

**EAST CONTRA COSTA COUNTY
HABITAT CONSERVANCY**

DATE: July 22, 2011
TO: Governing Board
FROM: John Kopchik, Executive Director
SUBJECT: Upper Hess Creek Watershed Habitat Restoration Project

RECOMMENDATION

- 2) Consider the following actions to implement the Upper Hess Creek Watershed Restoration Project (“Project”):
 - a. CONSIDER and APPROVE “CEQA Addendum, Upper Hess Creek Watershed Restoration Project, Greenhouse Gas Emissions” (Addendum), prepared pursuant to CEQA guidelines for Greenhouse Gas Emissions adopted in March 2010, subsequent to adoption of the EIR/EIS for the HCP/NCCP. FIND that impacts of Project are fully disclosed and analyzed in the EIR/EIS for the HCP/NCCP and the Addendum.
 - b. AUTHORIZE Conservancy staff to execute an agreement with the East Bay Regional Park District (“District”) for construction of the Project.
 - c. AUTHORIZE the payment of \$591,225 to the District for construction of the Project.
 - d. DIRECT Conservancy staff to file a Notice of Determination with the County Clerk disclosing Board approval of the Project.
 - e. DIRECT Conservancy staff to monitor construction of the Project and inspect final improvements to confirm completion of the Project in accordance with the plans and specifications.

RECOMMENDATION

As reported at previous Governing Board meetings, Conservancy staff, consultants and staff at the District have been working for the past 8 months to prepare the Upper Hess Creek Watershed Restoration Project for construction this summer. The Project was previously referred to as Land Waste Management Property restoration on the March 2011 agenda. Like the earlier projects completed in 2008-2010, the Project will contribute to achieving a critical jump start on the

CONTINUED ON ATTACHMENT: YES
ACTION OF BOARD ON: July 22, 2011 APPROVED AS RECOMMENDED _____
OTHER _____

VOTE OF BOARD MEMBERS

___ UNANIMOUS
AYES: _____
NOES: _____
ABSENT: _____
ABSTAIN: _____

I HEARBY CERTIFY THAT THIS IS A TRUE AND CORRECT COPY OF AN ACTION TAKEN AND ENTERED ON THE MEETING RECORD OF THE CONSERVANCY GOVERNING BOARD ON THE DATE SHOWN.

ATTESTED _____
CATHERINE KUTSURIS, SECRETARY OF THE EAST CONTRA COSTA COUNTY HABITAT CONSERVANCY

BY: _____, DEPUTY

Conservancy’s wetland restoration program. Construction is proposed to start in early August 2011. The project would be constructed by the District and funded by the Conservancy almost entirely through grant funds (Prop 50 Integrated Regional Water Management Plan Implementation grant). The detailed plans and specifications have been finalized, construction bids have been solicited, the lowest bid has been identified by the District and the project budget has been defined.

For the Project to move forward, action is needed by the Conservancy Board to approve the agreement with the District and authorize payment of project costs. The District Board will meet July 19, 2011 to consider the project and award the contract. Their award of the contract is contingent of the Conservancy Board taking action. Conservancy staff recommends that the Board approve the above actions to initiate work on this important restoration project.

Overview: The proposed project will be the fifth wetland restoration to be implemented as a result of the adoption of the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP). A critical component of the HCP/NCCP is the implementation of the Conservation Strategy, which provides for the creation of a preserve system and the restoration or creation of specific habitats and land cover types, both to compensate for impacts and to contribute to recovery of listed species.

The table below summarizes the amount of restoration/creation to result from the Project.

Restoration Site Name	Alkali Wetlands (acres)	Other Waters (acres)	Breeding Pond Wetted (acres)	Channel Restoration (ln ft)
CTS Breeding Pond		0.005	0.12	114
Upper Stock Pond*		0.001		258
Channel Restoration	0.05			117
Main Stock Pond	0.10	0.002		
Alluvial Valley	2.32			
Total	2.47	0.009	0.12	489

* Channel restoration at the site of the Upper Stock Pond might be delayed. The pond is still holding water. See the Detailed Information section for more discussion.

Project-specific restoration goals include the following:

- Implement the HCP/NCCP’s conservation actions in support of the biological goals and objectives.
- Contribute to the HCP/NCCP’s Stay Ahead provisions.
- Benefit covered species.
- Address some of the HCP/NCCP’s most challenging restoration requirements, such as those for streams and alkali wetlands to greatest extent possible (e.g., maximize restored acreages.)
- Restore hydrologic functions.
- Be cost effective.

A Collaborative Effort: Substantial work by a variety of individuals and organizations has advanced the Project to this point. The core of the planning and design team--H.T. Harvey and Associates (restoration ecology and landscape architecture), Balance Hyrdologics (hydrology and soils), District staff and Conservancy staff--worked closely together and with a range of other partners to perform the background work and multiple plan iterations necessary to make the Project ready for construction. The hard work and expertise of H.T. Harvey, Balance and District staff is greatly appreciated. Additional key collaborators include Basin Research (archeological assessment), U.S. Fish and Wildlife Service and California Department of Fish and Game (design guidance and permitting), the U.S. Army Corps of Engineers, Sacramento District (permitting) and San Francisco Bay Regional Water Quality Control Board (permitting).

Value of Project to Conservancy: There are a number of reasons why it is critical to pursue this wetland restoration project this year. Over the 30-year life of the HCP/NCCP, the Conservancy may be required to restore or create a large number of acres of various types of wetlands and waters. If impacts to wetlands and waters are substantial during those 30 years, the cumulative total restoration/creation acreage could exceed 500 acres. A more likely but still conservative¹ projection is 300 acres, which amounts to 10 acres of restoration/creation per year. Over the first three and half years of implementing the Plan, less than acre of wetland impact has occurred as a result of projects directly covered by the HCP/NCCP. Impacts to date require about an acre of restoration/creation to compensate. The Conservancy's intention as stated in the approved Work Plan is to be aggressive in its wetlands restoration and creation program. The Conservancy has restored or created about 10 acres of wetlands to date in the four prior projects and has restored several stream reaches. The Project would restore or create an additional 2.47 acres and 489 linear feet of stream, as well as help meet habitat enhancement and management requirements. Construction of the Project will help the Conservancy to meet its goal of achieving substantial wetland restoration early in the life of the program and well in advance of impacts.

The project would also help demonstrate the Conservancy's commitment (also reflected in the HCP/NCCP) to restore hydrologic conditions in watersheds throughout the Plan Area, an issue which has been of concern to the U.S. Army Corps of Engineers and the Water Boards as they consider regional permitting efforts consistent with the HCP/NCCP.

Finally, as further explained in the funding section below, the Conservancy has a grant that will cover all or nearly of the project costs, including both construction and design. The grant has an expenditure deadline of March 2012.

Selection of a Contractor: The District published a Notice to Bidders for this project on June 9, 2011 in two newspapers and on their project website. Eight (8) firms submitted responsible bids by Thursday, June 30, 2011. The table below summarizes the bids received. The lowest bidder was GradeTech, Inc. The cost estimate generated by District and Conservancy staff and consultants for the Notice to Bidders was \$503,261, slightly higher than the lowest bid. The basis for determination of low bid for this project is the aggregate amount of the bidder's Base Bid.

¹ Creation/restoration needs could very likely be less than 300 acres, but 300 acres is a conservative projection in the sense that is prudent for the Conservancy not to under-plan.

NAME OF BIDDER	TOTAL BASE BID
Grade Tech, Inc. Castro Valley, CA	\$480,600.00
Top Grade Construction Livermore, CA	\$516,885.00
R.J. Gordon Construction Pleasant Hill, CA	\$521,836.00
PARC Services Livermore, CA	\$540,711.00
Fanfa, Inc. San Lorenzo, CA	\$675,000.00
Maggioa & Ghilotti San Rafael, Ca	\$711,711.00
Restoration Resources Rocklin, CA	\$794,011.00
W.R. Forde Associates Richmond, CA	\$795,500.00

Project Budget for District Construction: The proposed budget for the District to construct the Project is presented below. It reflects the bid submitted by GradeTech and also includes District costs proposed in the Agreement. Please note that the District will apply unspent funds from the prior Souza 2 project toward this project, reducing the Conservancy’s payment for the project by \$18,065. Estimated Conservancy expenses for tasks not performed by the District are described below the table.

CONSTRUCTION CONTRACTOR COSTS	
MOBILIZATION AND DEMOBILIZATION	\$9,400.00
ENVIRONMENTALLY SENSITIVE AREA FENCE	\$5,000.00
SILT/WILDLIFE EXCLUSION FENCE	\$12,500.00
DEBRIS REMOVAL	\$6,800.00
DESTRUCT PEIZOMETER/WATER TESTING WELLS	\$14,700.00
CATTLE EXCLUSION FENCING, GATES AND ACCESS	\$68,300.00
INTERLOCKING CONCRETE BLOCK	\$22,300.00
EARTHWORK	\$286,000.00
EROSION CONTROL BLANKET	\$13,600.00
HABITAT FEATURES	\$17,700.00
DRILL SEEDING	\$19,000.00
BROADCAST SEEDING	\$5,300.00
SUBTOTAL CONSTRUCTION CONTRACTOR (BASE)	\$480,600.00
Construction contingency (15%)	\$72,090
TOTAL CONSTRUCTION CONTRACTOR COSTS (WITH CONTINGENCY)	\$552,690

Construction Management, Inspection, Soil Testing and Administration By District (estimate)	\$56,600
TOTAL CONSTRUCTION COSTS	\$609,290
Unspent District Funds from Souza 2 Restoration to be applied to Project	\$18,065.00
BALANCE: FUNDS TO BE PAID TO DISTRICT TO CONSTRUCT PROJECT	\$591,225

The Project Budget includes a 15% construction contingency. This contingency may only be used to fund additional costs incurred by the contractor if work beyond that described in project plans and specifications is required. Such additional work requires change orders approved by the District. The Budget also includes \$56,600 to cover the bulk of the District’s expense to manage the Project. These funds will pay for daily supervision by a District inspector, construction management by the District’s Construction and Design sections and soil testing. The District’s wetland restoration specialists have been closely involved in developing the Project and coordinating the District’s efforts, but the costs of these staff have been born by the District.

Not reflected in the table above are Conservancy’s costs for Project components not conducted through the District (e.g., project components to be managed directly by the Conservancy). These additional costs include: a) a \$5,000 contract with 3QC Inc for the Labor Compliance Program (mandatory for proposition 50 grant funds), b) Condor Country Consulting costs to perform pre-construction surveys and on-site biological monitoring during construction covered under existing on-call biological contract, c) H.T. Harvey costs as project designers to assist with construction management and survey/project layout, which would be covered under the recommended contract amendment (see agenda item 5); and d) Conservancy staff costs to help oversee construction, estimated at \$25,000.

All construction costs, including the construction contractor’s costs, the District’s costs to manage the Project, and the various direct Conservancy expenses described in the prior paragraph are consistent with the Conservancy’s approved 2011 Budget.

To ensure the Project succeeds and to meet the requirements of the HCP/NCCP, the Conservancy will also need to manage and monitor the project. For wetland projects, the first five years of management are generally the most difficult. For the first five years, staff estimates that management and monitoring costs will be \$20,000 to \$35,000 per year, perhaps higher if remedial measures are necessary. After plants become established, the features typically become self-sustaining and can be managed in a less specific way as part of the overall Preserve System. A management plan and management funding agreement will be developed for the entire Land Waste Management property and other properties acquired in the vicinity. Long term maintenance and funding for this restoration project will be subsumed into that larger effort. This will enable cost-savings due to economy of scale and will enable certain management tasks, such as invasive plant management, to be performed on a large enough scale to be effective over the long term.

Funding for the Project: Conservancy staff intends to cover most of the cost of the project with one approved grant: a \$1,400,000 grant from the State Water Resources Control Board, a

component of the regional Proposition 50 grant awarded to a group of east county agencies to begin implementing the East Contra Costa County Integrated Regional Water Management Plan. A \$500,000 portion of grant will support the acquisition of the property, and the remaining \$900,000 is reserved to cover planning, design and construction. The Conservancy will submit invoices on these grants to cover as much of the Project cost as possible (certain expenses, such as staff costs, may not be eligible). Given the State's fiscal crisis, it may be many months before the invoices are paid. Sufficient cash exists in the Conservancy's account to cover the full expense of the Project.

Agreement with District: The proposed Agreement with the District is attached. It sets forth the roles and responsibilities of the District and Conservancy in constructing the Project. The Agreement is based on the previously approved agreement for construction of the Souza II project which had a similar division of responsibility (e.g., District constructs the project). Staff recommends the Board authorize the agreement to be finalized and signed.

Anticipated Project Schedule: Below is a rough estimate of the construction schedule.

July 19, 2011: District Board considers authorizing Project contract.

July 22, 2011: Conservancy Board considers authorizing Project.

July 26, 2011: Pre-construction meeting

August 1 – October 15: Construction (approximate)

Early November: Final project inspection

Permits: One of the more challenging aspects of this project and a potential reason the project schedule could be delayed is the need for permits. Because the project seeks to restore wetlands and includes work in a jurisdictional stream, the project requires permits from the U.S. Army Corps of Engineers (consistent with the assignment of duties under the proposed RGP, the Sacramento District is lead for this project), the San Francisco Bay Regional Water Quality Control Board, the California Department of Fish and Game, and consultation by the U.S. Fish and Wildlife Service. The Conservancy is responsible for procuring these permits. Applications were submitted in May. Each permitting agency has been briefed on the project and the timing and has indicated they will make every effort to process the permits in time for August construction.

California Environmental Quality Act (CEQA) and Addendum: As the Lead Agency for the HCP/NCCP under CEQA, the East Contra Costa County Habitat Conservation Plan Association (HCPA), the predecessor to the Conservancy, prepared and certified an environmental impact report (EIR) for the HCP/NCCP on November 8, 2006. As a responsible agency under the California Environmental Quality Act (CEQA), prior to approving the HCP/NCCP project, the Conservancy found, for each significant impact identified in the EIR, that the HCP/NCCP project has been changed or mitigated to reduce the impacts to a less than significant level (Public Resources Code §15091).

The 2006 EIR did not analyze the environmental impacts associated with GHG emissions that would be caused by HCP/NCCP implementation. Subsequent to the certification of the Final EIR, new CEQA guidelines were adopted in March 2010 pursuant to SB 97. These new

guidelines require the analysis and disclosure of potential impacts associated with GHG emissions. The attached “CEQA Addendum, Upper Hess Creek Watershed Restoration Project, Greenhouse Gas Emissions” (Addendum), concludes that the impacts of the Project with respect to greenhouse gas emissions would be less than significant. The addition of new information concerning greenhouse gas emissions would not result in a new or substantially more severe impact than disclosed in the 2006 EIR.

The Upper Hess Watershed Restoration Project is within the scope of the EIR prepared for the HCP/NCCP and greenhouse gas emissions of the Project were considered in the Addendum. The Project is proposed to be constructed consistent with the mitigation measures identified in the EIR. As indicated in the findings and in the EIR, significant impacts identified for the HCP/NCCP can be mitigated to a less than significant level. Staff will file a Notice of Determination with the County Clerk following Board approval.

Detailed Information on Project Components: The primary components of the Project include the removal of ranch debris across the site (including tires, concrete rubble, metal barrels and other materials), restoration of stream channel in place of a less biologically valuable pond, creation of a California tiger salamander (CTS) breeding pond, removal of a failing ranch road crossing followed by channel restoration, wetland restoration around the main stock pond, and alkali wetland restoration. The total project area is 14.5 acres.

California Tiger Salamander Breeding Pond

A 0.12 acre California Tiger Salamander (“CTS”) breeding pond will be created in the western portion of the project area in an upper reach of the central ephemeral drainage. The pond is designed to provide breeding habitat for CTS during moderately dry to wet years (pond is predicted to fill and spill in 88% of years). The pond is designed to have a maximum average depth of 5.25 ft (within a deeper sub zone established in the pond) with an estimated average depth of approximately 3.00 (areas outside of subzones). Once the pond reaches capacity water will exit the pond via a gentle swale that will be seeded with native herbaceous species and covered with biodegradable erosion control blankets to assist with erosion control prior to vegetation establishment. The hydrologic model predicts that the pond will dry in August in most years and will dry by October in all years modeled.

