

**Monitoring and Adaptive Management Plan
Lower Walnut Creek Restoration Project**

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For:
Contra Costa County Flood Control District

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INTRODUCTION

Purpose of this Plan

[NOTE TO READER - Phase 2, design, permitting, and environmental compliance, of the Lower Walnut Creek Restoration Project is currently in progress. Development of Monitoring and Adaptive Management Plan (MAMP) is part of the Phase 2 work and will be completed during the design phase for the project and submitted to the resources agencies as part of the permitting process. A preliminary version of the MAMP has been prepared to meet the requirements of the NFWF grant.]

The Project description has recently been updated and expanded to include restoration of the Suisun Properties parcel. The MAMP will be updated to reflect the updated project description.]

This Monitoring and Adaptive Management Plan (MAMP) for the Lower Walnut Creek Restoration Project (Project) describes monitoring actions that will be conducted to evaluate progress toward desired outcomes and ongoing and long-term management actions to ensure sustainable outcomes. Monitoring will serve multiple purposes:

- Assess physical conditions to verify project was constructed as designed and meets permit requirements (compliance monitoring)
- Measure physical outputs and ecological outcomes to track progress towards project objectives (effectiveness monitoring)
- Inform corrective actions if success criteria are not met. The results will be used to reduce uncertainties and improve management and future planning (adaptive management).
- Meet regulatory requirements for evaluating and documenting performance. This plan conforms with the requirements of the U.S. Army Corps of Engineers (USACE) Final Compensatory Mitigation and Monitoring Guidelines for the South Pacific Division (USACE, 2015).

In addition to monitoring and management actions, the MMP identifies project success criteria, responsible parties for execution of this plan and reporting requirements. Monitoring and maintenance specific to levee performance for flood protection will follow existing Contract Costa County Flood Control District (District) guidance and are not presented in detail here.

Project Summary

The Lower Walnut Creek Restoration Project (Project), led by the Contra Costa County Flood Control District (District), will restore and enhance coastal wetlands and adjacent habitats at the mouth of Walnut Creek and its tributary Pacheco Creek, improving habitat quality, diversity, and connectivity along four miles of creek channel, up to 400 acres in total. The project is located along the southern shoreline of Suisun Bay. The Project is needed

to enhance and restore estuarine wetlands and associated wetland-upland transitional habitats that have suffered large historic losses, eliminate expensive and environmentally destructive flood-related dredging, and remedy limited public access. The project has been designed to provide sustainable benefits in consideration of future environmental changes, particularly sea level rise. The Project will enhance the over-all resilience of wetland habitats within the Project area by providing space for tidal marsh migration with rising sea levels, increasing tidal connectivity, reconnecting sediment flow pathways to promote healthy marsh accretion, and reducing the fragmentation of existing wetlands habitats in the region.

The restoration approach capitalizes on large areas of supratidal elevation lands and existing (degraded) landscape features to restore tidal marsh intergraded with a matrix of lowland terrestrial ecotone habitats. Regional ecosystem goals (Goals Project 2016) call for restoration of this type of habitat matrix and note that opportunities for its creation are rare around San Francisco Bay's mostly-developed shoreline. These habitats will provide diversity and enhanced ecosystem functions under present day conditions and sustainably evolve with sea-level rise. The connectivity of wetland and lowland terrestrial habitats is important to support contemporary ecosystem functions, including wildlife habitat and biogeochemical functions such as nutrient exchange. In addition, by restoring the conditions that support sustained wetland functions, the Project will enhance the site as a carbon sink, incorporating greenhouse gas mitigation and climate change adaptation with flood and habitat management and restoration. Restoration will be accomplished by breaching and lowering levees and berms to reintroduce the tides to diked former baylands, constructing new setback levees for flood protection, and grading filled areas to create new tidal channels, tidal wetland, and lowland terrestrial areas. The project includes a pre-construction program of invasive plant species control and onsite propagation of native plant material for restoration implementation. The project anticipates gradual estuarine transgression, and is designed to provide high ecological value and function through the 21st century. Additional information about the project is available at www.lowerwalnutcreek.org.

Project Goals and Objectives

The District developed Project goals and objectives, which were refined with input from the community-based planning process.

