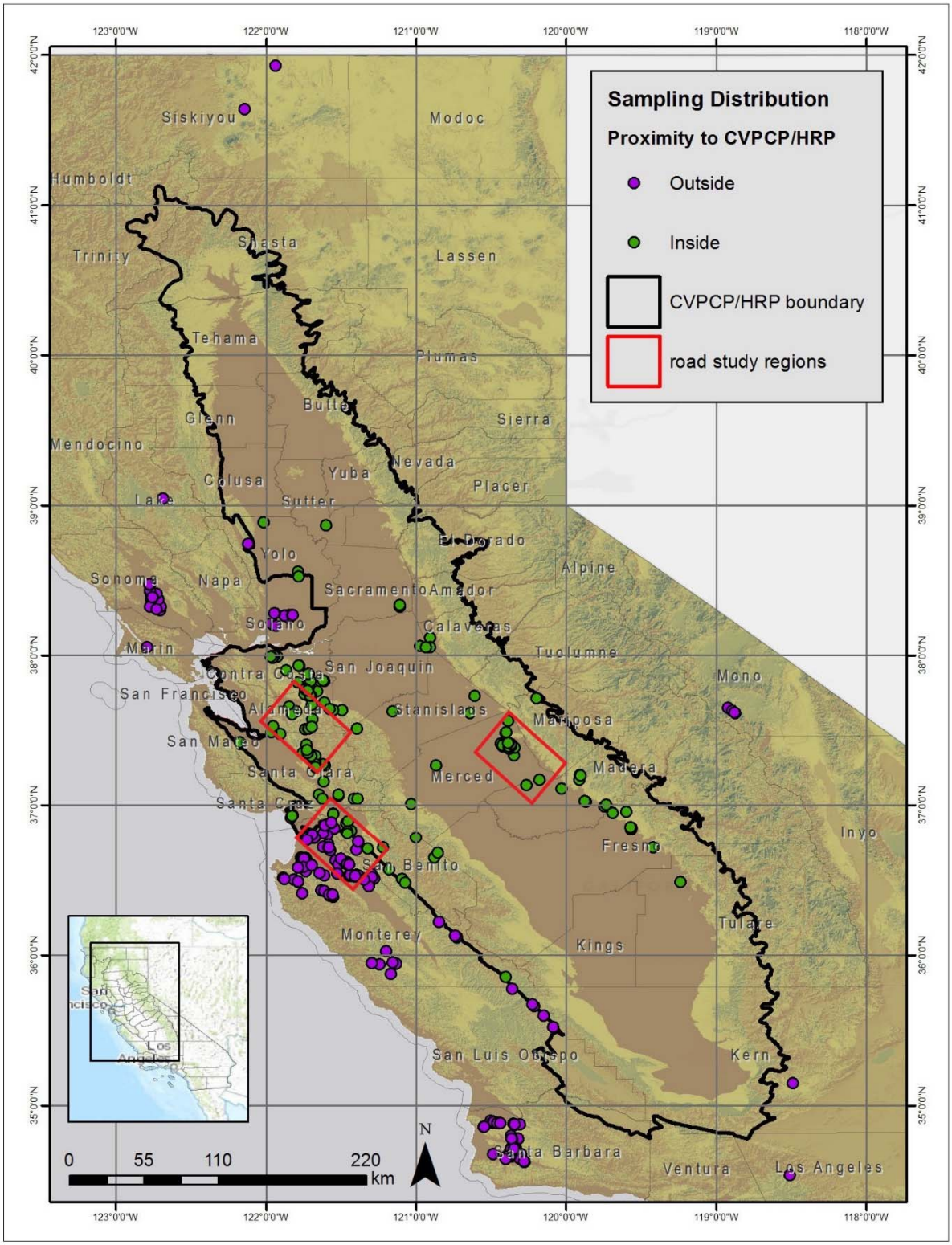


Figure 1. Current DNA sample localities. Boxes show three targeted regions for analysis of roads on gene movement. New sampling sites will fill gaps among green sites.