Upper Stock Pond

The Upper Stock Pond Restoration site will involve the removal of an instream stock pond followed by the restoration of the former stream channel through the pond. The channel restoration will be approximately 257 ft in length and will involve returning the channel to the form exhibited above and below the existing stock pond. Following grading, the restored area will be seeded with native herbaceous species mix and an erosion control blanket will be placed over the restored channel to assist with erosion control prior to vegetation establishment.

As of July 15, 2011, the Upper Stock Pond is still holding substantial water. It is very surprising that the pond would be holding water at this time of the year given past observations and data from aerial photos. The pond currently contains red-legged frog tadpoles. The pond will not be drained while red-legged frog tadpoles are present. Work at the pond cannot commence while

the pond has water. Conservancy staff will monitor the pond and the resident amphibians and make a determination in conjunction with the District on the basis of this future information as to whether to require a change order removing work at the Upper Stock Pond from the construction contract. If the pond dries before the tadpoles complete their metamorphosis, this would support the assessments made during project design that it would be preferable to restore the stream than to keep the pond and would be a factor in the determination as to whether to proceed.

Channel Restoration

The Channel Restoration site will consist of removing fill and a culvert from within the main drainage ranch road crossing area and restoring the channel to conform to the dimensions above and below the restoration area. The restoration will include placement of buried rock grade control, seeding with native herbaceous species and placement of biodegradable erosion control blankets over the seeded channel to aid in controlling erosion prior to vegetation establishment.

Main Stock Pond

The Main Stock Pond area will be enhanced through removal of debris and fill around the stock pond, creation of wetland terraces around the edges of the pond, placement of rock perches and coarse woody debris to improve red-legged frog habitat and enhancement/stabilization of an existing outlet spillway/swale at a slightly lower elevation than the existing outlet pipe. The grading will remove many of the abrupt transitions currently present so the pond fits into the landscape better and has a more natural appearance. The enhanced/stabilized outlet spillway/swale will consist of a section of interlocking concrete blocks at the spillway crest to ensure long-term stability. All graded areas will be seeded with a native herbaceous seed mix and biodegradable erosion control blanket will be placed over the seeded sections of the outlet spillway/swale, downslope of the interlocking concrete blocks, to aid in erosion control. Areas within targeted wetland habitat will be seeded with a native wetland seed mix. Once restored, livestock will be excluded from the pond and there will be a net gain of approximately 0.10 acres of wetland habitat around the pond.

Alluvial Valley

The alluvial valley restoration area is the primary restoration proposed on site. It will occur along a reach of the Upper Hess Creek valley that currently has no defined channel and has very limited USACE jurisdictional areas due to lack of wetland hydrology. Exploratory soil test pit trenching throughout the valley, conducted by Balance Hydrologics and H. T. Harvey & Associates in February 2011, showed that there are sub-surface, water-bearing soil horizons near the upstream end of the valley. However, this water appears to quickly dive as the flows exit the more confined, wetland dominated reach immediately below the stock pond and enter the much broader valley reach. The soil profile within the valley includes approximately 4-5 ft of alluvium, overlying 6-7 ft of old landslide debris flow and heavy clay at a depth of approximately 12 ft. This alluvium does not include any soil horizons capable of perching shallow groundwater. Therefore, the project design targets restoring conditions suitable to provide sustained soil saturation at or near the surface for a sufficient time to support alkali wetland habitat.

Approximately 18 inches of clay soil will be harvested from an on site borrow area to establish a soil horizon capable of perching seasonal groundwater. The valley bottom will first be excavated down approximately 30 inches. The top 18 inches of topsoil will be stockpiled separately to preserve the limited existing wetland vegetation root masses and seed bank. The subsoil excavated from 18-30 inches (12 inches total) will be stockpiled separately to be replaced prior to topsoil. The salvaged clay material will be placed across the entire valley bottom at a depth of 18 inches. Shallow clay groundwater cut-off walls will then be strategically located across the valley. These cut-off walls will be placed on top of the clay layer and will create subterranean cells throughout the valley. The salvaged 18 inches of topsoil and 12 inches of subsoil will then be replaced throughout the valley bottom.

Following placement of topsoil a series of micro-topographic depressions and mounds will be graded to add habitat complexity to the wetlands. In addition, the lowest portion of the valley where parallel headcut channels occur across last approximately 350 ft of the valley before the property boundary will be stabilized. The northeast channel will be filled as part of the wetland restoration grading and the southwest channel restored to a stable channel configuration with a series of step pools. Although rock will be placed to construct the pools and associated weirs, the entire restored channel will be covered with topsoil salvaged from the alluvial valley to provide a growing medium sufficient to support herbaceous vegetation. It is anticipated that a portion of each of the step pools and the channel may support new wetland habitat, although this area has not been claimed as part of the wetland habitat restoration. In addition, sonotubes will be installed in the rock during construction to allow for the installation of native willow cuttings in an attempt to establish willow riparian habitat. The willows would be installed to provide a biotechnical stability element to the restoration. Although willows do occur downstream of the restoration reach, it is recognized that the site may be too dry and too saline to support willow riparian habitat in the long-term. Thus, this restoration component is considered to be a habitat enhancement measure and no creation credits will be claimed.

Once graded, the entire site will be seeded with a native grass seed mix, which, along with the harvested and replaced topsoil, will assist with the establishment of the target wetland vegetation. This wetland restoration area will result in the restoration of approximately 2.32 acres of alkali wetlands.

Attachments:

- CEQA Addendum
- Agreement with East Bay Regional District (including the Draft Resource Management Plan Outline, an attachment to the Agreement)
- Schematic Illustrating Key project Components
- Complete plan set for the Project

CEQA ADDENDUM

UPPER HESS CREEK WATERSHED RESTORATION PROJECT – GREENHOUSE GAS EMISSIONS

PREPARED FOR:

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July 2011



ICF International. 2011. Upper Hess Creek Watershed Restoration Project – Greenhouse Gas Emissions. July. (ICF 0025.11.) San Francisco, CA. Prepared for the East Contra Costa County Habitat Conservancy. July

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Acronyms and Abbreviations

BAAQMD	Bay Area Air Quality Management District
BMP	best management practice
CEQA	California Environmental Quality Act
CH ₄	methane
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
Conservancy	East Contra Costa County Habitat Conservancy
CTS	California tiger salamander
Cy	cubic yards
DFG	California Department of Fish and Game
EBRPD	East Bay Regional Park District
EIR	environmental impact report
EIS	environmental impact study
GHG	greenhouse gas
HCP	habitat conservation plan
MND	mitigated negative declaration
MT	metric tons
N ₂ O	nitrous oxide
NCCP	natural community conservation plan
NEPA	National Environmental Policy Act
Sf	square feet
ULL	urban limit line
USFWS	United States Fish and Wildlife Service

Introduction

The following comprises an addendum to the 2006 East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan (HCP/NCCP) Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR).^{1,2} Pursuant to CEQA Guidelines Section 15164, it is concluded from the following analysis that the new information for GHG emissions for the Upper Hess Creek Watershed Restoration project described below would not result in a new or substantially more severe impact relative to the prior 2006 EIR. The East Contra Costa County Habitat Conservancy (Conservancy) Board will consider this addendum, with the 2006 EIR, when approving the project.

This addendum includes the following sections.

- CEQA Requirements, describing the findings necessary for adoption of an addendum
- Project Description
- Analysis of new information relative to greenhouse gas (GHG) emissions relative to the 2006 EIR.

¹ Jones & Stokes. 2006. East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan Final Environmental Impact Statement/Environmental Impact Report. Prepared for the East Contra Costa county Habitat Conservation Plan Association. October.

² Although the original document was an EIS/EIR prepared pursuant to both NEPA and CEQA, this addendum is prepared in compliance with CEQA requirements only, as the approval of the restoration project is a discretionary act of the Conservancy, which is subject to CEQA, and does not trigger discretionary approval from a federal agency. However, even if this addendum were proposed pursuant to NEPA, it would not result in the identification of any new significant impacts under NEPA that would require preparation of a supplemental Environmental Assessment or supplemental Environmental Impact Statement for the same reasons explained in this addendum concerning CEQA compliance.

CEQA Requirements

In 2006, the U.S. Fish and Wildlife Service (USFWS), the California Department of Fish and Game (DFG), Contra Costa County, and the cities of Brentwood, Clayton, Oakley, and Pittsburg approved the HCP/NCCP for East Contra Costa County.

The HCP/NCCP plan contains the elements:

- Permit Areas – the plan covers species impacts and plan activities within specified areas of growth and preservation.
- Covered activities (i.e., specific activities or projects) in the proposed HCP/NCCP which would be permitted by DFG and USFWS include the following three distinct categories.
 - Activities and projects associated with urban growth, in accord with local general plans.
 - Specific infrastructure projects outside the Urban Limit Line (ULL). The proposed plan would allow up to 1,126 acres of impact from rural infrastructure projects for either the initial or maximum urban development area.
 - The following activities inside the proposed HCP/NCCP preserves:
 - ✓ construction and maintenance of recreational or management facilities,
 - ✓ habitat enhancement, restoration, and creation,
 - ✓ management activities necessary to achieve the HCP/NCCP's biological goals,
 - ✓ surveys for covered species, vegetation communities, and other resources,
 - ✓ agricultural activities on adjoining land within one mile of the preserve boundary,
 - ✓ low-intensity recreational use, and
 - ✓ construction and maintenance of utility infrastructure.
- Other activities or projects not specifically described above may be evaluated for coverage under the proposed HCP/NCCP on a case-by-case basis.
- Preserve System - The main element of the HCP/NCCP conservation strategy is the creation of a Preserve System that would preserve approximately 23,800 acres of land with the initial urban development area, or approximately 30,300 acres of land under the maximum urban development area.
- Conservation Measures - The HCP/NCCP conservation measures address the landscape-level, community-level (or habitat), and species-level impacts, and includes measures to address the following objectives.
 - Design of covered activities to avoid or minimize impacts on covered species and covered vegetation communities.
 - Preservation of covered vegetation communities.
 - Preservation of covered species populations and habitats.
 - Restoration of covered species habitat and vegetation communities to compensate for direct and indirect impacts on specific species and vegetation communities.

- Restoration of species habitat to contribute to the recovery of listed covered species and help prevent the listing of non-listed covered species.
- Management of preserves to maximize the functions of habitats for covered species.

In compliance with CEQA, the state and local agencies analyzed the potential for environmental impacts of the HCP/NCCP and adopted feasible mitigation for identified significant impacts.

The 2006 EIR did not analyze the environmental impacts associated with GHG emissions that would be caused by HCP/NCCP implementation. Subsequent to the certification of the Final EIR, new CEQA guidelines were adopted in March 2010 pursuant to SB 97. These new guidelines require the analysis and disclosure of potential impacts associated with GHG emissions.

The Upper Hess Creek Restoration project is part of the HCP/NCCP implementation. While restoration as part of the HCP/NCCP was analyzed in the 2006 EIR, the prior EIR did not analyze the impact of GHG emissions due to restoration.

This additional information requires evaluation under CEQA. Section 15162 of the State CEQA Guidelines provides that when an EIR has been adopted for a project, no subsequent EIR is required for a later activity under that project unless one or more of the following has transpired:

1. Substantial changes are proposed in the project which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
3. New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete, shows any of the following:
 - a. The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
 - b. Significant effects previously examined will be substantially more severe than shown in the previous EIR;
 - c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
 - d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

When a new or substantially more severe impact is identified that cannot be mitigated to a less-than-significant level, the lead agency can adopt a subsequent or supplemental EIR. When a new or substantially more severe impact is identified that can be mitigated to a less-than-significant level, the lead agency can adopt a subsequent MND. Where the activity does not cause a new impact or

substantially more severe impact, the lead agency can adopt an addendum, per CEQA Guidelines Section 15164.

The new information now available concerning GHG emissions is analyzed below in light of the provisions of Section 15162. All of the pertinent mitigation measures from the 2006 EIR continue to apply to the project. The conclusion of the analysis that follows is that the new information concerning GHG emissions does not identify new or substantially more severe significant impacts.

Project Description

Project Background

A critical component to the HCP/NCCP is the implementation of the Conservation Strategy. The Conservation Strategy provides for the creation of a preserve system that will protect land for the benefit of covered species, natural communities, biological diversity, hydrologic function and ecosystem function. The Conservation Strategy also provides for the restoration or creation of specific habitats and land cover types both to compensate for impacts and to contribute to recovery of listed species.

The Upper Hess Creek Watershed property was identified as a “high priority” for acquisition in the HCP/NCCP (acquisition priority subzone 16). The addition of this property to the HCP/NCCP preserve system helps achieve the land acquisition requirements for annual grassland, alkali wetland and streams. Implementation of the proposed restoration project helps meet the Stay Ahead provisions of the HCP/NCCP and provides a rare opportunity to restore substantial acreage of high quality wetlands. Conservancy staff worked with the East Bay Regional Park District (EBRPD) to secure a funding package for the acquisition of this property in the winter of 2010/2011, and the property was acquired with a combination of the Conservancy’s federal grants from U.S. Fish and Wildlife Service and EBRPD Measure WW funds. EBRPD completed the acquisition in April 2011.

The Upper Hess Creek Watershed Restoration Project is planned to be implemented during the summer/fall 2011 construction season. The construction will include restoration/creation of substantial new acreage of alkali wetland habitat, new California tiger salamander (CTS) breeding habitat, in-stream channel restoration, improved site access and new fencing to exclude cattle from the restoration sites while they establish.

Project Setting

Location

The Upper Hess Creek Watershed project encompasses an approximately 14.5-acre portion of the 469.41-acre property located in eastern Contra Costa County. The project site is located on the north side of Kirker Pass Road between the City of Pittsburgh and the City of Concord.

Project Overview and Detailed Description

The proposed restoration project includes a series of project components all located along the main stem of Upper Hess Creek. The site currently is dominated by upland annual grasslands, however there are 0.75 acre of existing alkali wetlands, 1.33 acres of ephemeral channel, and approximately 0.10 acre of open water (i.e., perennial pond).

Within the 14.5-acre project area, work will occur on approximately 7.4 acres which includes the total footprint of all site preparation, grading, and other construction activities. The primary components of the project include the following.

- Creation of a 0.12-acre CTS breeding pond located at the top of the watershed. This also includes restoring 114 linear feet of channel through construction of a stable spillway channel.

- Removal of an old, instream stock pond and restoration of 258 linear feet of the creek channel through this reach.
- Removal of an old, failing and eroding ranch road creek crossing located on a large in-channel berm and relocating the crossing upstream with a stable low water crossing using interlocking concrete blocks. This will allow for restoration of approximately 117 linear feet of creek channel and enhancement and possible expansion of existing downstream wetland habitat.
- Enhancement of an existing 0.10-acre near-perennial stock pond and restoration/creation of approximately 0.10 acres of new alkali wetland habitat around the perimeter of the stock pond. The pond enhancement will include removal of a stockpile of dredged pond sediment, stabilization of the banks around the pond, establishing benches around the margins of the pond at appropriate elevations to support new alkali wetlands, abandoning an existing overflow pipe and stabilizing the overflow channel, and enhancing the overflow swale on the west side of the pond as a stable spillway with a combination of grading, placement of interlocking concrete blocks, seeding and erosion control blankets.
- Restoration of the alluvial valley to support 2.32 acres of new alkali wetland habitat. This will entail excavating approximately 2.5 feet of the existing topsoil, placing a clay soil layer excavated from an adjacent on-site location, and replacing the top 2.5 feet of salvaged topsoil. The clay will be installed at the upstream end of the valley at a depth sufficient to intercept known water bearing soil horizons at approximately 3 and 7 ft below ground surface. The clay layer will gently slope up to the design grade from the “tie-in” point. Shallow clay groundwater cutoff walls will be constructed across the valley bottom to establish cells filled with alluvial soil that will capture, subterranean water flow down the valley and provide soil moisture sufficient to support an area dominated by alkali wetland vegetation. An approximately 0.3 acre transition area from the downstream end of the created wetland to the property boundary will include a series of 4 step pools along a stable reconstructed channel.
- Install cattle exclusion fencing along portions of the Upper Hess Creek corridor to ensure protection of the restoration sites. Access gates will be strategically placed to allow for cattle movement across the corridor and to permit flash grazing within the corridor.
- Enhance overall habitat on-site by removing all existing debris.
- Seeding wetland areas with appropriate native vegetation, seeding all other disturbed areas with a native upland grass/forb mix.