The Project goal is to:

Restore and enhance wetlands and associated habitats in Lower Walnut Creek and to provide sustainable flood management, while allowing opportunities for public access and recreation.

Additional information on the District's vision for a restored Lower Walnut Creek can be found in the "Resilient Landscape Vision for Lower Walnut Creek" report (SFEI, 2017).

Project objectives are to:

- 1. Restore wetlands to improve ecological function and habitat quantity, quality, and connectivity (including upland transition zones) in the Lower Walnut Creek area for native, resident plant and animal species including special status species.*

Special status species known to occur in the area include the salt marsh harvest mouse, California black rail, Ridgway's rail, and Mason's lilaeopsis.

2. *Maintain appropriate levels of flood protection along Lower Walnut and Pacheco creeks, as warranted by the land use.*

This includes protecting the services provided by existing infrastructure (e.g., power lines, railroads, water lines) and maintaining access to infrastructure and adjacent private property. Open space areas may not require maintenance or improvement of flood protection levels.

3. *Allow for future public access, education, and recreational opportunities.*

The District is committed to developing a project that is compatible with regional goals for public access through the Project area, such as a trail segment connecting two regionally-significant trails – the Ironhorse and Bay trails. The District's charter, however, limits the ability of the District to directly fund the creation and maintenance of public access and recreation facilities.

While the District is not in a position to directly implement public access and recreational facilities, the District will provide opportunities for partners such as the East Bay Regional Parks District (EBRPD) and the John Muir Land Trust to pursue future public access and recreation projects within the Lower Walnut Creek Project area.

4. *Create sustainable benefits that consider future environmental changes such as sea level rise and sedimentation.*

A guiding principle in planning the Lower Walnut Creek Restoration Project is to design a system that works with nature, not against it. This means anticipating changes associated with estuarine and fluvial sediment deposition and increases in flooding anticipated to result from future sea level rise, and designing a system that is resilient to these changes without expensive and environmentally disruptive management actions.

The District is committed to developing a project that will be resilient to future sea level rise through the year 2050, and adaptable to anticipated changes through 2100. For planning purposes, the Project has adopted a sea level rise projection of 2 feet by 2050 and considers a range of sea level rise extending up to 5 feet by 2100. These values are consistent with the upper range of projected sea level rise indicated in the National Research Council's 2012 report "Sea level Rise for the Coasts of California, Oregon and Washington" (NRC, 2012) and BCDC's Adapting to Rising Tides regional sea level rise planning program (AECOM 2016).

Plan Implementation Strategy

The Plan implementation strategy relies on the following concepts to guide the implementation and development of the site:

1. Utilize natural processes for habitat establishment, as possible.
2. Utilize best available science to manage the site.
3. Practice adaptive management of the site utilizing input from monitoring data in conjunction with adaptive review of restoration goals and objectives.

4. Review monitoring reports annually to identify any additional management actions needed to promote achievement of restoration goals and objectives.
5. To the extent practicable, minimize effects that would lead to improved conditions for nonnative invasive species such as perennial pepperweed (*Lepidium latifolium*), and stinkwort (*Dittrichia graveolens*), or non-native predators of special status wildlife species.

Responsible Parties

The Project site is owned by the Contra Costa Flood Control and Water Conservation District. After construction is complete, the District will retain responsibility for all management and maintenance activities described in this plan, including reporting.

- Executing the management, monitoring, maintenance, and reporting responsibilities as described in this Plan, including data collection, storage, and transmittal.
- Performing general inspections to ensure restored habitat values are protected and maintained.
- Analyzing portions of the monitoring data resulting from the monitoring activities and implementing any remedial or adaptive management actions as required by regulatory permit conditions.
- Filing reports (annual or as required by regulatory permit and grant conditions) describing the status and evolution of the restored wetland habitats, general plant and tidal area health, presence and abundance of invasive flora and fauna, hydrologic conditions, wildlife utilization, and other management, maintenance, monitoring and reporting activities that have a bearing on successfully meeting regulatory permit requirements.
- Maintaining a file on the Project detailing management, maintenance, monitoring, and reporting activities, correspondence, and determinations.