Section 2 Alternatives Including the Proposed Action

2.1 No Action Alternative

Reclamation would not provide $350,865.32 to UCLA to conduct genomic research on the federally endangered CTS. UCLA would then be required to obtain the $350,865.32 from other public or private sources to conduct this research. If alternative funding cannot be secured, the proposed research would not be conducted.

2.2 Proposed Action

Reclamation would provide $350,865.32 to UCLA to conduct genomic research on the federally threatened CTS. UCLA would do the following:

1. Conduct a comprehensive survey of the genetically-based management units within the Central DPS of the California Tiger Salamander. This includes fieldwork and laboratory molecular analysis of the target capture data set of 5,237 gene regions for each of about 3,500 CTS samples, most of which are already on hand in UCLA freezers. Existing stored samples will comprise the bulk of the sampling for the project. However, UCLA's collections of CTS genetic information contain data gaps, particularly from the southern San Joaquin Valley (Madera, Fresno and northern Tulare Counties), the southern Sacramento Valley (Sacramento and Calaveras Counties) and the western foothills of the San Joaquin Valley (San Benito, Fresno, Kings and Kern Counties). Over the course of the project the Recipient will target both public and private lands (70 sites) in these regions to sample to fill these gaps. For new samples, the strategy for gaining access to new sites is to 1) work with public agencies to access new sites; 2) work with private landowners who grant land access; and 3) using aerial imagery, identify landowners whose property supports suitable CTS habitat, then contact each landowner to request access.

2. Complete a detailed analysis of geographic regions where CTS populations include individuals with non-native tiger salamander genes. The genetic analyses will help identify natural clusters of individuals that are similar to each other generically, but which differ from other clusters. The distribution of CTS with non-native genes in relation to roads will also be evaluated and analyzed. The key outcome will be a set of maps and associated databases showing the current distribution of non-native salamander genes and their numerical abundance across the cDPS. The maps will highlight areas of genetically pure CTS as critical targets for land acquisition and species management.

3. Use landscape resistance modeling to evaluate, at the broader range-wide and more fine-scale local levels, the effect of vegetation, pesticide application, urban development (including road effects), pond density, and road density on the movement of native and non-native genes.

4. Identify critical land areas for acquisition or protection, focusing on regions that contain native CTS populations that, in the future, will be buffered from CTS populations with non-native genes. The first goal is to identify contiguous regions of appropriate CTS habitat, as determined by habitat modeling, and then prioritize candidate regions for priority land conservation based on genetic management units and on the likelihood of invasion by non-native genes. The second goal is to identify management strategies that may serve to reduce the flow of non-native tiger salamander genes into areas with relatively or completely pure CTS populations.

5. Provide Reclamation with draft and final manuscripts to be published in scientific journals, as data warrant. The Recipient will promptly provide to Reclamation electronic files of all field data, GIS data, and research products including reports, analyses, databases, and models as warranted, that are produced in connection with the investigations undertaken through the CESU Agreement.

Section 3 Affected Environment and Environmental Consequences

This section identifies the potentially affected environment and the environmental consequences involved with the Proposed Action as compared to the No Action Alternative. If Reclamation did not provide $350,865.32 to UCLA to conduct genomic research on the federally endangered CTS, the research would not be performed and this would remain a data gap in the overall conservation of CTS. There will be no further discussion of effects from the no action alternative as conditions would remain unchanged from current conditions. Effects of the proposed action are compared to this condition.

3.1 Cultural Resources

The Proposed Action is an undertaking as defined at 36 CFR § 800.16(y). Reclamation determined the undertaking has no potential to cause effects on historic properties, pursuant to 36 CFR § 800.3(a)(1), and, therefore, would not result in significant impacts to cultural resources. As such, Reclamation has no further obligations under 54 U.S.C. § 306108, commonly known as Section 106 of the National Historic Preservation Act. (See Appendix A).