Construction Schedule

The Conservancy plans to begin construction on approximately August 1, 2011 and conclude by November 1, 2011. The project will take approximately 2 ½ to 3 months to construct.

Construction Equipment, Area of Activity and Duration

For the purposes of the GHG analysis, ICF used the construction equipment defaults from the URBEMIS 2007 model. These defaults are listed in Attachment 1.

For duration of equipment activity, ICF assumed a three month work schedule, and a total disturbance area of 10 acres, which is a conservative estimate greater than the expected 7.4 acres of

total disturbance, with 60 days of mass grading activity and 10 days of fine grading activity. The project balances cut and fill and thus no import or export of fill material is included in the analysis.

Consideration of Best Management Practices

The Bay Area Air Quality Management District (BAAQMD) strongly recommends that construction projects incorporate its latest Best Management Practices (BMPs) GHG emissions reduction. Although these requirements are not technically mandated by the BAAQMD, they help reduce pollution from those sources.

The implementing agencies previously adopted Mitigation Measure AIR-1 to reduce NOx emissions. Some of the requirements of AIR-1, such as use of more recent equipment and avoidance of idling will help to reduce GHG emissions.

In addition, to conform to the BAAQMD's guidance to reduce GHG emissions, the Conservancy has considered the BAAQMD's GHG BMP practices outlined in their CEQA Guidelines to address GHG emissions:

- Alternative-fueled (e.g., biodiesel, electric) construction vehicles/equipment of at least 15 percent of the fleet;
- Local building materials of at least 10 percent; and
- Recycle at least 50 percent of construction waste or demolition materials.

The project primarily consists of site grading and planting and thus uses minimal building materials and does not generate substantial construction waste or demolition materials. As a result, the BMPs above on local building materials or recycling are not applicable. As the project site is remote, the use of electrical vehicles is not feasible. However, the Conservancy will encourage the use of biodiesel fuels (such as B20) for construction vehicles or equipment that are certified to use biodiesel fuels. As described below, the construction GHG emissions are minimal and thus the Conservancy would not mandate biodiesel use as such controls are not required to avoid a significant impact, but would encourage its use as practicable.

Analysis of New Information Relative to 2006 EIR

This section evaluates the new information for the Upper Hess Creek Restoration Project relative to the 2006 EIR, which analyzed the project's impacts and serves as the baseline for this subsequent analysis. This evaluation determines if there is substantial evidence of a new or substantially more severe impact not disclosed in the 2006 EIR.

Greenhouse Gas Emissions

The 2006 EIR analyzed the potential for the HCP/NCCP project, including restoration to adversely affect air quality for criteria pollutants, based on the BAAQMD's then applicable 1999 guidelines. The 2006 EIR concluded that all potentially significant air quality impacts could be reduced to a less-than-significant level with mitigation.

No analysis was done in the 2006 of the HCP/NCCP's contribution to GHG emissions since that was not required by either the BAAQMD or the State CEQA Guidelines at that time. Since adoption of the 2006 EIR, the BAAQMD has updated its CEQA Guidelines (BAAQMD 2011) and the California Natural Resources Agency has amended the State CEQA Guidelines (March 2010). These now require that lead agencies analyze a project's GHG emissions as part of CEQA review process.

Thresholds of Significance

Based on the CEQA Guidelines Appendix G, a proposed project would have a potentially significant effect related to GHG emissions if it would:

- generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment, or
- conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

The CEQA Guidelines further state that the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the determinations above. The BAAQMD has developed significance criteria, as updated in their CEQA Guidelines (Bay Area Air Quality Management District 2011). Consequently, the proposed project would have a significant impact on air quality if it would exceed any of the BAAQMD thresholds relevant to GHG emissions.

BAAQMD recommends an operational threshold of 1,100 metric tons (MT) of carbon dioxide equivalent (CO₂e). The BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. However, the BAAQMD recommends that GHG emissions that would occur during construction be quantified and disclosed, and a determination should be made on the significance of these construction generated GHG emission impacts in relation to meeting Assembly Bill (AB) 32 GHG reduction goals. In addition, as noted above, BAAQMD recommends consideration of specific BMPs for construction including use of alternative-fueled vehicles or equipment, use of local materials, and recycling on construction debris and waste.

Methods

Construction of the project would generate GHG emissions. GHG emissions from construction are primarily the result of fuel use by off-road construction equipment and on-road delivery, hauling, and construction employee vehicles. The primary GHG emissions generated by these sources are carbon dioxide (CO₂), methane (CH₄), and nitrous oxides (N₂O).

CO₂ emissions were estimated using URBEMIS2007 and the assumptions described above for project equipment and duration. URBEMIS does not quantify CH₄ and N₂O emissions from off-road equipment or vehicle traffic. Emissions of CH₄ and N₂O from diesel equipment and haul trucks were determined by scaling the construction CO₂ emissions predicted by URBEMIS by the ratio of CH₄/CO₂ (0.000057) and N₂O/CO₂ (0.000026) emissions expected per gallon of diesel fuel according to the California Climate Action Registry (CCAR) (California Climate Action Registry 2009). GHG emissions from gasoline-powered worker commutes were determined by dividing the annual CO₂ emissions from construction worker and vendor commutes by 0.95. This statistic is based on the EPA's recommendation that CH₄, N₂O, and other GHG emissions account for 5% of on-road emissions (U.S. Environmental Protection Agency 2011).

Greenhouse Gas Impact Analysis

Generate a significant amount of GHG emissions, either directly or indirectly?

This impact was not evaluated in the 2006 EIR.

Construction activities would generate short-term emissions of CO₂, CH₄, and N₂O. Generation of these emissions would result from fuel combustion associated with off- and on-road equipment and vehicles. GHG emissions resulting from project construction are summarized in Table 1 below.

Table 1. Summary of Construction-Related GHG Emissions (Metric Tons per Year of Carbon Dioxide Equivalent)

Year	CO ₂	CH ₄	N ₂ O	CO _{2E}	Notes
2011					
Mass Grading	68.3	0.0039	0.0018	68.9	
Fine Grading	10.2	0.0006	0.0003	10.3	
Worker Trips	3.6			3.8	See text 5% assumption
Total				83.0	
<i>Global Warming Potential</i>	<i>1</i>	<i>21</i>	<i>310</i>		<i>GWP compares other gases to CO₂</i>

As shown in Table 1, the project would result in 83 MTCO_{2e} during construction activities. As noted above, the BAAQMD has not identified a construction threshold to evaluate climate change. The project's annual emissions are far below the BAAQMD's operational threshold of 1,100 MTCO_{2e}. In addition, these emissions are considered short-term as the source of emissions will cease once construction is complete.

As a matter of comparison, the 83 MTCO_{2e} of GHG emissions is approximately equivalent to the annual GHG emissions of four average single family dwellings (assuming ~20 MT/year) or of 16 cars (assuming 20 mpg; 10,000 miles per year). The BAAQMD operational threshold of 1,100 MT, by contrast, would correspond to approximately 57 housing units and 200 cars, using the same assumptions.

There would be minimal to no operational GHG emissions which would be limited to a small amount of maintenance activity over-time. The project would not result in any substantial change in carbon sequestration given that it would neither remove nor add land covers containing perennial forms of vegetation (e.g. woodlands or forest cover).

For these reasons, the project would have a less than significant impact related to GHG emissions.

Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHGs?

This impact was not evaluated in the 2006 EIR. The State has adopted several policies and regulations for the purpose of reducing GHG emissions, beginning with AB32. To achieve these GHG reductions, there will have to be widespread reductions of GHG emissions across California. Some of those reductions will need to come in the form of changes in vehicle emissions and mileage, changes in the sources of electricity, and increases in energy efficiency by existing facilities, as well as other measures. The remainder of the necessary GHG reductions will need to come from requiring new development to have lower carbon intensity than business-as-usual (BAU) conditions.

As discussed above, implementation of the project would generate a less than significant level of GHG emissions. Thus, project-generated GHG emissions would not conflict with the State goals listed in AB32 or in any preceding state policies adopted to reduce GHG emissions.

Furthermore, once construction is completed, there would be no long-term operational activities associated with the demolished buildings and parking lot.

Thus, this impact is considered less-than-significant.

Cumulative Impacts

As discussed above, the new information concerning GHG emissions would not result in a new or substantially more severe impact than disclosed in the 2006 EIR. GHG analyses are inherently cumulative in nature. The BAAQMD does not have separate thresholds for analyzing climate change cumulative impacts. If annual emissions of operational-related GHGs exceed the thresholds shown in Table 1, then the proposed project would result in a cumulatively considerable contribution of GHG emissions and a cumulatively significant impact to global climate change. The project's construction-related emissions are short term and would be far below BAAQMD's operational thresholds. In addition, there would be no long-term sources of emissions, as operational increases

are not expected. Therefore, the project would not result in cumulative impacts on GHG emissions and climate change.

Conclusion

The addition of new information concerning GHG emissions would not result in a new or substantially more severe impact than disclosed in the 2006 EIR. Therefore, an addendum to the 2006 EIR is the appropriate CEQA documentation. An addendum need not be circulated for public review but can be included in or attached to the adopted EIR. The decision-making body (the Conservancy) shall consider the addendum with the adopted EIR before making a decision on the project. [CEQA Guidelines sec. 15164]

References Cited

BAAQMD. 2011. California Environmental Quality Act. Air Quality Guidelines. San Francisco, CA. June, 2010. Revised May 2011.

California Climate Action Registry 2009. General Reporting Protocol. Version 3.1. January.

United States Environmental Protection Agency. 2011. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2009. EPA 430-R-11-005. Washington, DC. April 15, 2011.

List of Preparers

ICF International (formerly Jones & Stokes)

Rich Walter, Principal

Attachment 1 – URBEMIS Analysis

NOTE: URBEMIS RESULTS ARE IN TONS. THESE RESULTS WERE
CONVERTED TO METRIC TONS IN TABLE 1 IN THE ADDENDUM

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\ICF JS\Projects\ECC HCP\GHG Addendum\Upper_hess_Urbemis_071511.urb924

Project Name: Upper Hess Creek Restoration

Project Location: Contra Costa County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2011 TOTALS (tons/year unmitigated)	0.11	0.90	0.50	0.00	1.93	0.05	1.97	0.40	0.04	0.44	90.45

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)							

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.01	0.00	0.00	0.00	0.00	0.00	0.12

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.01	0.00	0.00	0.00	0.00	0.00	0.12

Construction Unmitigated Detail Report:

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CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2011	0.11	0.90	0.50	0.00	1.93	0.05	1.97	0.40	0.04	0.44	90.45
Mass Grading 08/01/2011-11/01/2011	0.10	0.79	0.44	0.00	1.68	0.04	1.71	0.35	0.04	0.39	78.70
Mass Grading Dust	0.00	0.00	0.00	0.00	1.68	0.00	1.68	0.35	0.00	0.35	0.00
Mass Grading Off Road Diesel	0.09	0.79	0.40	0.00	0.00	0.04	0.04	0.00	0.04	0.04	75.29
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.42
Fine Grading 11/01/2011-11/14/2011	0.01	0.12	0.07	0.00	0.25	0.01	0.26	0.05	0.01	0.06	11.75
Fine Grading Dust	0.00	0.00	0.00	0.00	0.25	0.00	0.25	0.05	0.00	0.05	0.00
Fine Grading Off Road Diesel	0.01	0.12	0.06	0.00	0.00	0.01	0.01	0.00	0.01	0.01	11.24
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51

Phase Assumptions

- Phase: Fine Grading 11/1/2011 - 11/14/2011 - Default Fine Site Grading Description
- Total Acres Disturbed: 10
- Maximum Daily Acreage Disturbed: 2.5
- Fugitive Dust Level of Detail: Default
 - 20 lbs per acre-day
- On Road Truck Travel (VMT): 0
- Off-Road Equipment:
 - 1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
 - 1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
 - 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

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1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 8/1/2011 - 11/1/2011 - Default Mass Site Grading Description

Total Acres Disturbed: 10

Maximum Daily Acreage Disturbed: 2.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

AGREEMENT BETWEEN EAST BAY REGIONAL PARK DISTRICT AND EAST CONTRA COSTA COUNTY HABITAT CONSERVANCY RELATING TO HABITAT RESTORATION AT LAND WASTE MANAGEMENT, CONCORD NAVAL WEAPONS STATION PRESERVE

This Agreement, dated _____, 2011, is by and between East Bay Regional Park District ("District") and East Contra Costa County Habitat Conservancy ("Conservancy").

RECITALS

- I. The Land Waste Management parcel is located northwest of Black Diamond Mines Regional Preserve, Straddling Kirker Pass Road on the east side of the summit and west of the intersection with Nortonville Road in unincorporated Contra Costa County, California. It is comprised of 4690-acres (the "Property"). The Property was acquired by the District in 2011 in partnership with the Conservancy.
- II. The Conservancy is administering the implementation of the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan ("HCP") in Contra Costa County, California. The HCP has been approved by the District and the Conservancy. The HCP has undergone environmental review and permitting by the United States Fish and Wildlife Service (the "Service") and Department of Fish and Game ("CDFG" or the "Department"). The HCP calls for the restoration and creation of habitats within preserved lands.
- III. Consistent with the HCP, the Conservancy and the District have agreed to do the following:
 - a. District will construct a habitat restoration project on the Property called the Upper Hess Creek Watershed Habitat Restoration Project.
 - b. Conservancy will provide funds to the District to pay District's costs associated with construction of the habitat restoration project; and
 - c. Conservancy will fund and provide specified project design services, supplies, post construction maintenance (anticipated to be five years) and other project related costs.
- IV. District and Conservancy acknowledge that the site of the Upper Hess Creek Watershed Habitat Restoration Project is intended to be kept by District in a natural state in perpetuity while providing public access and associated improvements that are compatible with the restoration project and HCP

conservation strategy, consistent with the Funding Agreement dated December 27, 2010 that was executed by District and Conservancy ("Funding Agreement") and the deed restrictions that will be recorded on the Property pursuant to the Funding Agreement.

- V. On July 19, 2011, the District Board of Directors adopted Resolution No. 2011--, accepting and appropriating \$591,255 from the Conservancy to assist the District with project development at the Land Waste Management, Concord Naval Weapons Station Preserve site.

AGREEMENT

Therefore, based on the foregoing recitals, the District and Conservancy agree to the following:

1. **Construction of Project.** The District shall construct, and the Conservancy shall fund and provide specified additional support for, the habitat restoration project on the Property, as described more particularly in Exhibit "A," which is attached hereto and incorporated herein by this reference (the "Project").

(a) Detailed plans and specifications for the Project and the construction contract to be entered into by District have been approved by District and Conservancy. A complete budget detailing all of the estimated costs associated with construction of the Project that Conservancy will be required to pay is set forth in Exhibit "B," which is attached hereto and incorporated herein by this reference ("Project Budget"). Conservancy shall only be required to pay for those Project costs, \$609,290, that have been included in the Project Budget ("Approved Construction Costs"). Should there be unforeseen circumstances increasing actual Project costs beyond the contingency fund budgeted for the Project in the Project Budget, the Parties shall follow the procedure outlined in Paragraph 2 below to reach agreement on the amount and allocation of increased costs.

(b) Within 7 days of the date this Agreement is executed by District and Conservancy, Conservancy will advance to District the sum of \$591,225, which amount is equal to the Approved Construction Costs minus \$18,065 in funds which were previously paid to the District by Conservancy for assistance on other habitat restoration projects but were not needed by District and were not spent. Conservancy will not be required to advance or pay any Project costs beyond the Approved Construction Costs unless those

additional Project costs have been approved by Conservancy in advance. If the funds advanced to District by Conservancy to cover Approved Construction Costs exceed the actual Project costs incurred by District for the Project, Conservancy and District will promptly meet and confer following completion of construction of the Project to discuss whether District shall apply such excess funds to future Conservancy-funded projects or return the funds to Conservancy.