Qualified Personnel

The District shall retain professional biologists, botanists, restoration ecologists, or other specialists (“Qualified Personnel”) as necessary to conduct tasks and monitoring as described in this Plan. Duties of the Qualified Personnel may include, but are not limited to:

- Monitoring and maintaining habitat function
- Monitoring and erosion and slope stability
- Identifying and evaluating the presence of invasive species and developing management recommendations
- Conducting surveys that are required by this Plan
- Evaluating site conditions and recommending remedial actions and or adaptive management actions to the District
- Assisting in the review or planning of any additional restoration actions following initial construction

- Preparing annual reports

SUCCESS CRITERIA

The success criteria identified below will provide a basis for determining the need for remedial (corrective) measures and adaptive management. Variable environmental conditions beyond the control of the project, such as weather patterns, trespassers, and vandalism, may contribute to one or more of the success criteria not being attained, but will not necessarily imply that the restoration has failed. Rather, the entire set of monitoring results will provide a basis for discussion with regulatory agencies as to whether remedial actions are warranted. Despite failure to attain one or more specific success criteria, monitoring results may suggest that the restoration areas are developing properly, overall performance goals are being met, and that no remedial intervention would be warranted. Most importantly the success criteria are intended to be used and interpreted based on professional judgment of the monitoring biologists as well as regulatory agency staff.

The success criteria by which the Project will be evaluated are described below.

Hydrology

Within one-year post-breach, full tidal inundation will be achieved across the site, with tide range comparable to natural marshes in Suisun Bay. Once achieved, the site is expected to maintain full tidal inundation long-term. Fully tidal channels within the restoration area are expected during water level monitoring in Years 1, 2, 4, and 10.

Geomorphology

The network of branching 1st, 2nd and 3rd order channels will maintain channel densities (total channel length) and cross-sectional geometry to fall within the range of natural and restoring reference tidal wetlands within San Francisco Estuary.

Vegetation and Habitats

Desired native plant species will populate the restoration site through planting and natural recruitment. The complex of tidal marsh (intertidal marsh, low tidal marsh, high tidal marsh and, marsh ponds), lowland terrestrial (sandy alkali playa flats, lowland grassland, and seasonal wetlands) and upland will represent a diversity of native species.

Vegetation Establishment

Within five years the marsh plain is expected to develop a nearly continuous fringe of native brackish marsh plants along the higher-elevation wetland margins, with intermittent patches of the same species scattered throughout the interior of the site. In the lowland terrestrial zone, the sandy alkali playa flats will support native alkali vernal pool flora and a diversity of other native annual and perennial species, the lowland grasslands will support a mix of ruderal and native lowland perennial grassland species, and the seasonal wetlands will support native seasonal wetland plants.

Total cover by this vegetation is expected to progressively increase during the first five-year period. The performance criterion for vegetation establishment is average cover of native and naturalized species in restored wetlands (based on interpretation of UAS aerial imagery) as follows:

- As-built: <5% cover
- Year 1: 4% cover
- Year 2: 7% cover
- Year 4: 15% cover
- Year 10: 50% cover

Percent cover and/or species richness criteria for lowland grassland and upland grassland and scrub habitats will be determined in consultation with the permitting agencies.

Invasive Plants

In the lowland terrestrial and upland habitat there is a potential for rapid colonization by naturalized ruderal plants, some of which are acceptable with respect to project goals (e.g. most non-native grasses and forbs), some of which are not (e.g. highly invasive grasses, forbs, shrubs, and trees). Control of High or Moderate rated invasive and non-naturalized plants will be implemented.

Highly invasive species, such as perennial pepperweed and stinkwort, will be monitored on a quarterly basis throughout the 10-year monitoring period. When new populations of highly invasive species are encountered they will be controlled as soon as feasible and within four weeks. However, weed control efforts in highly sensitive habitats may be delayed due to other restrictions, such as during nesting season, or may not occur where accessing infestations would result in significant damage to endangered species habitats.

Wetlands

A re-delineation of jurisdictional wetlands will be performed five years following construction to verify that the target wetland acreage has been attained. If the target wetland acreage has not been attained, the District will discuss the site function and conditions and determine if remedial actions should be taken.

Flood Protection

Appropriate levels of flood protection will be provided by the project, including continued access to existing utility infrastructure.

Public Access

Adequate public access accommodation space -- area where the trails and access facilities will be located -- will be included in as-built conditions to allow future implementation of public access, education, and recreational elements.