3.2Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in assets that are held in trust by the United States for federally recognized Indian tribes or individuals. There are various ITA's in the vicinity to the Proposed Action. Based on the nature of the planned work it does not appear to be in an area that will impact Indian hunting or fishing resources or water rights nor is the proposed activity on actual Indian lands. It is reasonable to assume that the proposed action will not have any impacts on ITAs. (See Appendix B).

3.3 Indian Sacred Sites

Executive Order 13007 (May 24, 1996) requires Federal agencies to protect and preserve Indian religious practices on Federal lands through accommodating access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoiding adversely affecting the physical integrity of such sacred sites. Executive Order 13007 is applicable to sacred sites identified by Federally-recognized Indian tribes on Federal land. The Proposed Action does not involve Federal land. As such, the Proposed Action would result in no impacts related to the access or use of Indian sacred sites.

3.4 Environmental Justice

Executive Order 12898 requires each Federal agency to identify and address disproportionately high and adverse human health or environmental effects, including social and economic effects of its program, policies, and activities on minority populations and low-income populations. Reclamation has not identified adverse human health or environmental effects on any population as a result of implementing the Proposed Action. Therefore, implementing the Proposed Action could not have a significant or disproportionately negative impact on low-income or minority individuals within the Proposed Action area.

3.5 Biological Resources

3.5.1 Affected Environment

The majority of work associated with the Proposed Action will occur in a laboratory environment with tissues that have been previously collected from the entire range of the CTS (Figure 1). This encompasses most of the CVPCP project area, from Yolo County south to Tulare and the Kern/San Luis Obispo County lines. It also includes immediately adjacent areas in Monterey County (Salinas Valley). Three regions have been identified as requiring additional samples to fill in data gaps. The Proposed Action will include collecting tissue samples from approximately 70 sampling sites (200 individuals) within the three regions, Salinas Valley, East Bay Regional Parks, and Merced County (labeled Road Study Regions in Figure 1). These regions are approximately equal in size and include about 2,200 square miles each. While these three regions are separated by at least 15 miles, due to the focused scope of the project, the affected environment within them is similar. The scope of new tissue collection involves gaining access to breeding ponds during the later portion of the breeding season (November-April) when larval CTS are more likely present. Collection of CTS larvae will occur within the ponds, tissue (tail tips) will be collected adjacent to the ponds, and the subject CTS larvae will be released back into the ponds whence they came. Specific sampling sites within the three regions cannot be identified at this time as sampling will occur opportunistically.

3.5.2 Environmental Consequences

The researcher holds a valid Federal Recovery Permit for the proposed activities under Section 10(a)(1)(a) of the Endangered Species Act (ESA), 16 U.S.C. §1531 *et seq.*, from the USFWS, and a Scientific Collecting Permit issued by the California Department of Fish and Wildlife. Through their USFWS permit, the permittees are authorized to take [harass by survey, capture, handle, release and collect adult vouchers (specimens)], and collect CTS tissue samples in conjunction with surveys and population monitoring for the purpose of enhancing the species' survival. Among other things, the permit limits the number of individuals that can be collected. Adverse effects from this project on CTS would be in the form of injury, temporary capture, and disturbance of habitat related to sampling and tissue collection efforts during the breeding season. Project parameters would limit the affects to less than the USFWS permit thresholds for take exceedance. Prior to initiation of collecting, the permittees must request and receive approval from the appropriate USFWS office to sample or collect at specific locations. This is in order to receive guidance on how to address concerns USFWS may have about impacts to the species at that location. Within 90 days following completion of the last field visit at each project site, a report shall be submitted by the permittees to the appropriate USFWS office. The report would allow the permittees and the USFWS to evaluate the effect of the project on listed species, and to adapt the study design, as needed, to reduce impacts to listed species to the maximum extent practical.

The proposed action would be in accordance with State and Federal permits that are issued in consideration of the specific locations sampling is requested at, the potential impacts to the target species, and incidental impacts on other special status species. Therefore, the proposed action would have no additional adverse effects or exceed take from what was previously authorized by the Federal Recovery Permit. Consequently, the proposed action would not adversely affect any federally listed species beyond what was detailed and evaluated in the issuance of the Federal Recovery Permit. (See Appendix D).