(c) District shall use its reasonable good faith efforts to complete construction of the Project during the fall of 2011. Conservancy recognizes that circumstances outside the District's control such as early rainfall and unanticipated constructions delays could cause completion of the Project to be delayed to the 2012 dry season. District shall keep Conservancy apprised of the status of the Project throughout construction. District shall maintain an accounting of expenses incurred in constructing the Project and shall provide Conservancy with one or more reports documenting expenses incurred in constructing the Project upon completion and prior to completion of the Project upon reasonable request by Conservancy. District shall promptly notify Conservancy when construction of the Project is complete, upon which

- i. Conservancy shall have the right to inspect the Project and confirm completion of the Project in accordance with the plans and specifications approved by Conservancy, and
- ii. The Parties will determine the date the Project is complete for purposes of determining the first date of the Initial Period (as defined below).

(d) Conservancy shall be responsible for providing Project engineering and design support in a timely manner as required by the Project plans, specifications and construction schedule. Conservancy shall also provide cattle watering improvements following fencing of the main stock pond. These services and materials shall be funded by the Conservancy and are not included in the Approved Construction Costs. These responsibilities are described more particularly in Exhibit "A".

2. **Construction Management.** During Project construction, District will incur costs related to inspection of contractor's work, construction meetings and communications, and other related tasks. District has estimated that these costs will not exceed \$56,600 ("Estimated Construction

Management Costs"). The Estimated Construction Management Costs are reflected and included in the Approved Construction Costs and shall be paid by conservancy as described in Section 1 above. Should there be significant changes in the Project circumstances; District may determine that such funding is inadequate or excessive for construction management of the Project. Should this occur, Conservancy and District shall confer to reach mutual agreement on changes to the Project and/or adjusted compensation to District for changed construction management costs.

3. **Initial Management and Maintenance of Project.** During the initial five year period immediately following District's completion of construction of the Project or until Management Plan (as defined below) performance criteria are met, whichever event occurs later (the "Initial Period"), the Parties will share responsibility for management and maintenance of the Project in accordance with a management plan for the completed Project ("Management Plan") that will be developed by the Parties prior to completion of construction and will generally provide as follows:

- a. Conservancy, at Conservancy's cost and expense, shall perform certain defined maintenance and monitoring tasks and remedial measures relating specifically to the Project that are described in Exhibit "C".
- b. District shall perform day-to-day public access related land management activities, including fence maintenance, grazing management, and trash removal as needed.

A general outline of the additional components of the Management Plan, including the goals and objectives of the Project, is included in Exhibit "C" attached hereto. If not covered by an existing encroachment permit, the Conservancy and/or the contractor(s) retained by the Conservancy to perform maintenance and monitoring shall apply for an encroachment permit to enter the Property during the Initial Period for the maintenance and monitoring activities. There will be no charge for issuance of such encroachment permits.

4. **Permanent Management and Maintenance of the Project.** District and Conservancy shall meet and confer in the six month period immediately preceding the end of the Initial Period to accomplish the following:

- (a) District and Conservancy will determine the Parties' respective management and maintenance responsibilities for the Project following the Initial Period.

- (b) If, five years after District's completion of construction of the Project, the Project has not, or will not meet, the goals and objectives set forth in the Management Plan, as reasonably determined by Conservancy, Conservancy and District will determine the feasibility of undertaking additional measures mutually agreeable to Conservancy and District that are designed to improve the functionality of the Project to a level that will meet such goals and objectives. If it is not feasible to improve functionality of the Project to a level that will meet such goals and objectives, as reasonably determined by Conservancy, Conservancy and District will determine mutually agreeable measures to remove the habitat features and/or cease maintenance of the habitat features, at which time the Parties management obligations under this Agreement will terminate.
- (c) Conservancy and the District will:
 - a. Analyze all costs incurred by the Parties during the Initial Period to implement the Management Plan;
 - b. Prepare an estimate of the costs associated with management, maintenance and monitoring of the Project following the Initial Period ("Future Management Costs"); and
 - c. Determine a mutually agreeable method for Conservancy to cover such costs related to the Project following the Initial Period, which methods could include a new annual reimbursement rate, establishment of an endowment for management of the Project, and/or including Future Management Costs in an endowment or annual contribution set up for management of the entire Property and neighboring properties that are covered by the same preserve management plan.

In the unlikely event that District and Conservancy cannot reach agreement on management, maintenance and monitoring of the Project following the Initial Period then District shall be discharged of any and all obligations to manage, maintain or monitor the Project.

- (d) Conservancy shall fund all maintenance and monitoring

requirements established by regulatory permits for this project.

5. **Permits.** Conservancy shall be responsible for obtaining any local, county, state, and federal regulatory approvals and permits required to construct and maintain the Project on the Property (collectively, "Approvals"). District agrees to cooperate with Conservancy and perform any acts or execute any documents reasonably necessary to enable Conservancy to secure such approvals and permits. District may be named as applicant or co-applicant or co-permittee as the Property owner and future management agency. District will not begin construction of the Project until all required Approvals for such construction have been obtained. Conservancy shall use its reasonable good faith efforts to obtain all Approvals required for construction of the Project on or before August 1, 2011. Conservancy recognizes that failure to obtain permits before August 1, 2011 may result in project delays and/or make constructing the project in 2011 infeasible due to restrictions on construction during the rainy season (October 15 – April 14). Conservancy agrees to pay additional Project costs that may result from permit related delays.
6. **Access to Property.** Conservancy shall be authorized to access the Property, at reasonable times and upon reasonable prior notice to District. Access may be for the purpose of inspecting progress of the Project, monitoring District's compliance with this Agreement, and conducting Conservancy's obligations under this Agreement. Conservancy agrees to defend, indemnify and hold harmless District, its officers, directors and employees, for any property loss or damage and from any liability for death or injury occurring to Conservancy's employees, representatives, contractors and consultants while on District property, except when such liability results from the sole negligence or sole willful misconduct of District. District agrees to defend, indemnify and hold harmless Conservancy, its officers, directors and employees, for any property loss or damage and from any liability for death or injury occurring to District's employees, representatives, contractors and consultants while on District property, except when such liability results from the sole negligence or sole willful misconduct of Conservancy.
7. **Prevailing Wages.** Conservancy and District are aware of the requirements of California Labor Code Sections 1720 et seq and 1770 et seq, as well as California Code of Regulations, Title 8, Section 16000 et seq ("Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on public works projects. Each party shall require compliance with the Prevailing Wage Laws as applicable in any contracts for construction, inspection or maintenance of the Project. Conservancy shall defend, indemnify and

hold harmless District for any claims, liabilities, costs (including reasonable attorney's fees), penalties or interest arising out of any actual or alleged failure by the Conservancy, its agents, employees, contractors or consultants to comply with the Prevailing Wage Laws as applicable to the Project. District shall defend, indemnify and hold harmless Conservancy for any claims, liabilities, costs (including reasonable attorney's fees), penalties or interest arising out of any actual or alleged failure by the District, its agents, employees, contractors or consultants to comply with the Prevailing Wage Laws as applicable to the Project.

8. **Modification to Agreement.** This Agreement may only be modified by a writing executed by both Parties.
9. **Entire Agreement.** This Agreement contains the entire understanding of the Parties relating to the subject matter of this Agreement. Any representation or promise of the Parties relating to the work shall not be enforceable unless it is contained in this agreement.

In witness whereof, District and Conservancy have executed this Agreement, effective as of the date first above written.

EAST BAY REGIONAL PARK DISTRICT

By: _____
Name: Robert E. Doyle
Title: General Manager
Date: _____

EAST CONTRA COSTA COUNTY HABITAT CONSERVANCY

By: _____
Name: John Kopchik
Title: Executive Director
Date: _____

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EXHIBIT "A"

Upper Hess Creek Watershed Habitat Restoration Project ("Project")

The **Upper Hess Creek Watershed** Habitat Restoration Project is located in the Land Waste Management property, Concord Naval Weapons Station Preserve. It will restore/create approximately 2.47 acres of wetlands, create 0.12 acres of pond and restore approximately 489 linear feet of stream. The Project includes in-stream creek improvements for the segment of a Hess Creek tributary that traverses the property from the northwestern to southeastern boundary, including creation of pond, removal of another pond, relocation of a fire road stream crossing, restoration of wetlands surrounding the main stock pond, improvement of the spillway for the main pond, and wetland restoration/creation in the alluvial valley below the main stock pond. These improvements will improve the hydrologic function of the creek and improve habitat conditions. Work to be performed under the construction contract includes mobilization/demobilization, earthwork/grading, seeding and debris removal. Improvements to be installed include two at grade fords made of articulated concrete mat, new barbed wire fencing and new vehicle gates.

District shall provide construction inspection services for the Project and shall administer the construction contract. Conservancy shall provide construction engineering and design support services and cattle watering equipment, including the following:

1. Obtaining a grading permit from Contra Costa County.
2. Obtaining required California Department of Fish and Game permit(s).
3. Obtaining required US Army Corps of Engineers permit(s).
4. Obtaining required Central Valley Regional Water Quality Control Board permit(s).
5. Conducting pre-construction biological surveys and prior to site disturbance as necessary.
6. Conducting biological resources monitoring during construction, if such monitoring is required, and ensuring implementation of regulatory permit conditions as required.
7. Designer/Engineer support for responding to contractor requests for information (RFIs).
8. Designer/Engineer support for site layout and survey.
9. Designer/Engineer attendance at weekly field meetings or as necessary.
10. Following installation of fencing around the main stock pond: Supplying, delivering and installing cattle watering improvements at two locations – one at the north and one at the south side of the main stock pond.

EXHIBIT "B"

Project Budget	
Description	Amount
Mobilization and Demobilization	\$9,400.00
Environmentally Sensitive Area Fence	\$5,000.00
Silt/Wildlife Exclusion Fence	\$12,500.00
Debris Removal	\$6,800.00
Destruct Peizometer/Water Testing Wells	\$14,700.00
Cattle Exclusion Fencing, Gates and Access	\$68,300.00
Interlocking Concrete Block	\$22,300.00
Earthwork	\$286,000.00
Erosion Control Blanket	\$13,600.00
Habitat Features	\$17,700.00
Drill Seeding	\$19,000.00
Broadcast Seeding	\$5,300.00
SUBTOTAL BASE CONSTRUCTION	\$480,600.00
Construction contingency (15%)	\$72,090.00
ESTIMATED CONSTRUCTION MANAGEMENT COSTS (District Staff Time)	\$50,000.00
PRECONSTRUCTION DISTRICT COSTS (District Staff Time)	\$6,600.00
APPROVED CONSTRUCTION COSTS	\$609,290.00
TRANSFER OF UNPSENT FUNDS FROM SOUZA 2 (145400LHCP)	\$18,065.00
TOTAL	\$591,225.00

DRAFT

EXHIBIT "C"

Resource Management Plan Outline



H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

**UPPER HESS CREEK
RESTORATION PROJECT
RESTORATION MANAGEMENT PLAN OUTLINE**

Prepared by:

H. T. HARVEY & ASSOCIATES

Dan Stephens, B.S., Principal-in-Charge
Patrick Reynolds, M.S., Senior Restoration Ecologist
Matt Quinn, M.S., Project Manager
Charles McClain, M.S., Restoration Ecologist

Prepared for:

East Contra Costa County Habitat Conservancy
651 Pine Street, 4th Floor NW
Martinez, CA 94553

20 May 2011

Project # 2927-05



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1.0 INTRODUCTION

The East Contra Costa County Habitat Conservancy (Conservancy), in partnership with the East Bay Regional Park District (District), will implement a wetland and creek channel restoration /enhancement project within a 200.2 acre (ac) portion of the Upper Hess Creek Watershed (UHCW) (Figure 1) in Contra Costa County. The District, with support from the Conservancy, purchased the subject property from private ownership to help achieve conservation goals associated with implementing the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP or Plan: Jones & Stokes 2006). The proposed project will be the fifth wetland/riparian restoration project to be implemented as a result of the adoption of the HCP/NCCP by local, state and federal agencies.

The Upper Hess Creek Watershed property was identified as a “high priority” for acquisition in the HCP/NCCP (acquisition priority subzone 1a and 1b). The addition of this property to the HCP/NCCP preserve system helps achieve the land acquisition requirements for annual grassland, alkali wetland and streams. Implementation of the proposed restoration project helps meet the Stay Ahead provisions of the HCP/NCCP and provides a rare opportunity to restore substantial acreage of high quality wetlands. Conservancy staff worked with the East Bay Regional Park District to secure a funding package for the acquisition of this property in the winter of 2010/2011, and the property was acquired with a combination of the Conservancy’s federal grants from U.S. Fish and Wildlife Service and EBRPD Measure WW funds. EBRPD completed the acquisition in April 2011.

This restoration project was designed to support the HCP/NCCP’s biological goals and objectives. The HCP/NCCP biological goals that this project supports include the following:

- Goal 2: Maintain and enhance hydrogeomorphic and ecological function of wetlands and ponds to promote covered species, native biological diversity, and habitat heterogeneity (Chapter 5 Conservation Strategy, Table 5-1).
- Goal 3: Restore wetlands and create ponds in the Preserve System to compensate for permanent loss of these habitats (Chapter 5 Conservation Strategy, Table 5-1).
- Goal 4: Restore wetlands and create ponds in the Preserve System to contribute to recovery of covered species (Chapter 5 Conservation Strategy, Table 5-1).
- Goal 30: Maintain and enhance instream aquatic habitat for covered species and native fish (Chapter 5 Conservation Strategy, Table 5-1).
- Goal 31: Restore streams and riparian woodland/scrub (Chapter 5 Conservation Strategy, Table 5-1).

The project will be funded primarily with Conservancy grants (*e.g.*, a grant awarded to Contra Costa Water District for implementation of the East Contra Costa County Integrated Regional Water Management Plan and a grant from the California Department of Fish and Game). The project is not being funded with fees collected pursuant to issuance of state and federal permits for fill of wetlands or other waters.

This *Mitigation and Monitoring Plan* (MMP) provides a detailed description of the proposed habitat restoration within a portion of the UHCW property and includes the habitat goals and objectives and criteria that will be used to evaluate the success of the proposed restoration. It includes a description of site conditions, restoration methods and HCP/NCCP compliance requirements for a 200.2 ac portion (project area) of the UHCW property (Figure 1). The restoration project proposed for the project area addresses specific restoration- and enhancement-related objectives of the HCP/NCCP conservation strategy for wetland and creek channel habitat. This MMP also describes the species covered for incidental take under the HCP/NCCP and how those species will benefit from the restoration actions.

This MMP will be a component of a larger *Preserve Management Plan* (PMP) that is being developed for several parcels in the Pittsburg Hills area, including the UHCW property. This larger plan, called the Pittsburg Hills PMP, will document past and ongoing land management activities on the UHCW parcel, describe permitted and prohibited uses of the parcel, and prescribe short-term and long-term management actions that will be used to fulfill preserve-wide biological goals and objectives. This MMP also serves as a permit support document for the U.S. Army Corps of Engineers (USACE) permit application to fill waters of the United States pursuant to Section 404 of the Clean Water Act (CWA), a water quality certification, pursuant to Section 401 of the CWA, from the San Francisco Bay Regional Water Quality Control Board and the California Department of Fish and Game (CDFG) to impact stream channel habitat per Section 1600 of the California Fish and Game code.

Figure 1. Vicinity Map

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2.0 PERMITTING REQUIREMENTS

The following permits and authorizations will be necessary prior to initiation of restoration activities in the project area: a Streambed Alteration Agreement from the CDFG ; a permit to fill waters of the United States, pursuant to Section 404 of the CWA, from the San Francisco District of the USACE; a water quality certification, pursuant to Section 401 of the CWA, from the San Francisco Bay Regional Water Quality Control Board; a Stormwater Pollution Prevention Plan (SWPPP) to be prepared by the Contractor, approved by the District and submitted to the State Water Resources Control Board; a grading permit from the Contra Costa County Department of Conservation and Development.