Sustainable Benefits

Transitional ecotone and upland habitats will be established to provide high tide refugia for sensitive species and increase resilience to sea level rise. In addition, flood protection elements will be constructed to accommodate future raising for sea-level rise.

MONITORING

Pre-Project Conditions

Pre-project conditions are documented in the permit applications, and establish the acreage of each wetland and upland vegetation type prior to project construction.

In addition, low-level aerial photography using an Unmanned Aircraft System (UAS, or drone) will be acquired prior to construction to provide a visual document of pre-project existing conditions. Interpretation of the aerial imagery will provide a baseline estimate of the vegetated and unvegetated area against which subsequent monitoring data will be compared.

As-Built Conditions

UAS-acquired aerial photography will be acquired immediately following completion of construction to document the as-built conditions. Interpretation of the aerial imagery will provide a baseline estimate of the vegetated and unvegetated area against which subsequent monitoring data will be compared. The baseline imagery also informs an assessment of the rate of change within the restored area, and the effectiveness of restoration and management actions. The location, orientation, monitoring methods, and any other site-specific information will be recorded in the field and documented in the annual monitoring reports to ensure that monitoring methods are implemented consistently from year to year.

Monitoring

Table 1 provides a summary of the monitoring activities planned for the project site. The monitoring schedule described is adaptable based upon implementation of adaptive management measures.

Hydrology

Measurements of tidal water elevations within the Lower Walnut Creek Restoration Project will be made to assess the restoration of the hydrologic functions of the Project and to document the depth and duration of tidal inundation over the marshplain surface, which will effect vegetation establishment.

Water levels will be measured and recorded at two locations within each Reach using continuous water level recorders. The exact locations of gauges will be determined in the field, with consideration given to access for downloading data and protection from vandalism. Hydrology monitoring will take place during monitoring years 1, 2, 4, and 10 and sensors shall be deployed between April and October.

**TABLE 1
SUMMARY OF MONITORING SCHEDULE**

Category	Aspect	Location	Monitoring Parameter	Time of Year	Monitoring Years
Hydrology	Water Levels	Install pressure transducer: <ul style="list-style-type: none"> • Representative channel network in each Reach • Representative marsh pond (North Reach) 	Water level	Deployed April - October	Years 1, 2, 4, and 10
	Salinity	Install salinity gauge: <ul style="list-style-type: none"> • Representative marsh pond (North Reach) 	Water salinity	Deployed April - October	Years 1, 2, 4, and 10
Geomorphology	Channel Development – Planform	<ul style="list-style-type: none"> • Entire site 	Channel length	Late summer	Pre-construction, As-built, Year 1, 2, 4, and 10
	Channel Development – Cross-Sections	Cross Sections: <ul style="list-style-type: none"> • Type 1, Type 2, and Type 3 Channels and adjacent marshplain 	Elevation	Annual, in Summer	Year 1, 2, 4, and 10
Vegetation	Vegetation Succession	<ul style="list-style-type: none"> • Entire site 	Vegetative Cover	Late summer	Pre-construction, As-built, Year 1, 2, 4, and 10
	Weed Survey	<ul style="list-style-type: none"> • Entire site 	Invasive Plants	Late spring and/or Late summer	Year 1, 2, 3, 4, 6, 8, 10
	Photo-Documentation	<ul style="list-style-type: none"> • Entire site 	Site Development	Late summer	Year 1, 2, 3, 4, 6, 8, 10
Wetlands	Wetland Extent	<ul style="list-style-type: none"> • Entire Site 	USACE Jurisdictional Wetlands	Any season	Year 5
Flood Protection*	Levee	<ul style="list-style-type: none"> • South Reach 	Length of levee	Any season	As-built
	Floodplain Inundation	<ul style="list-style-type: none"> • Entire Site 	Water depth and duration	Wet season	To be determined
Public Access	Levee	<ul style="list-style-type: none"> • South Reach 	Length of levee	Any season	As-built
	Accommodation space for trail and access facilities	<ul style="list-style-type: none"> • South Reach 	Area	Any season	As-built
	Accommodation space for trail and access facilities	<ul style="list-style-type: none"> • North Reach 	Length and area	Any season	As-built
Sustainable Benefits	Habitat Resilience, accommodation space	<ul style="list-style-type: none"> • Entire Site 	Area	Any season	As-built
	Levee	<ul style="list-style-type: none"> • South Reach 	Length	Any season	As-built

* Monitoring and maintenance specific to levee performance for flood protection will follow existing Contract Costa County Flood Control District (District) guidance.