During collection of new tissue samples, researchers would access additional sampling areas in vehicles using existing roads, and approach ponds on foot. While there is the potential for special status plant and animal species within the areas of collection, the focused sampling efforts in CTS breeding ponds, access to the sites via existing roads and on foot, and activities being conducted during daylight hours reduce the potential to adversely impact non-target species to a discountable level. During CTS tissue collection efforts, there is a potential for the incidental capture and harassment of the federally-listed as threatened California red-legged frog (*Rana draytonii*). Bycatch of this species is accounted for in the permits held by the researchers and requires the species be released immediately. The only impact on California red-legged frog would be incidental capture and immediate release. The resultant potential impact on the California red-legged frog would be insignificant.

Section 4 Consultation and Coordination

Reclamation, in the process of preparing and awarding the proposed grant, consulted and coordinated with the following:

U.S. Fish and Wildlife Service
U.S. Bureau of Land Management
U.S. Environmental Protection Agency
California Department of Fish and Wildlife
East Bay Regional Park District
Division of Natural & Social Sciences at New England College
National Oceanic and Atmospheric Administration

4.1 Central Valley Project Conservation Program Technical Team

CVPCP managers are guided by a Technical Team of biologists and natural resource specialists from Reclamation, the USFWS, and the California Department of Fish and Wildlife. During the period of October 2016 through January 2017, members of the Technical Team reviewed and scored proposals submitted to Reclamation for consideration for funding. The Proposed Action ranked in the top tier of proposals and was recommended for funding following evaluation by the Team. Reclamation and USFWS management subsequently approved the Technical Team's recommendation for funding of the proposed action.

4.2 ESA Consultation

Potential adverse effects from the Proposed Action, to federally listed species, are accounted for in the Incidental Take Statement of the applicant's Federal Recovery Permit (as described in Section 3.2.2). Since take, as prohibited under Section 9 of the ESA, has been exempted through the Federal Recovery Permit, and no additional take would occur, no consultation is required by Reclamation under Section 7 of the ESA.

Section 5 References

U.S. Fish and Wildlife Service. 2017. Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (Ambystoma californiense). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. v + 69pp.

Appendix A

Cultural Resources Compliance

CULTURAL RESOURCES COMPLIANCE
Division of Environmental Affairs
Cultural Resources Branch (MP-153)

MP-153 Tracking Number: 17-MPRO-127

Project Name: Rangewide and Landscape Genomics Central DPS CA Tiger Salamander

NEPA Document: BOR Grant Agreement

NEPA Contact: Dan Cordova, Natural Resource Specialist

MP 153 Cultural Resources Reviewer: Scott Williams, Archaeologist

Date: April 10, 2017

Reclamation proposed to provide Grant funding to conduct a comprehensive survey of the genetically-based management units within the Central Distinct Population Segment (DPS) of the California Tiger Salamander. This is the type of undertaking that does not have the potential to cause effects to historic properties, should such properties be present, pursuant to the NHPA Section 106 regulations codified at 36 CFR § 800.3(a)(1). Reclamation has no further obligations under NHPA Section 106, pursuant to 36 CFR § 800.3(a)(1).

The grant funding will support fieldwork and laboratory molecular analysis of the target capture data set of 5,237 gene regions for each of about 3,500 CTS samples, most of which are already on hand in UCLA freezers. In addition, the grant recipient will complete a detailed analysis of geographic regions that are currently harboring non-native tiger salamander genes. Use landscape resistance modeling to evaluate, at the broader range-wide and more fine-scale local levels, the effect of vegetation, pesticide application, urban development, pond density, and road density on the movement of native and non-native genes. They will also identify critical land areas for acquisition or protection, focusing on regions that contain native CTS populations that are buffered from the invasion of non-native genes in the future. The exact project locations for the fieldwork have yet to be determined, and will depend on the amount and location of ponds to be sampled, and on the ability to access those lands. Locations across the entire range of the Central Distinct Population Segment of the CTS will be sampled. This encompasses most of the CVPCP program area, from Yolo County south to Tulare and the Kern/San Luis Obispo County lines. It also includes immediately adjacent areas in Monterey County (Salinas Valley). As a part of this project, the recipients propose sampling approximately 70 sites for larval DNA samples that will close gaps in their existing sampling. No digging or construction is proposed.