2.1 RESPONSIBLE PARTIES

The site manager and property owner is the East Bay Regional Park District, 2950 Peralta Oaks Court, Oakland, CA 94605. The contact person is Brad Olson. John Kopchik and/or Abigail Fateman will serve as the contact person for the East Contra Costa County Habitat Conservancy located at 651 Pine Street, 4th Floor North Wing, Martinez, CA 94553.

This Mitigation and Monitoring Plan was prepared by H. T. Harvey & Associates, 983 University Avenue Building D, Los Gatos, CA 95032. The principal-in-charge and contact person is Dan Stephens at (408) 458-3202.

3.0 SITE CONDITIONS

3.1 SITE LOCATION

The 200.3 ac UHCW site is located north of Kirker Pass Road, west of the City of Pittsburg and east of the City of Concord (Figure 1). The project area occurs on the Clayton U.S. Geological Survey (USGS) 7.5-minute quadrangle map within Township 2 North, Range 1 West, Section 35 (Assessor's Parcel Numbers [APN] #094-130-014, 094-130-015, and 075-080-011). This MMP covers an approximately 200.2 ac portion of 496.1 ac of land purchased by the District. In the future, additional restoration actions may occur on other portions of the site.

3.2 REGIONAL SETTING

The UHCW project area is located on the north edge of the Diablo Range and west of the boundary between the Great Valley and the Coast Ranges. It is near the northern Contra Costa County border, approximately 2 miles (mi) from the town of Clayton (Figure 1). The entire parcel is designated as a high acquisition priority in the HCP/NCCP in Acquisition Analysis Zone 1c (see Figure 5-2 in the HCP/NCCP).

The project area is situated in predominately undeveloped land used for cattle grazing. The Concord Naval Weapons Station (located northwest of the UHCW parcel) encompasses approximately 13,000 ac and is undergoing transfer to the City of Concord for future non-military redevelopment, including open space (Fugro West, Inc. 2010). The properties to northwest, north and northeast are all owned by the Keller Canyon Landfill Company and currently comprise similar conditions to the project site. The property to the southeast is a small commercial woodlot that includes the downstream reach of the main drainage as it exits the project site.

The project area is in the northwest foothills/upper valley region of the HCP/NCCP planning area and within the Kirker Creek watershed. The main drainage feature on the property is an unnamed ephemeral stream (herein referred to as Upper Hess Creek) that is part of the Hess Creek subbasin and is a tributary to Kirker Creek. The Kirker Creek watershed drains northward from the Los Medanos Hills and the hills in and around Black Diamond Mines Regional Preserve into the Sacramento-San Joaquin Delta at New York Slough near Browns Island.

3.3 ACCESS

The project area is accessible from the north side of Kirker Pass Road. A gated and paved access road runs approximately 200 feet (ft) into the site before becoming unpaved.

3.4 SOILS

According to the Natural Resource Conservation Service (formerly the Soil Conservation Service) mapping, soils from 3 series, including Altamont, Pescadero and Diablo Clay underlie the survey area (Figure 2). Two phases of Altamont series, one phase of Pescadero series, and one phase of Diablo series occur on site including Altamont-Fontana complex, 30 to 50 percent slopes, Altamont-Fontana complex 50 to 75 percent slopes, Pescadero clay, loam strongly alkali

and Diablo clay 30 to 50 percent slopes. The Altamont soils are underlain by soft, fine-grained sandstone and shale, are well drained, and are typically neutral to moderately alkaline in the upper horizons and moderately alkaline in lower horizons (SCS 1977). The Pescadero soils consist of soils that formed in alluvium from sedimentary rock. These soils occur in small inland valleys and on rims of basins. The substratum is moderately alkaline and very strongly alkaline sandy clay loam with slow permeability. The Diablo clay soils include well drained soils derived from weathered sandstone and shale (SCS 1977). The Pescadero clay loam, strongly alkali soils are listed as hydric soils on the California State Hydric List and the Contra Costa County Hydric Soils List (SCS 1991).

A detailed soils investigation was conducted at the site as part of the hydrologic modeling completed by Balance Hydrologics Inc. to determine the suitability of the site's soils for the proposed habitat restoration (Appendix A). The soils investigation described in Appendix A shows that the in situ sites soils in areas mapped as Pescadero clay loam are actually dominated by landslide/mudflow material which are generally too coarse to hold enough water for the desired wetland conditions and as a result it was determined that higher clay content soils harvested from other areas on the property would need to be used to restore/create the target wetland hydrology.

3.5 VEGETATION/LAND COVER

The 200.2 ac project area currently contains 8 cover types per the land cover mapping prepared for the HCP: alkali grassland, alkali wetland, annual grassland, creek or drainage, oak woodland, pond, seasonal wetland, and permanent wetland.

Alkali grassland occurs on the lower two thirds of the main Upper Hess Creek drainage at the interface between the non-native grassland and existing alkali wetland habitat. The alkali grassland is dominated by saltgrass (*Distichlis spicata*) and wild barley (*Hordeum* spp.). Alkali wetlands were identified along the west bank of the main drainage upstream of the main stock pond as described below. These wetlands are supported by an in channel seep that provides a year-round source of water. Dominant wetland vegetation includes saltgrass, Baltic rush (*Juncus balticus*), American rush (*Scirpus americanus*), rabbitsfoot grass (*Polypogon monspeliensis*), water cress (*Rorippa nasturtium-aquaticum*) and brass buttons (*Cotula coronopifolia*) (H. T. Harvey & Associates 2011).

The main Upper Hess Creek channel in the project area is characterized by a shallow gradient with little surface flow in many sections. It is fed by groundwater and several ephemeral tributaries and swales. The channel is incised on the western two-thirds of the property. The banks are vegetated with annual grasses and forbs with saltgrass in some areas. The drainage and its banks are unvegetated in areas where channel incision and cattle utilization is high. The remaining eastern portion of the drainage below the stock pond is relatively flat and bound within more gradual banks for nearly 400 ft before the terrain opens into a broader alluvial valley with no defined channel. The drainage reappears as two incised channels nearly 500 ft down slope before reaching the eastern parcel boundary.

Non-native and/or naturalized plant species dominate the annual grassland in the project area. Dominant grasses are wild oats (*Avena* spp.), ripgut brome (*Bromus diandrus*), barley (*Hordeum*

Figure 2. Soils Map

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spp.), Italian ryegrass (*Lolium multiflorum*), fescues (*Vulpia* spp.), black mustard (*Brassica nigra*), cranesbill (*Geranium* spp.), and white-stem filaree (*Erodium moschatum*), among others (Sycamore Associates 1995). Stands of potentially noxious milk thistle (*Silybum marianum*) occur within the grassland. Groundcover in the annual grassland is generally 90 to 100 percent, with less cover occurring on unpaved roads and cattle crossings. Several species of native forbs and grasses are scattered throughout the grassland.

Oak woodland occurs on the northwest boundary of the project site along the central drainage. This community is defined in the HCP/NCCP as grassland with a tree canopy cover of more than 10 percent. Tree species within the project area include valley oak (*Quercus lobata*) and California buckeye (*Aesculus californica*).

One near-perennial livestock pond is present in the project area. It appears to be formed by water collecting from an in-channel seep located upstream of the pond. This water is held by an earthen dam.

Several potentially jurisdictional wetland areas are located in the vicinity of the in-channel seep upstream of the main livestock pond and within a portion of the drainage immediately downstream of the pond. The vegetation within these depressional alkali wetlands is dominated by hydrophytic plant species including Baltic rush, Italian ryegrass (*Lolium multiflorum*), barley (*Hordeum* spp.) and saltgrass.

3.6 COVERED SPECIES HABITAT VALUE

The UHCW project area supports the following wildlife habitat types — alkali grassland, alkali wetland, freshwater emergent wetland, seasonal wetland, oak woodland, and annual grassland as observed during the wetland delineation completed in January 2011. Wildlife species detected during the January 2011 wildlife survey conducted by H. T. Harvey & Associates included the California red-legged frog (*Rana draytonii*), Pacific chorus frog (*Pseudacris regilla*), southern alligator lizard (*Elgaria multicarinata*), American kestrel (*Falco sparverius*), red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), killdeer (*Charadrius vociferous*), European starling (*Sturnus vulgaris*), northern flicker (*Colaptes auratus*), acorn woodpecker (*Melanerpes formicivorus*), common raven (*Corvus corax*), western scrub-jay (*Aphelocoma californica*), black phoebe (*Sayornis nigricans*), mountain bluebird (*Sialia currucoides*), northern mockingbird (*Mimus polyglottos*), American pipit (*Anthus rubescens*), horned lark (*Eremophila alpestris*), oak titmouse (*Baeolophus inornatus*), white-breasted nuthatch (*Sitta carolinensis*), ruby-crowned kinglet (*Regulus calendula*), yellow-rumped warbler (*Dendroica coronata*), red-winged blackbird (*Agelaius phoeniceus*), tricolored blackbird (*Agelaius tricolor*), Brewer's blackbird (*Euphagus cyanocephalus*), western meadowlark (*Sturnella neglecta*), lesser goldfinch (*Spinus psaltria*), Botta's pocket gopher (*Thomomys bottae*), and California ground squirrel (*Spermophilus beecheyi*). Additionally, red fox (*Vulpes vulpes*) or gray fox (*Urocyon cinereoargenteus*) tracks were detected in the mud near the seep, and a road-killed American badger (*Taxidea taxus*) was observed along the median barrier of Kirker Pass Road across from the project site.

Based on field surveys and habitat distribution models in the HCP/NCCP, existing habitats in the study area are capable of supporting the following species covered in the HCP/NCCP: the

California tiger salamander (*Ambystoma californiense*), California red-legged frog, western pond turtle (*Clemmys marmorata*) golden eagle (*Aquila chrysaetos*), western burrowing owl (*Athene cunicularia*), and tricolored blackbird. Habitats on the site are also consistent with those used by the San Joaquin kit fox (*Vulpes macrotis mutica*), though this species has not been recorded as far northwest as the project site.

The main stock pond retains water year-round in most years, and no bullfrogs (*Lithobates catesbeiana*) or fish were observed in the pond during special-status amphibian surveys in 1995 (Sycamore Associates 1995) or during the January 2011 wildlife survey conducted by H. T. Harvey & Associates. Provided that bullfrogs and other predators are absent, the pond provides suitable California tiger salamander breeding habitat for the minimum 10 weeks required for successful reproduction (Feaver 1971). The annual grassland habitats and associated pocket gopher and ground squirrel burrows throughout the study area provide upland habitat for this species. However, it appears that ground squirrel poisoning by previous landowners has limited the abundance of squirrels and burrows. California tiger salamanders have been documented at several locations near the study area, with approximately 20 records falling between 0.29 and 5.00 mi from the site (CNDDDB 2011).

At least 12 California red-legged frogs were observed in the main Upper Hess Creek drainage just upstream of the main livestock pond during the wildlife survey in January 2011, and both juveniles and adults were documented on the site during a wildlife survey in 1995 (Sycamore Associates 1995), indicating a persistent population within the main drainage. The main livestock pond provides suitable breeding habitat provided that bullfrogs and other predators are absent, while the surrounding grasslands and open oak woodlands provide suitable non-breeding habitat.

The main livestock pond in the study area also provides potential dispersal habitat for western pond turtles, and most of the main drainage is mapped by the East Contra Costa County HCP/NCCP as suitable dispersal habitat for the species. Pond turtles have not been documented on the project site, and the ephemeral nature of the drainages within the project area limit the potential for turtles to disperse to the site from other locations. However, the HCP/NCCP documents some occurrences to the east of the study area, although these are separated from the site by several ridges; thus there is some potential that occasional individuals could make their way onto the project site.

The annual grasslands provide suitable foraging habitat for golden eagles, and the larger oaks on the north-facing slopes within the study area offer potentially suitable nesting substrate. Golden eagles have been observed foraging throughout the project vicinity, and have been documented nesting in low numbers in Contra Costa County (Glover 2009).

The moderately grazed grasslands throughout the study area comprise potential breeding habitat for burrowing owls. Ground squirrel burrows, present sporadically across the property, are preferred by burrowing owls for roosting and nesting. Burrowing owls have been documented in the project vicinity on multiple occasions, with approximately seven records falling between 1.5 and 5 mi from the study area (CNDDDB 2011).

The study area offers suitable foraging habitat for tricolored blackbirds, and is within habitat mapped as primary foraging habitat in the East Contra Costa County HCP/NCCP. A mixed flock of blackbirds that included tricolored blackbirds was observed foraging in the study area during the January 2011 wildlife survey conducted by H. T. Harvey & Associates. The parcel does not provide suitable breeding habitat for this colonially nesting species.

The project area is mapped as suitable core or low-use habitat for the San Joaquin kit fox in the East Contra Costa County HCP/NCCP, and supports suitable denning, foraging, and dispersing habitat for the San Joaquin kit fox. Scattered California ground squirrel burrow complexes are present on the parcel, providing a prey base as well as burrow systems that could be enlarged by foxes for use as denning sites. Kit foxes have been observed on rare occasions to the east and southeast of the study area, and two observations have been recorded 3 – 5 mi to the east (CNDDDB 2011). However, kit foxes have never been documented to occur as far northwest as the project site, and thus there is no evidence that they are present here.

The project area provides potentially suitable habitat for 6 plant species covered in the HCP: big tarplant (*Blepharizonia plumosa*), round-leaved filaree (*California macrophylla*), showy madia (*Madia radiata*), Contra Costa goldfields (*Lasthenia conjugens*), milkvetch (*Astragalus tener* ssp. *tener*) and adobe navarretia (*Navarretia nigelliformis* ssp. *nigelliformis*). On April 15, 18, and May 6, 2011 Nomad Ecology conducted focused botanical surveys for April and May blooming species within the footprint of restoration construction. None of these species were observed nor were any other CNPS listed plant species. The only remaining potentially occurring species is big tarplant which typically blooms in September. Construction is expected to begin in August. To accommodate the project's schedule, reference populations of big tarplant in Contra Costa County will be visited in July to examine its condition to see if surveys for this species are feasible in July based on this year's weather patterns. If surveys confirm presence, any areas supporting big tarplant will have all avoidance and minimization measures, as outlined in the HCP/NCCP, implemented.

3.7 TOPOGRAPHY AND HYDROLOGY

The project area consists of hill-and-valley terrain, ranging in elevation from approximately 500 ft in its lowlands to 1300 ft in the steeply sloping hills and ridges to the northwest. No traditional navigable waters exist on the site. The main drainage feature on the property (Upper Hess Creek) is an unnamed ephemeral stream that is part of the Hess Creek subbasin and is a tributary to Kirker Creek. The Kirker Creek watershed drains northward from the Los Medanos Hills and the hills in and around Black Diamond Mines Regional Preserve into the Sacramento-San Joaquin Delta at New York Slough near Browns Island.

Average annual precipitation within the study area region is approximately 17.5 inches (Balance Hydrologics, Appendix B).

The hydrology within the project area is largely driven by groundwater in summer and early winter. Once the soils reach field capacity, a combination of groundwater and surface water then drive the system. Appendix B provides a summary memo of the water balance model prepared by Balance Hydrologics Inc. The memo addresses the hydrologic sufficiency of the site to support the target wetland restoration efforts.

The upper reaches of Upper Hess Creek have a defined channel and support ephemeral flows. In the upper reach is a small instream stockpond that holds water for brief periods after rainfall, and midway down the drainage there is a larger near-perennial stockpond. Based on a review of historical aerial photos, this main livestock pond appears to have been installed sometime between 1980 and 1993. The majority of water in the livestock pond is permanently impounded; however some of this water percolates downward through the soil profile beneath an alluvial valley and resurfaces in the lower reach of the ephemeral drainage. Below the main stockpond the valley lacks a defined channel and presents a broad floodplain that is fairly inactive except during very large storm events when water sheets across its surface.

3.8 WATER QUALITY

The project area has been heavily grazed and subjected to historic landslides, resulting in highly eroded stream banks, sedimentation, and reduced water quality. Water in the main livestock pond tends to be highly turbid, primarily due to unrestricted access by grazing animals. Water quality is expected to improve with the proposed fencing of the stock pond, habitat restoration, and management of grazing.

3.9 JURISDICTIONAL AREAS

H. T. Harvey & Associates conducted a delineation of waters of the United States, including wetlands, for the project area (H. T. Harvey & Associates 2011). In summary, a total of 2.12 ac, including 0.79 ac of alkali wetlands and 1.33 ac of other waters of the United States, were delineated in the project area. Table 1 summarizes the type of features in the project area and the preliminary jurisdictional status of each.

Table 1. Summary of Potential Jurisdictional Waters in the UHCW Study Area

POTENTIAL JURISDICTIONAL WATERS	ACRES
Section 404 Wetlands	
Alkali Wetlands	0.79
Section 404 Other Waters	
Ephemeral Drainage Channels and Livestock Ponds	1.33
Total of Jurisdictional Waters	2.12
Upland	198.00
Total Area Surveyed	200.23

3.10 AQUATIC FUNCTIONS

The main Upper Hess Creek drainage is an unnamed tributary to Hess/Kirker Creek. The drainage supports annual grassland, oak woodland, and wetland habitats as well as 2 stock ponds. The upper stock pond holds water during the wettest times of the year before drying out in the spring. The lower stock pond is fed year-round by an in-channel seep. This seep is likely an important source of water for wildlife and may contribute to nutrient cycling via mineral deposition. Both stock ponds lack vegetation and therefore contribute little to water quality improvement; however they likely function at a low to moderate level for flood storage and groundwater recharge. The upper stockpond likely does not provide breeding habitat for

California red-legged frog and California tiger salamander, except in the wettest years, but the lower main stockpond provides breeding habitat in most years. Both provide, at least for periods of time, aquatic habitat for resident and dispersing frogs and salamanders.

Parts of the main Upper Hess Creek drainage are incised including upstream of the main livestock pond and 2 bifurcated headcut channels in the lowest portion of the site approaching the eastern property boundary. Water from the lower stock pond percolates beneath an earthen dam and contributes to subsurface flows that support an alkali wetland. The wetland captures sediment and slows surface and subsurface water during storm events. This area gives way to an alluvial valley that lacks a defined channel as well as the hydrology necessary to produce conditions of prolonged soil saturation and inundation characteristic of jurisdictional wetlands.

4.0 JURISDICTIONAL AREA IMPACTS

Restoration within the proposed project site would temporarily impact existing jurisdictional areas. Figure 3 shows the location of project impacts on site. Table 2 below summarizes project impacts and shows the total net increase in jurisdictional areas following project completion.

Table 2. Habitat Impacts and Restoration/Creation¹

Habitat Type	Existing (Acres)	Permanent Impacts (filled) (Acres)	Temporary Impacts (Acres)	Restoration and/or Creation (Acres)	Total after Restoration (Acres)	Net Increase (Acres)
Wetlands	0.79	0.00	0.12	2.47	3.26	2.47
Other Waters ²	1.33	0.15	0.33	0.01	1.19	-0.14 ³
Total	2.12	0.15	0.45	2.48	4.45	2.33
Stream Channel	7944 (ln ft)	391 (ln ft)	1194 (ln ft)	489 (ln ft)	8042 (ln ft)	98 (ln ft)

¹ All impacts covered in this table are based on wetlands and other waters as delineated in the attached wetland delineation report and represent impacts to waters of the U.S/State.
² Other waters includes channel and open water pond habitats
³ The net loss is actually conversion of other waters to wetland

Figure 3. Other Water and Wetland Impacts

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5.0 RESTORATION

5.1 RESTORED ALKALI WETLANDS, CALIFORNIA TIGER SALAMANDER POND AND CREEK CHANNEL HABITAT

The UHCW restoration design includes several habitat types. It will involve the removal of ranch debris across the site including tires, concrete rubble, metal barrels and other materials, creation of a California tiger salamander (CTS) breeding pond, removal of a failing ranch road crossing followed by channel restoration, wetland restoration around the main stock pond, and alkali wetland restoration. Detailed plans for the restoration areas are provided in Appendix C.

Table 3 provides a summary of the habitat restoration proposed by acreage and linear feet of restored stream channel. Descriptions of each of the habitat restoration areas proposed are described below and detailed designs are provided in Appendix C.

Table 3. Habitat Restoration Proposed Per Site and Habitat Type

Restoration Site Name	Alkali Wetlands (acres)	Other Waters (acres)	Breeding Pond Wetted (acres)	Channel Restoration (ln ft)
CTS Breeding Pond		0.005	0.12	114
Upper Stock Pond		0.001		258
Channel Restoration	0.05			117
Main Stock Pond	0.10	0.002		
Alluvial Valley	2.32			
Total	2.47	0.009	0.12	489

5.1.1 CTS Breeding Pond

A 0.12 ac CTS breeding pond will be created in the western portion of the project area in an upper reach of the central ephemeral drainage (Appendix C, Sheets L2.0 and L5.0). The pond is designed to provide breeding habitat for CTS during moderately dry to wet years (pond is predicted to fill and spill in 88% of years). The pond is designed to have a maximum average depth of 5.25 ft (within a deeper sub zone established in the pond) with an estimated average depth of approximately 3.00 (areas outside of subzones). Once the pond reaches capacity water will exit the pond via a gentle swale that will be seeded with native herbaceous species and covered with biodegradable erosion control blankets to assist with erosion control prior to vegetation establishment. The hydrologic model predicts that the pond will dry in August in most years and will dry by October in all years modeled (Appendix B).

5.1.2 Upper Stock Pond

The Upper Stock Pond Restoration site (Appendix C, Sheets L2.0 and L5.2) will involve the removal of an instream stock pond followed by the restoration of the former stream channel through the pond. The channel restoration will be approximately 257 ft in length and will involve returning the channel to the form exhibited above and below the existing stock pond.

Following grading, the restored area will be seeded with native herbaceous species mix and an erosion control blanket will be placed over the restored channel to assist with erosion control prior to vegetation establishment.

5.1.3 Channel Restoration

The Channel Restoration site (Appendix C, Sheets L2.0 and L5.5) will consist of removing fill and a culvert from within the main drainage ranch road crossing area and restoring the channel to conform to the dimensions above and below the restoration area. The restoration will include placement of buried rock grade control, seeding with native herbaceous species and placement of biodegradable erosion control blankets over the seeded channel to aid in controlling erosion prior to vegetation establishment.

5.1.4 Main Stock Pond

The Main Stock Pond area will be enhanced through removal of debris and fill around the stock pond, creation of wetland terraces around the edges of the pond, placement of rock perches and coarse woody debris to improve red-legged frog habitat and enhancement/stabilization of an existing outlet spillway/swale at a slightly lower elevation than the existing outlet pipe. The grading will remove many of the abrupt transitions currently present so the pond fits into the landscape better and has a more natural appearance. The enhanced/stabilized outlet spillway/swale will consist of a section of interlocking concrete blocks at the spillway crest to ensure long-term stability. All graded areas will be seeded with a native herbaceous seed mix and biodegradable erosion control blanket will be placed over the seeded sections of the outlet spillway/swale, downslope of the interlocking concrete blocks, to aid in erosion control. Areas within targeted wetland habitat will be seeded with a native wetland seed mix. Once restored, livestock will be excluded from the pond and there will be a net gain of approximately 0.10 ac of wetland habitat around the pond. Appendix C, Sheets L5.4-L5.6 show the grading plans for this area.

5.1.5 Alluvial Valley

The alluvial valley restoration area is the primary restoration proposed on site. It will occur along a reach of the Upper Hess Creek valley that currently has no defined channel and has very limited USACE jurisdictional areas due to lack of wetland hydrology. Exploratory trenching throughout the valley, conducted by Balance Hydrologics and H. T. Harvey & Associates in February 2011, showed that there are sub-surface, water-bearing soil horizons near the upstream end of the valley (Appendix A). However, this water appears to quickly dive as the flows exit the more confined, wetland dominated reach immediately below the stock pond and enter the much broader valley reach. The soil profile within the valley includes approximately 4-5 ft of alluvium, overlying 6-7 ft of old landslide debris flow and heavy clay at a depth of approximately 12 ft (Appendix A). This alluvium does not include any soil horizons capable of perching shallow groundwater. Therefore, the project design targets restoring conditions suitable to provide sustained soil saturation at or near the surface for a sufficient time to support alkali wetland habitat.

Approximately 18 inches of clay soil will be harvested from an on site borrow area (Appendix C, Sheet L2.0) to establish a soil horizon capable of perching seasonal groundwater. The valley bottom will first be excavated down approximately 30 inches. The top 18 inches of topsoil will be stockpiled separately to preserve the limited existing wetland vegetation root masses and seed bank. The subsoil excavated from 18-30 inches (12 inches total) will be stockpiled separately to be replaced prior to topsoil. The salvaged clay material will be placed across the entire valley bottom at a depth of 18 inches. Shallow clay groundwater cut-off walls will then be strategically located across the valley. These cut-off walls will be placed on top of the clay layer and will create subterranean cells throughout the valley. The salvaged 18 inches of topsoil and 12 inches of subsoil will then be replaced throughout the valley bottom.

Following placement of topsoil a series of micro-topographic depressions and mounds will be graded to add habitat complexity to the wetlands. In addition, the lowest portion of the valley where parallel headcut channels occur across last approximately 350 ft of the valley before the property boundary will be stabilized. The northeast channel will be filled as part of the wetland restoration grading and the southwest channel restored to a stable channel configuration with a series of step pools. Although rock will be placed to construct the pools and associated weirs, the entire restored channel will be covered with topsoil salvaged from the alluvial valley to provide a growing medium sufficient to support herbaceous vegetation. It is anticipated that a portion of each of the step pools and the channel may support new wetland habitat, although this area has not been claimed as part of the wetland habitat restoration. In addition, sonotubes will be installed in the rock during construction to allow for the installation of native willow cuttings in an attempt to establish willow riparian habitat. The willows would be installed to provide a biotechnical stability element to the restoration. Although willows do occur downstream of the restoration reach, it is recognized that the site may be too dry and too saline to support willow riparian habitat in the long-term. Thus, this restoration component is considered to be a habitat enhancement measure and no creation credits will be claimed. Appendix C, Sheets L5.7 and L5.10 include the preliminary grading plans for this area.

Once graded, the entire site will be seeded with a native grass seed mix, which, along with the harvested and replaced topsoil, will assist with the establishment of the target wetland vegetation. This wetland restoration area will result in the restoration of approximately 2.32 ac of alkali wetlands.

5.2 RESTORED HABITAT AQUATIC FUNCTIONS AND VALUES

The proposed project consists of restoring/creating approximately 2.47 ac of alkali wetlands, 0.12 ac of CTS breeding habitat, and 489 ln ft of stream channel. The aquatic functions and values of wetlands and other waters of the United States will be significantly enhanced through implementation of the proposed restoration. Restoration/creation of wetlands in the project area will increase water and sediment storage, and provide flood attenuation benefits to unstable stream channels downstream. The restoration will also increase the functions and values of the onsite wetlands as wildlife habitat, including habitat for the federally listed California red-legged frog and the state and federally-listed California tiger salamander. These restoration actions will contribute to the recovery of these threatened species.

5.3 RESTORATION GOALS AND OBJECTIVES

The restoration goals and objectives for the project area are based upon the biological goals and objectives established for the HCP/NCCP (Table 5-1 of the HCP/NCCP). Biological goals and objectives relevant to restoration on the UHCW site are provided in Table 4 below. Table 4 also defines the site-specific restoration objectives for the UHCW site, based upon each relevant HCP/NCCP objective. The HCP/NCCP objectives describe the desired outcome for the HCP/NCCP as a whole, whereas the site-specific restoration objectives describe the desired restoration outcome for the UHCW site. Table 4 also lists the Covered Species that may be benefited, and restoration measures that will be implemented to achieve each of the site-specific restoration objectives. Performance criteria for each of these objectives are described in the Monitoring section of this MMP.

Table 4. HCP/NCCP Biological Goals and Objectives, Site-specific Restoration Objectives and Site-specific Restoration Measures

HCP/NCCP Goals and Objectives	UHCW Site-specific Restoration Objectives	Covered Species Benefited	Site-specific Restoration Measures
Wetlands (and Other Aquatic) Biological Goals and Objectives			
Goal 2: Maintain and enhance hydrogeomorphic and ecological function of wetlands and ponds to promote covered species, native biological diversity, and habitat heterogeneity.			
Objective 2.1. Maintain or increase native emergent vegetation where appropriate.	SO-1. Increase the abundance and distribution of native wetland vegetation in the project area.	California tiger salamander, California red-legged frog	Create and restore wetlands onsite. Establish native wetland vegetation where appropriate in created and restored wetlands and drainages.
Objective 2.2. Reduce sediment deposition and transport where appropriate.	SO-2. Reduce erosion along the tributary to Hess/Kirker Creek.	California red-legged frog	Increase onsite water retention, create stable vernal alkali wetland complex, reduce grazing within wetlands.
Objective 2.3. Maintain or increase wetland and pond capacity and water duration as appropriate.	SO-3. Increase wetland and pond capacity and water duration in the project area.	California tiger salamander, California red-legged frog	Construct California tiger salamander breeding pond, create stable alkali wetland complex.
Objective 2.4. Maintain or increase flows to and connectivity among wetlands and wetland complexes as appropriate.	SO-4. Hydrologically connect Upper Hess Creek from the main stock pond to channel at property boundary.	California red-legged frog	Connect the lower stock pond outflows to channel at property boundary via the proposed alluvial valley alkali wetland restoration.
Objective 2.6. Eliminate or reduce exotic plants.	SO-5. Reduce non-native plant species in the project area wetlands.	6 covered plant species with potential to occur on site and golden eagle and burrowing owl (foraging habitat improvements).	Vegetate newly restored areas with native species and implement invasive plant control measures.

HCP/NCCP Goals and Objectives	UHCW Site-specific Restoration Objectives	Covered Species Benefited	Site-specific Restoration Measures
Goal 3: Restore wetlands and create ponds in Preserve System to compensate for permanent loss of these habitats.			
Objective 3.2. Restore alkali wetlands in-kind at a ratio of 2:1 of wetted ac (estimated to be 64 ac of alkali wetland complex with the maximum urban development area).	SO-6. Restore approximately 2.32 ac of alkali wetlands in the project area.	California red-legged frog	Create alkali wetland complex on site.
Objective 3.4. Create ponds in-kind at a ratio of 1:1 (estimated to be 8 ac with the maximum urban development area) to support California tiger salamander, California red-legged frog, and/or western pond turtle.	SO-7. Create an approximately 0.12 ac California tiger salamander breeding pond; enhance existing main stock pond.	California tiger salamander, California red-legged frog	Construct California tiger salamander breeding pond in upper tributary, and improve main stock pond conditions.
Goal 4: Restore wetlands and create ponds in the Preserve System to contribute to the recovery of covered species.			
Objective 4.2. Restore 5 wetted ac of alkali wetlands.	SO-8. Restore approximately 2.32 ac of alkali wetlands.	California red-legged frog	Create alkali wetland complex on site.
Objective 4.4. Create 8 ac of ponds to support California tiger salamander, California red-legged frog, and/or western pond turtle.	SO-9. Create an approximately 0.12 ac California tiger salamander breeding pond in upper tributary; enhance existing main stock pond.	California tiger salamander, California red-legged frog	Construct California tiger salamander breeding pond in upper tributary, and improve main stock pond conditions.
Goal 30: Maintain and enhance instream aquatic habitat for covered species and native fish.			
Objective 30.6. Improve stream flow and connectivity for native aquatic wildlife	SO-10. Restore 489 linear feet of stream channel and hydrologically connect Upper Hess Creek from the main stock pond to channel at property boundary.	California tiger salamander, California red-legged frog	Remove existing dam at upper stock pond and existing road crossing. Connect the lower stock pond outflows to channel at property boundary via the proposed alluvial valley alkali wetland restoration.
Goal 31: Restore streams and riparian woodland/scrub			
Objective 31.3. Restore species richness and diversity, vegetative cover, wildlife habitat function and hydrologic function	SO-11. Create 0.12 ac California tiger salamander pond, enhance existing main pond, restore 489 linear feet of channel, restore	California tiger salamander, California red-legged frog	Construct California tiger salamander breeding pond in upper tributary, and improve main stock pond conditions. Remove existing dam at upper

HCP/NCCP Goals and Objectives	UHCW Site-specific Restoration Objectives	Covered Species Benefited	Site-specific Restoration Measures
	approximately 2.32 ac of alkali wetlands.		stock pond and existing road crossing. Connect the lower stock pond outflows to channel at property boundary via the proposed alluvial valley alkali wetland restoration.