This document is intended to convey the completion of the NHPA Section 106 process for this undertaking. Please retain a copy in the administrative record for this action. Should changes be made to this project, additional NHPA Section 106 review, possibly including consultation with the State Historic Preservation Officer, may be necessary. Thank you for providing the opportunity to comment.

Appendix B

Indian Trust Assets Compliance

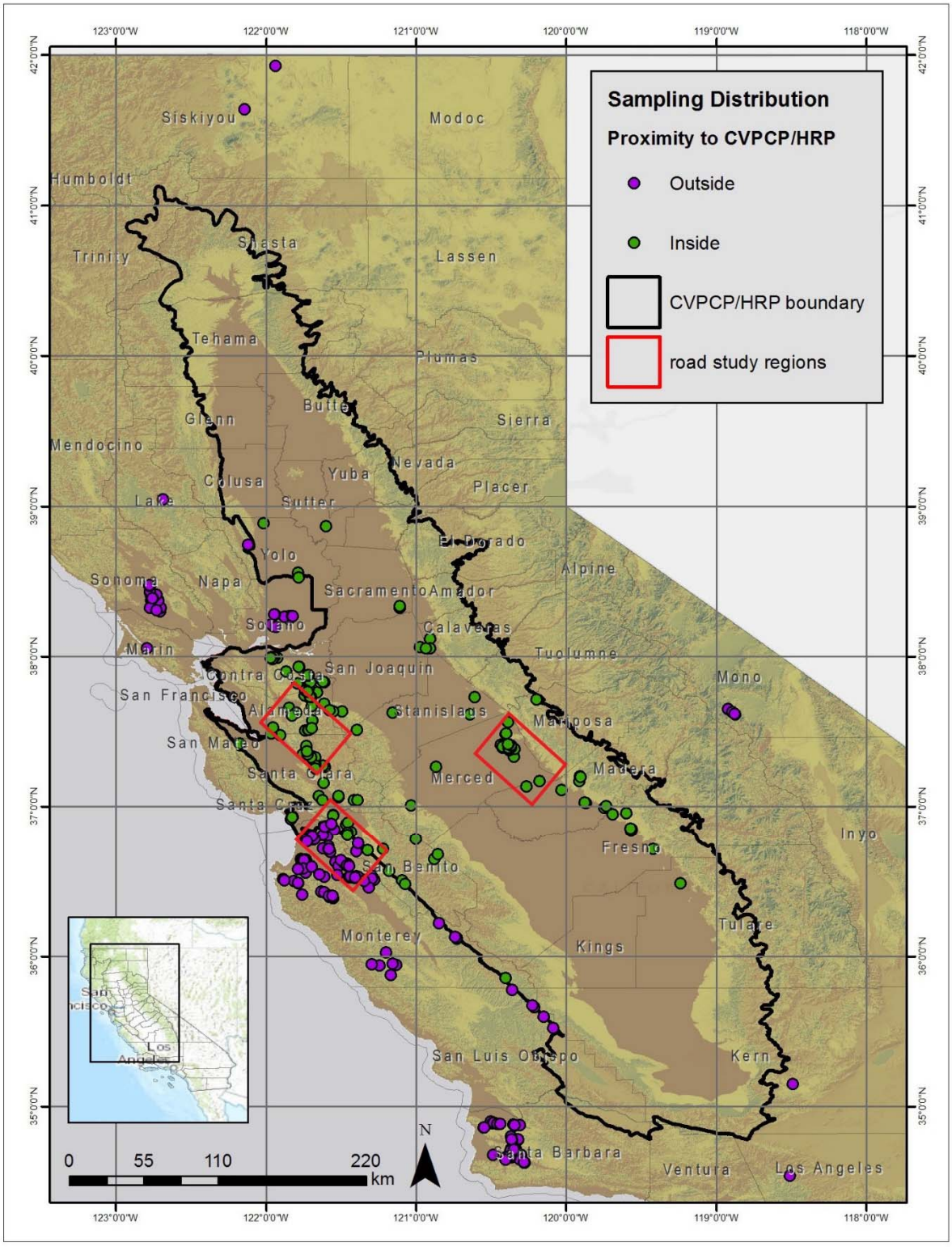
Indian Trust Assets Request Form (MP Region)