6.0 SITE PREPARATION

Prior to the start of construction activities, environmentally sensitive areas (ESA) will be fenced to protect them from encroachment by heavy equipment. In addition, wildlife exclusion fencing will be installed and maintained to prevent California red-legged frog and CTS from inadvertently entering the construction areas. Appendix C, Sheets L3.0 and L3.1 shows details regarding the ESA and wildlife exclusion fencing designs and locations.

6.1 CONSTRUCTION MONITORING

A restoration biologist/ecologist and/or approved construction monitor will be onsite during construction in all areas that support existing wetland habitat or potential habitat for any special-status species as required, pursuant to the pre-construction surveys and construction monitoring provisions described in Section 7 below. At a minimum, the restoration biologist/ecologist will have demonstrated expertise in restoration ecology and at least 3 years experience in restoration design and implementation.

6.2 GRADING

Grading for each of the five restoration sites that require grading varies substantially, as each site is unique. A substantial component of the grading for the CTS pond and alkali wetlands involves placement of a clay layer harvested on site to reduce soil infiltration and establish the target wetland hydrologic conditions. Grading at the upper stock pond, main stock pond and channel restoration area is designed primarily to modify existing topography to allow for the restoration of stream channels, increase wetland acreage and create more natural topography that better blends into the landscape. The majority of the grading on site will occur at the alluvial valley restoration area and is described in detail in Section 5.1.5 above. In addition, the construction plans provided in Appendix C show the grading proposed.

6.3 SEEDING

6.3.1 Nature and Source of Propagules

The plant propagules utilized on site shall be of Contra Costa County origin, when available. If a particular species is not available from Contra Costa County, available seed stock from adjacent counties may be substituted upon approval by a restoration professional familiar with the restoration site conditions and the conditions present at the alternate propagule collection sites.

6.4 SEEDING PLAN

Vegetation establishment will occur via harvested and replaced topsoil followed by active seeding. Two seed mixes have been developed for the project. In upland areas and areas that transition from uplands to wetlands a native transition seed mix will be used (Table 5). Within wetland restoration areas, a native wetland seed mix will be used (Table 6).

In the restoration areas that are relatively small and have irregular topography including the CTS pond, upper stock pond, channel restoration and the main stock pond, the seed will be applied via

hand broadcast. In the larger and flatter locations including the alkali wetlands/alluvial valley, clay borrow area, and temporary access and staging areas, the seed will be applied via drill seed.

Table 5. Native Transition Seed Mix

Scientific Name	Common Name	Pounds Of Pure Live Seed/Acre
<i>Achillea millefolium</i>	Yarrow	1
<i>Bromus carinatus</i>	California brome	12
<i>Elymus glaucus</i>	blue wild rye	12
<i>Hordeum brachyantherum</i> var. <i>Salt</i>	meadow barley	6
<i>Nassella pulchra</i>	purple needlegrass	6
<i>Vulpia microstachys</i>	small fescue / three-weeks fescue	10

Table 6. Wetland Seed Mix

Scientific Name	Common Name	Pounds of Pure Live Seed/Acre
<i>Elymus glaucus</i>	blue wild rye	8
<i>Festuca rubra</i>	molate red fescue	10
<i>Hordeum brachyantherum</i> var. <i>Salt</i>	meadow barley	20
<i>Hordeum depressum</i>	dwarf barley	10
<i>Vulpia microstachys</i>	small fescue / three-weeks fescue	8

7.0 AVOIDANCE AND MINIMIZATION MEASURES

Measures will be implemented to avoid and minimize impacts to HCP/NCCP Covered Species and their habitat, and to wetlands and drainages during restoration related activities. Some of these measures are conditions of the HCP/NCCP, while others are required to comply with the Clean Water Act and California Fish and Game Code.

7.1 COVERED SPECIES AVOIDANCE AND MINIMIZATION MEASURES

Section 6.4.3 of the HCP/NCCP provides measures for avoiding and minimizing project related impacts to Covered Species. The preconstruction surveys and construction monitoring requirements necessary to avoid and minimize impacts are summarized in Table 6-1 of the HCP/NCCP. The proposed restoration activities will take place in suitable habitat for five of the species listed in Table 6-1 of the HCP/NCCP: California tiger salamander, California red-legged frog, San Joaquin kit fox, golden eagle and western burrowing owl. The required preconstruction surveys, avoidance and minimization measures, and construction monitoring for these species are described below.

7.1.1 California Tiger Salamander and California Red-legged Frog

The HCP/NCCP requires written notification to USFWS, CDFG, and the Implementing Entity, including photos and habitat assessment, prior to disturbance of any suitable breeding habitat. The project proponent will also notify these parties of the approximate date of removal of the breeding habitat at least 30 days prior to this removal to allow USFWS or CDFG staff to translocate individuals, if requested. USFWS or CDFG must notify the project proponent of their intent to translocate California tiger salamanders and/or California red-legged frogs within 14 days of receiving notice from the project proponent. The applicant must allow USFWS or CDFG access to the site prior to construction if they request it.

The HCP/NCCP includes no restrictions on the nature of the disturbance or the date of the disturbance unless CDFG or USFWS notify the project proponent of their intent to translocate individuals within the required time period. In this case, the project proponent must coordinate the timing of disturbance of the breeding habitat to allow USFWS or CDFG to translocate the individuals. USFWS and CDFG shall be allowed 45 days to translocate individuals from the date the first written notification was submitted by the project proponent (or a longer period agreed to by the project proponent, USFWS, and CDFG).

However, in an effort to further ensure protection of California tiger salamanders and California red-legged frogs during construction, the project proponent has required that the contractor install wildlife exclusion fencing at appropriate locations. This will ensure that construction is restricted to the intended work area, will protect existing wetland habitat, and will inhibit associated wildlife, including the California tiger salamander, from entering construction areas. Installation of wildlife exclusion fencing and all construction activities in areas that may support California tiger salamanders shall be completed under the direction of a USFWS and CDFG approved biologist. The wildlife exclusion fencing shall be installed by hand and the use of heavy equipment shall not be allowed. Any California tiger salamanders encountered during

wildlife exclusion fence installation and/or active construction will be translocated by an approved biologist to the main wetland/stock pond area, which will be protected/enclosed by the wildlife exclusion fencing. Appendix C, Sheet L3.0 includes the location of the wildlife exclusion fencing and translocation area.

7.1.2 San Joaquin Kit Fox

The project area is mapped as suitable core or low-use habitat for the San Joaquin kit fox in the East Contra Costa County HCP/NCCP, and supports ostensibly suitable denning, foraging, and dispersing habitat for the San Joaquin kit fox. During surveys conducted by H. T. Harvey & Associates in January 2011, scattered California ground squirrel burrow complexes were observed on the project site providing a prey base as well as burrow systems that could be enlarged by foxes for use as denning sites. Kit foxes have been observed on rare occasions to the east and southeast of the study area, and two observations have been recorded 3 – 5 mi to the east (CNDDDB 2011). However, kit foxes have never been documented to occur as far northwest as the project site, and thus there is no evidence that they are present here. Nonetheless, the East Contra Costa Conservancy has elected to take a conservative approach and follow all required avoidance and minimization measures specified in the HCP/NCCP for this species. The following sections copy the required measures from the HCP/NCCP (pages 6-37, 6-38).

7.1.2.1 Preconstruction Survey

Prior to any ground disturbance related to covered activities, a USFWS/CDFG– approved biologist will conduct a preconstruction survey in areas identified in the planning surveys as supporting suitable breeding or denning habitat for San Joaquin kit fox. The surveys will establish the presence or absence of San Joaquin kit foxes and/or suitable dens and evaluate use by kit foxes in accordance with USFWS survey guidelines (U.S. Fish and Wildlife Service 1999).

Preconstruction surveys will be conducted within 30 days of ground disturbance. The biologist will survey the proposed disturbance footprint and a 250-foot radius from the perimeter of the proposed footprint to identify San Joaquin kit foxes and/or suitable dens. Adjacent parcels under different land ownership will not be surveyed. The status of all dens will be determined and mapped. Written results of preconstruction surveys will be submitted to USFWS within 5 working days after survey completion and before the start of ground disturbance. Concurrence is not required prior to initiation of covered activities.

If San Joaquin kit foxes and/or suitable dens are identified in the survey area, avoidance and mitigation measures described below will be implemented.

7.1.2.2 Avoidance and Minimization Requirements

- If a San Joaquin kit fox den is discovered in the proposed development footprint, the den will be monitored for 3 days by a USFWS/CDFG–approved biologist using a tracking medium or an infrared beam camera to determine if the den is currently being used.
- Unoccupied dens should be destroyed immediately to prevent subsequent use.

- If a natal or pupping den is found, USFWS and CDFG will be notified immediately. The den will not be destroyed until the pups and adults have vacated and then only after further consultation with USFWS and CDFG.
- If kit fox activity is observed at the den during the initial monitoring period, the den will be monitored for an additional 5 consecutive days from the time of the first observation to allow any resident animals to move to another den while den use is actively discouraged. For dens other than natal or pupping dens, use of the den can be discouraged by partially plugging the entrance with soil such that any resident animal can easily escape. Once the den is determined to be unoccupied it may be excavated under the direction of the biologist. Alternatively, if the animal is still present after 5 or more consecutive days of plugging and monitoring, the den may have to be excavated when, in the judgment of a biologist, it is temporarily vacant (*i.e.*, during the animal's normal foraging activities).

7.1.2.3 Construction Monitoring

If dens are identified in the survey area outside the proposed disturbance footprint, exclusion zones around each den entrance or cluster of entrances will be demarcated. The configuration of exclusion zones should be circular, with a radius measured outward from the den entrance(s). No covered activities will occur within the exclusion zones. Exclusion zone radii for potential dens will be at least 50 ft and will be demarcated with four to five flagged stakes. Exclusion zone radii for known dens will be at least 100 ft and will be demarcated with staking and flagging that encircles each den or cluster of dens but does not prevent access to the den by kit fox.

7.1.3 Golden Eagle

The project area provides suitable foraging habitat for the golden eagle, and the oak woodland habitat provides marginally suitable nesting habitat. To avoid or minimize direct impacts on golden eagle as a result of covered activities, the following procedures will be implemented.

7.1.3.1 Preconstruction Survey

Prior to implementation of covered activities, a qualified biologist will conduct a preconstruction survey to establish whether nests of golden eagles are occupied. If nests are occupied, minimization requirements and construction monitoring will be required.

7.1.3.2 Avoidance and Minimization

Covered activities will be prohibited within 0.5 mi of active nests. Nests can be built and active at almost any time of the year, although mating and egg incubation occurs late January through August, with peak activity in March through July. If site-specific conditions or the nature of the covered activity (*e.g.*, steep topography, dense vegetation, limited activities) indicate that a smaller buffer could be appropriate or that a larger buffer should be implemented, the Implementing Entity will coordinate with CDFG/USFWS to determine the appropriate buffer size.

7.1.3.3 Construction Monitoring

Construction monitoring will focus on ensuring that no covered activities occur within the buffer zone established around an active nest. Although no known golden eagle nest sites occur within or near the ULL, covered activities inside and outside of the Preserve System have the potential to disturb golden eagle nest sites. Construction monitoring will ensure that direct effects to golden eagles are minimized.

7.1.4 Western Burrowing Owl

The project area provides potentially suitable nesting and foraging habitat for burrowing owl. To avoid or minimize direct impacts to burrowing owl the following procedures will be implemented.

7.1.4.1 Preconstruction Surveys

Prior to any ground disturbance, a USFWS/CDFG approved biologist will conduct a preconstruction survey in areas having potential burrowing owl habitat. The surveys will establish the presence or absence of western burrowing owl and/or habitat features and evaluate use by owls in accordance with CDFG survey guidelines (California Department of Fish and Game 1993). On the parcel where the activity is proposed, the biologist will survey the proposed disturbance footprint and a 500-foot radius from the perimeter of the proposed footprint to identify burrows and owls. Adjacent parcels under different land ownership will not be surveyed. Surveys should take place near sunrise or sunset in accordance with CDFG guidelines. All burrows or burrowing owls will be identified and mapped. Surveys will take place no more than 30 days prior to construction. During the breeding season (February 1– August 31), surveys will document whether burrowing owls are nesting in or directly adjacent to disturbance areas. During the nonbreeding season (September 1–January 31), surveys will document whether burrowing owls are using habitat in or directly adjacent to any disturbance area. Survey results will be valid only for the season (breeding or nonbreeding) during which the survey is conducted.

7.1.4.2 Avoidance and Minimization and Construction Monitoring

If burrowing owls are found during the breeding season (February 1–August 31), the project will avoid all nest sites that could be disturbed by project construction during the remainder of the breeding season or while the nest is occupied by adults or young. Avoidance will include establishment of a nondisturbance buffer zone (described below). Construction may occur during the breeding season if a qualified biologist monitors the nest and determines that the birds have not begun egg-laying and incubation or that the juveniles from the occupied burrows have fledged. During the nonbreeding season (September 1– January 31), the project should avoid the owls and the burrows they are using, if possible. Avoidance will include the establishment of a buffer zone (described below). If occupied burrows for burrowing owls are not avoided, passive relocation will be implemented. Owls should be excluded from burrows in the immediate impact zone and within a 160-foot buffer zone by installing one-way doors in burrow entrances. These doors should be in place for 48 hours prior to excavation. The project area should be monitored daily for 1 week to confirm that the owl has abandoned the burrow. Whenever possible, burrows

should be excavated using hand tools and refilled to prevent reoccupation (California Department of Fish and Game 1995). Plastic tubing or a similar structure should be inserted in the tunnels during excavation to maintain an escape route for any owls inside the burrow.

7.2 WETLANDS AND WATER QUALITY AVOIDANCE AND MINIMIZATION MEASURES

The Clean Water Act requires minimization of impacts to wetlands and water quality. Section 6.4.2 of the HCP/NCCP also includes measures to protect wetlands, ponds, and streams. The following measures will be implemented to ensure against adverse water quality effects that could result from restoration related activities:

- All materials that are potential construction pollutants from the contractor's operations will be stored in a lawful manner. The contractor will not fuel, service or make repairs to any equipment or vehicles within 100-ft of the top of bank or any drainage or delineated wetlands on site.
- The contractor will develop and implement a pollutant containment plan that will include a minimum the following best management practices (BMPs)
 1. Protection of all drainage swales, creeks, and streams at or near the construction site and the appropriate measures to prevent sediment and pollutants from entering them.
 2. Proper storage of potential pollutants.
 3. Proper containment and cleanup procedures for accidental spills. Adequate materials for proper containment and cleanup shall be stored at the site.
 4. Proper waste disposal methods.
 5. Off-site vehicle wash and designated on-site refueling area with spill containment in a bermed area only if it is necessary to fuel equipment on-site.
 6. The dewatering of excavated areas is allowed to be discharged into the adjacent creek. Creek bank erosion and flowline siltation shall be prevented by installing filter fabric at points of discharge. This operation plan shall be in accordance with the BMPs.
 7. Clearing and grubbing limits will be laid out with lathe stakes 5 days prior to beginning site clearing.
 8. Where temporary equipment access routes are required, the sequence of construction activities shall be coordinated to only allow equipment access prior to preparation of soils. Upon completion of soil preparation activities, no further vehicular traffic will be allowed other than equipment required for seeding and fencing, if needed. If equipment access should become necessary, the access route shall be disked and fine graded again prior to re-seeding to eliminate any resulting soil compaction.

8.0 SHORT-TERM MAINTENANCE

Maintenance will be required during the monitoring period at the created wetlands and pond areas to help ensure success of the habitat restoration. Such activities may include invasive species control, reseeding and potentially planting, among others. Monitoring data (see following section regarding monitoring requirements) collected by a qualified biologist will be used to evaluate the success of the restoration site. Information from this monitoring program will provide feedback to direct necessary maintenance, and help ensure the success of the mitigation site.

8.1 INVASIVE SPECIES CONTROL

Invasive plant species within the UHCW site will be controlled throughout the CTS pond, channel, stock pond and alluvial valley wetland restoration areas. Of particular concern are yellow star thistle (*Centaurea solstitialis*) and milk thistle (*Silybum marianum*) which are present on site and could invade the disturbed soil areas.

In addition, soil borrow and fill areas, rock and wood pile areas and road edges that are disturbed will be treated to control invasive species establishment and spread. These areas will be particularly good vectors for yellow star thistle and milk thistle, the two most problematic weeds on site.

During the monitoring period, the presence of undesirable non-native plant species will be assessed and those that impact site performance controlled. Control of invasive, non-native plants will generally be accomplished through manual removal or treatment with an herbicide approved by the EPA for use in aquatic settings and not found on the list of 66 pesticides named in the lawsuit brought by the Center for Biological Diversity against the EPA (EPA 2010).

8.2 RESEEDING AND PLANTING

In the event that the propagule rich salvaged and reapplied topsoil and native herbaceous vegetation seeding does not produce sufficient vegetative cover, then reseeding or container plant installation will be implemented. If the sites require reseeding, a native seed mix or seed mix similar to those described in Tables 6 and/or 7 will be applied using the methodology described in this report. In addition, consideration will be given to planting container plants for the target wetland species should it be determined that seeding alone is not sufficient.

8.3 GRAZING MANAGEMENT

Livestock grazing of the upland areas will continue to be a landuse practice on the property and will be managed to maintain suitable dispersal and aestivation habitat for California tiger salamander, and overland dispersal by California red-legged frogs. California tiger salamander use the burrows excavated by burrowing mammals during summer aestivation. The grasslands on the property support pocket gopher ground squirrel burrows. Controlled grazing by cattle will prevent vegetation from becoming too tall and/or dense, which results in conditions that are not favorable to ground squirrels. The Preserve Management Plan to be prepared for this section of

the HCP/NCCP Preserve System will specifically guide grazing and other long-term management needs of the restoration property.

Exclusion fencing will be installed in locations shown on the Preliminary Construction Plans (Appendix C). The purpose of the exclusion fencing is to protect the restoration sites, where needed while they establish. However, gates will be installed at strategic locations to allow for periodic “flash” grazing of the main stock pond and alluvial valley wetland areas so that grazing can be utilized as another potential weed management tool. In addition, periodic grazing of the main stock pond area will improve overall habitat values for ground squirrels and amphibians by reducing aboveground biomass in and around the pond. A qualified land manager in association with a qualified ecologist shall collaborate on the timing and intensity of flash grazing within the restoration areas.

9.0 MONITORING

Monitoring data will be collected and used to evaluate the success of the restoration sites. Information from this monitoring program will provide feedback to direct necessary maintenance and adjustments to restoration areas to ensure the success of the restoration sites.

9.1 PERFORMANCE AND SUCCESS CRITERIA

Monitoring of performance criteria will evaluate the extent to which the site-specific restoration objectives are being met. Table 7 provides the performance criteria for each site-specific restoration objective. Table 8 provides annual and final success criteria for wetland vegetation percent cover. Monitoring results from Years 1 through 4 will be compared to the annual success criteria to evaluate progress toward these goals and to provide a basis for remedial action recommendations. The results of the monitoring in Year 5 will be compared to the final success criteria to determine if these criteria have been met. If the final success criteria have not been met, remedial actions and monitoring will continue until they have been met.

Table 7. Site-specific Restoration Objectives and Performance Criteria

UHCW Site-specific Restoration Objectives	Performance Criteria
Wetlands (and other Aquatic)	
SO-1. Increase the abundance and distribution of native emergent vegetation in the project area.	See annual performance criteria in Table 8.
SO-2. Reduce erosion along Upper Hess Creek.	Qualitative assessment including photo-documentation before and annually for 5 years after restoration activity determines that erosion along the Upper Hess Creek onsite has been reduced.
SO-3. Increase wetland and pond capacity and water duration in the project area.	Wetland and pond acreage onsite has increased and is in the range of the targeted 2.47 ac of restored wetlands and 0.12 ac of restored pond within 5 years following restoration construction.
SO-4. Hydrologically reconnect the Upper Hess Creek from lower stock pond to channel at property boundary.	Qualitative assessment and hydrologic monitoring based on photo-documentation and seasonal shallow groundwater monitoring annually for 5 years after restoration activity shows that Upper Hess Creek is hydrologically connected between the lower stock pond and the restored channel at the property line.
SO-5. Reduce non-native plant species in restored wetlands.	Total absolute cover of non-native invasive plant species* no more than 10% relative cover.
SO-6. Restore approximately 2.32 ac of alkali wetlands in the project area.	Approximately 2.32 ac alkali wetlands have been restored and confirmed via wetland delineation.
SO-7. Create an approximately 0.12 ac California tiger salamander breeding pond.	An approximately 0.12 ac pond will have been restored and confirmed via wetland delineation.

UHCW Site-specific Restoration Objectives	Performance Criteria
SO-8. Restore approximately 2.32 ac of alkali wetlands.	Approximately 2.32 ac alkali wetlands have been restored and met the annual performance criteria in Table 7 and confirmed via wetland delineation.
SO-9. Create an approximately 0.12 ac California tiger salamander breeding pond in upper tributary.	Same as for SO-7
SO-10. Restore 489 linear feet of stream channel and hydrologically connect Upper Hess Creek from the main stock pond to channel at property boundary.	Same as for SO-4
SO-11. Create 0.12 ac California tiger salamander pond, enhance existing main pond, restore 489 linear feet of channel, restore approximately 2.32 ac of alkali wetlands.	Same as for SO-6, SO-7, and SO-8

* Non-native invasive plant species include those species with high impact rankings by the California Invasive Plant Council (Cal-IPC), and any other species determined to threaten successful restoration of the native plant communities onsite (California Invasive Plant Council 2006).

The annual performance criteria referenced in Table 8 are described below for the alluvial valley wetland and pond areas.

9.1.1 Criteria for CTS Pond, Channel Restoration Area, Main Stock Pond and Alluvial Valley Alkali Wetland Areas

The project will create an approximately 0.12 ac CTS breeding pond, approximately 2.32 ac of alkali wetland, approximately 0.10 ac of alkali wetlands around the main stock pond, and 0.05 ac of alkali wetlands at the channel restoration area. The wetland delineation results will be used to determine success at all three sites. Percent vegetative cover will serve as an additional measure of success at the main stock pond and alluvial valley sites but not at the CTS pond site where planned disturbance by livestock to create turbid water conditions and to keep vegetation low to allow mature CTS to move in and out of the ponds is recognized as an important component of the restoration effort and as a result cover of vegetation will not be used as a measure of success.

Percent Cover. The USACE standard dominance test (USACE 2010) will be used as the primary indicator of successful establishment of wetland vegetation. Table 8 provides the performance and final success criteria for average relative percent cover of dominant wetland indicator species during the 5 year monitoring program for the alluvial valley wetlands and lower stock pond sites. The final success criterion requires that more than 50% of the dominant plant species be obligate, facultative wetland, and facultative species. Percent cover of non-native invasive pest plant species will be no more than 10% during Years 1-5.

Table 8. Relative Percent Cover Criteria of Dominant Wetland Vegetation.

Year-1	Year-2	Year-3	Year-4	Year-5 (Final Success Criterion)
5%	10%	20%	35%	50%

Wetland Delineation. A formal delineation of the USACE jurisdictional areas restored will be undertaken at the site 5 years following site construction. The actual acreage of new wetland

habitat created will define the success of the project with the goal of establishing approximately 2.47 ac of new USACE jurisdictional area including wetlands and others waters.

9.2 MONITORING METHODS

9.2.1 Vegetation Monitoring

Vegetation monitoring will be performed in the restored areas to determine whether restoration objectives SO-1, SO-3, SO-5, SO-6, and SO-8 as shown in Tables 5 and 8 has been achieved.

Percent Cover. Wetland vegetation cover will be measured by quadrat sampling using a 1 m² quadrat. The location of each sample will be selected using a random, stratified methodology. The wetland indicator status of each species from the quadrat data will be determined, and the average percent cover attributed to wetland indicator species, as a group, will be calculated. The predicted frequency of occurrence in wetlands represented by each wetland indicator status category is presented in Table 9.

Table 9. Wetland Indicator Status Category

Indicator Category	Symbol	Frequency Of Occurrence In Wetlands
Obligate *	OBL	Greater than 99%
Facultative Wetland *	FACW	67-99%
Facultative *	FAC	34-66%
Facultative Upland	FACU	1-33%
Upland	UPL	Less than 1%

* Species characterized under this indicator category are considered wetland indicator species.

Photo-documentation. Photo-documentation of the site will be conducted from a number of fixed locations in Years 1-5 to document the development and growth of vegetation through time. Photographs will be also be taken to record any events that may have a significant effect on the success of restoration such as erosion, flood, fire, or vandalism. The locations for photo-documentation will be selected and marked with a t-post during preparation of the as-built plans.

Invasive Plant Assessment. A qualified plant ecologist or rangeland manager will survey the property 3 times per year to identify any areas of invasive plant infestations. Following each survey, the qualified plant ecologist or rangeland manager will report on results and any recommended treatments.

9.2.2 Erosion

Erosion monitoring will be implemented to determine whether site-specific restoration objective SO-2 is being met. Photo-documentation point locations will be selected in locations where erosional problems have been identified along the Upper Hess Creek. A baseline assessment will be prepared prior to onset of construction, to include photographs and a written description of the conditions at each location. Photographs and written descriptions from each location will then be prepared annually at approximately the same time of year, after the rainy season. The written descriptions will compare each location with conditions from the previous year in terms of bank stability or degree of erosion. At the end of 5 years, a determination will be made as to whether the restoration has successfully resulted in reduced erosion along the Upper Hess Creek.

9.2.3 Wetland Acreage

The wetland and pond restoration areas will be assessed via wetland jurisdictional methodologies for the number of ac of USACE jurisdictional area to determine whether restoration objective SO-3 is being met. If the desired acreage is not achieved in Year-5 or if climatic conditions were atypical in that year (*i.e.*, below average rainfall year), a wetland delineation will be repeated at the site in subsequent years to accurately determine the wetland acreage is achieved. Or, alternatively, the actual wetland acreage created as determined by the delineation will be credited against the wetland restoration requirements set forth in the HCP.

9.2.4 Hydrologic Connectivity

Hydrologic connectivity between the Upper Hess Creek and adjacent wetlands will be monitored to determine whether restoration objective SO-4 is being met. Photo-documentation points will be established prior to the onset of the restoration construction, and placed at locations where hydrologic connectivity between Upper Hess Creek from the main stock pond to the property line has improved. A baseline assessment will be prepared prior to onset of construction, to include photographs and a written description of the conditions at each location. Photographs and written descriptions from each location will then be prepared annually. The written descriptions will compare each location with conditions from the previous year in terms of hydrologic connectivity. In addition, up to 6 shallow ground water monitoring wells (piezometers) will be established to determine shallow groundwater levels in winter and spring. The wells will be monitored approximately once per month between December and April.

At the end of 5 years, a determination will be made as to whether the restoration has successfully resulted in hydrologic connectivity between the main stock pond and property boundary.

9.2.5 Depth and Duration of Inundation at CTS Pond

The depth and duration of inundation in the created CTS pond will be monitored to determine whether restoration objectives SO-7 are being met. To assess the depth and duration of inundation, a staff gauge will be placed at the lowest point of the pond. The lateral extent of inundation will also be estimated based on visual observation and recorded on standardized site base maps. Hydrology data will be collected monthly when the pond is holding water which will vary between years but is expected to occur from approximately December through August in most monitoring years. Hydrographs will be constructed for the pond on an annual basis and for the entire 5-year monitoring period.

If the first 5 years of monitoring are characterized by abnormally dry conditions, an assessment will be conducted that compares the observed hydrological responses of each wetland to various rainfall events during the 5-year period. Monitoring results will be reviewed each year by a restoration ecologist/hydrologist as an adaptive management tool to achieve the desired hydrology. The information gained may be used to adjust the outlet elevations to achieve the desired hydrology. Such adaptive management of the restoration site will help to insure its success.

The monitoring ecologist will note any visual observations of CTS or other wildlife utilizing the pond and surrounding habitat during regularly scheduled monitoring visits.

9.3 MONITORING SCHEDULE

Data should be collected at approximately the same time each year to standardize results but may be adjusted to account for seasonal variations in vegetation conditions, weather, precipitation, and temperature. Tables 10 and 11 provide an overview of the suggested monitoring schedule.

Table 10. Suggested Project Monitoring Timeline.

Monitoring Element	Year 1	Year 2	Year 3	Year 4	Year 5
Vegetation Survey ¹ , Photo Documentation, & General Site Assessment	X	X	X	X	X
Invasive Plant Assessment	X	X	X	X	X
Wetland Delineation					X
Hydrologic Assessment	X	X	X	X	X

¹ Monitoring transects and quadrats

Table 11. Annual Monitoring Schedule for Alkali Wetlands.

Monitoring Element	Suggested Schedule											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Vegetation Survey, & Photo Documentation				X								
Invasive Plant Assessment		X			X		X					
Wetland Delineation				X								
Hydrology	X	X	X	X	X	X	X	X				X

10.0 ADAPTIVE MANAGEMENT

An adaptive management approach will be employed at each site during mitigation implementation. Data collected and observations made yearly during monitoring and site maintenance will be used to modify maintenance and management practices. These management modifications, based upon hands-on, project specific experience, will guide restoration efforts to maximize habitat development and to ensure restoration site success. Potential remedial actions could include supplemental watering, additional erosion control, additional invasive plant control, planting of container stock, hydrologic and/or channel modification, and regrading.

If wetland vegetation is damaged as a result of remedial hydrologic or geomorphic wetland repairs, the site manager may install supplemental plants of local origin. Should any unexpected special-status species be detected within the wetlands in the future, the site manager may adapt the management activities to ensure the plant or wildlife species' viability within the HCP/NCCP restoration area.

11.0 REPORTING

11.1 AS-BUILT PLAN

A biological as-built plan will be prepared within 8 weeks of completion of restoration construction. The as-built plan will show any significant deviations from what is described in this mitigation and monitoring plan and the restoration drawings shown in Appendix C. It will cover items including the size and configuration of the proposed restoration areas, plant species and seeding, rates among others. The as-built plans will be sent to the resource agencies for their records.

11.2 ANNUAL MONITORING REPORTS

Annual monitoring reports will be sent to the regulatory permitting agencies by December 31 of each monitoring year. Annual monitoring reports will include a brief description of the project, the methods used to collect and analyze the data, the results of the data analysis, a discussion of the results, and conclusion regarding the present condition of the site. The report will also include a remedial action section, which will discuss any additional actions required to achieve the final success criteria. Representative photographs will be included.

12.0 COMPLETION OF MITIGATION

Monitoring will be conducted for 5 years in the wetland and pond areas. At the end of the monitoring period a final monitoring report will be prepared to document that the restoration site has met the final success criteria. If the site has met the success criteria, a letter will be sent to the permitting/resource agencies within 8 weeks of achieving the success criteria acknowledging the site's conditions and requesting their concurrence. The project will be considered a success and should be signed off by the resource agencies when the site-specific objectives are met. If the site has not met its final success criteria and performance criteria, monitoring will continue until the criteria have been successfully met, or the targeted habitat restoration credit has been reduced to match what the project has achieved.

13.0 LONG-TERM MANAGEMENT

Long-term management at the restoration site will be required once the restoration project has met its performance and final success criteria. The HCP/NCCP provides management guidelines in Conservation Measure 1-2 (Chapter 5). The PMP for this and other properties in the Pittsburg Hills area will provide site specific long-term management prescriptions.

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**APPENDIX A.
SOILS SUMMARY MEMO**

(not included in outline)

**APPENDIX B.
WATER BALANCE SUMMARY MEMO**

(not included in outline)

**APPENDIX C.
RESTORATION CONSTRUCTION PLANS**