Submit your request to your office's ITA designee or to MP-400, attention Kevin Clancy.

Date:

Requested by (office/program)	Dan Cordova
Fund	17XR0680A3
WBS	RX304249930250000
Fund Cost Center	RR02015200
Region # (if other than MP)	
Project Name	Rangewide and Landscape Genomics of the Central DPS of California Tiger Salamander
CEC or EA Number	MP-CEC-17-
Project Description (attach additional sheets if needed and include photos if appropriate)	Reclamation would provide $350,865.32 to UCLA, via the CVP Conservation Program (CVPCP), to conduct genomic research on the federally threatened California tiger salamander (CTS). Work would focus on the central Distinct Population Segment (DPS). Project activities include both laboratory genetics work, and collecting tissue samples from live specimens within the DPS to compile a more robust collection of genetic data within the range of the DPS. Tissue collections would involve dip net capture of individuals in breeding pools, collection of tissue, and subsequent release of individuals back into the pool.
***Project Location (Township, Range, Section, e.g., T12 R5E S10, or Lat/Long cords, DD-MM-SS or decimal degrees). Include map(s)**	The entire range of the Central Distinct Population Segment (DPS) of the CTS. This encompasses most of the CVPCP project area, from Yolo County south to Tulare and the Kern/San Luis Obispo County lines. It also includes immediately adjacent areas in Monterey County (Salinas Valley). See attached map

/s/ Daniel Cordova	Daniel Cordova	4/4/2017
Signature	Printed name of preparer	Date


Sampling Distribution
Proximity to CVPCP/HRP
Outside
Inside
CVPCP/HRP boundary
road study regions
123°0'0"W
122°0'0"W
121°0'0"W
120°0'0"W
119°0'0"W
118°0'0"W
42°0'0"N
41°0'0"N
40°0'0"N
39°0'0"N
38°0'0"N
37°0'0"N
36°0'0"N
35°0'0"N
Siskiyou
Modoc
Humboldt
Trinity
Shasta
Lassen
Tehama
Plumas
Glenn
Butte
Sierra
Mendocino
Colusa
Yuba
Nevada
Placer
Lake
Sutter
El Dorado
Yolo
Alpine
Sonoma
Napa
Sacramento
Amador
Solano
Calaveras
Marin
Tuolumne
San Joaquin
Contra Costa
Mono
San Francisco
Alameda
Stanislaus
Mariposa
San Mateo
Santa Clara
Merced
Madera
Santa Cruz
Inyo
Fresno
San Benito
Tulare
Monterey
Kings
San Luis Obispo
Kern
Santa Barbara
Ventura
Los Angeles
0
55
110
220
km
N

ITA Determination:

There are various ITA's in the vacinity to the proposed Rangewide and Landscape Genomics of the Central DPS of California Tiger Salamander**.**

Based on the nature of the planned work it **does not** appear to be in an area that will impact Indian hunting or fishing resources or water rights nor is the proposed activity on actual Indian lands. It is reasonable to assume that the proposed action **will not** have any impacts on ITAs.

K. Clancy	Kevin Clancy	4/10/2017
Signature	Printed name of approver	Date

Appendix C

Endangered Species Act Compliance

MP-152
ENV-7.00

MEMORANDUM

To: Dan Strait
Central Valley Project Conservation Program Manager

From: Dan Cordova
Natural Resources Specialist

Subject: Endangered Species Act Section 7 Determination for the Rangewide and Landscape Genomics of the Central DPS of California Tiger Salamander

The Bureau of Reclamation (Reclamation) proposes to provide $350,865.32 to the University of California Los Angeles (UCLA; Recipient) to their newly-developed 5237-gene genomic target capture array to study landscape resistance and the movement of native and non-native genes across the range of the Central Distinct Population Segment federally protected California tiger salamander (*Ambystoma californiense*; CTS)(Proposed Action). The Proposed Action will occur in the Central Valley Project service area and throughout its range. Funding would be provided through the Central Valley Project Conservation Program (CVPCP).

Research associated with the Proposed Action will focus on three primary tasks and can be completed within 2.5 years. These tasks are: 1) identify the healthiest, most genetically defensible management units for conservation action and recovery across the central Distinct Population Segment (cDPS), 2) use landscape genomics to identify landscape features that enhance and facilitate the movement of native and non-native genes across the region, 3) use these results to identify the best remaining lands for acquisition and protection that are critical to recovery plans for the CTS across the region. Future work would model the spread and retraction of native and non-native genes into the future based on best available climate predictions for California.

The majority of work associated with the Proposed Action will occur in a laboratory environment with tissues that have been previously collected from the entire range of the CTS. This encompasses most of the CVPCP project area, from Yolo County south to Tulare and the Kern/San Luis Obispo County lines. It also includes immediately adjacent areas in Monterey County (Salinas Valley). Three regions have been identified as requiring additional samples to fill in data gaps. To fill in the data gaps the Proposed Action will include collecting tissue samples from approximately 70 sampling sites (200 individuals) within the three regions, Salinas Valley, East Bay Regional Parks, and Merced County. These regions are approximately equal in size and include about 2,200 square miles each. While these three regions are separated by at least 15 miles, due to the focused scope of the project, the affected environment within them is similar. The scope of new tissue collection involves gaining access to breeding ponds during the later portion of the breeding season (November-April) when larval CTS are more likely present. Collection of CTS larvae will occur within the ponds, tissue (tail tips) will be collected adjacent to the ponds, and the subject CTS larvae will be released back into the ponds whence they came.

Specific sampling sites within the three regions cannot be identified at this time as sampling will occur opportunistically. While there is a potential for special status plant and animal species within the areas of collection, the focused sampling efforts in CTS breeding ponds, access to the sites via existing roads and on foot, and activities being conducted during daylight hours reduce the potential to adversely impact non-target species to a discountable level. During CTS tissue collection efforts, there is a potential for the incidental capture and harassment of the federally-listed as threatened California red-legged frog (*Rana draytonii*). Adverse effects on California red-legged frog would be associated with incidental capture and immediate release. The resultant potential impact on the California red-legged frog would be insignificant. However, bycatch of this species is accounted for in the permits held by the primary researcher and requires, among other measures, the species be released immediately.

Dr. H. Bradley Shaffer, the primary researcher, holds a valid Federal Recovery Permit for the proposed activities under Section 10(a)(1)(a) of the Endangered Species Act (ESA), 16 U.S.C. §1531 et seq., issued by the USFWS, and a Scientific Collecting Permit issued by the California Department of Fish and Wildlife. The proposed action would be in accordance with these State and Federal permits that are issued in consideration of the specific locations sampling is requested, the potential impacts to the target species, and incidental impacts on other special status species.

Reclamation has determined that providing grant funding to conduct the described research would have no additional adverse effects or exceed take from what was previously authorized via the Federal Recovery Permit. Since take, as prohibited under Section 9 of the ESA, has been exempted through the Section 10 permits, and no additional take is anticipated to occur, this concludes Reclamation's responsibility under Section 7 of the ESA. However, if new information is made available, the project description changes, and/or researchers do not fully comply with the terms and conditions prescribed in their 10(a)(1)(a) permits, then Reclamation may need to revisit its ESA responsibility. Please retain a copy of this memo as part of the administrative record.