Geomorphology

Tidal Wetland Development – Planform

Aerial photographs will be taken of the site at a scale that can distinguish the development of the channel networks, and the distribution of marsh and mudflat areas. During monitoring years 1, 2, 4, and 10 aerial photographs will be taken and changes in wetland layout will be compared to the previous aerial photographs. Free satellite photos will also be used when possible. Newly-formed channels and significant changes to the channel layout will be noted in each monitoring year. Aerial photographs will be taken in the late summer and during a tide no greater than +2.0 feet MLLW so that channels are clearly visible and marsh/mudflat areas can be viewed. Mapping will be performed at a minimum scale of 1:2400. The images will be obtained in a digital rectified format to allow use in a GIS system.

At years 1, 2, 4, and 10, UAS imagery will be used to establish contours the surface of the site and provide a spatial baseline for site development, habitat evolution and of settlement of site features. Aerial photographs taken to evaluate channel development and marsh/mudflat layout will also support the vegetation succession monitoring.

Tidal Wetland Development – Cross-Sectional

The cross-sectional geometry of the marsh plain will be monitored using ground-surveyed transects and augmented with aerial photographs (described above). Transects will be at key locations across slough channels, mudflat, and marsh. All transects will be surveyed following construction to provide baseline data on the channel and marsh elevations prior to tidal inundation. Transect starting and ending points will be permanently marked in the field to facilitate reoccupation in subsequent monitoring years.

Transect data will indicate whether or not marsh/mudflat areas are receiving sedimentation at the expected rates. Access within the site is expected to be difficult initially due to the soft ground surface and the need to minimize disturbance to the site. Transect elevations will be surveyed during high tides by boat if it is not possible to accomplish the surveys on foot. Transects will be resurveyed at years 1, 2, 4, and 10.

Vegetation

Vegetation Succession

Aerial photographs (UAS imagery discussed above) will be used to monitor vegetation succession with limited ground-truthing. A map of the colonizing and expanding patches of native and non-native vegetation will be produced from the analysis of the aerial images. False color infra-red photography will aid in the identification of plant species that have become established throughout the site. Aerial image interpretation to determine vegetation types and cover will be completed every year a UAS image is completed (pre-construction, as-built, and Years 1, 2, 4, and 10).

Weed Survey

Locations of perennial pepperweed (*Lepidium latifolium*), stinkwort (*Dittrichia graveolens*) and other highly invasive plants that negatively affect tidal marsh and transition zones will be recorded. Non-native and non-naturalized species that are rated High or Moderate according to the California Invasive Plant Council's

California Invasive Plant Inventory, Online Database (Cal-IPC 2017) will be recorded and recommended for treatment or other management actions, with an emphasis on controlling weeds that threaten the ability to meet performance criteria specified in the regulatory permits¹. A list of invasive species targeted for management will be developed and updated during each monitoring cycle. Stands of target invasive plants using GPS will be mapped to monitor invasive plant colonization and establishment at the site.

For the first two years mapping will occur in late spring and late summer to ensure all invasive plants species at the site are captured. After two years, it may be decided that only annual mapping is necessary, or depending on what invasive species are present the biennial monitoring may continue to be required. Weed surveys and mapping will occur in Years 1, 2, 3, 4, 6, 8, and 10, unless it is determined after four years that the monitoring should continue annually in order to inform annual maintenance and invasive plant control work at the site. Invasive weed and treatment recommendations are in the Maintenance section below. Although the weed survey will cover upland areas, only areas surveyed within jurisdictional wetlands will be required to be included in the annual monitoring reports.

Photo-Documentation

Ten permanent photo-documentation stations will be established at the site pre-construction. Photographs taken during monitoring years at these locations will provide further evidence of vegetation succession and evolution of the marsh, transition, and upland areas throughout the site. Photopoints would be located in areas with a good vantage of the site, representative of site conditions, good distribution around the site, and that can be located in subsequent years. The location of photopoints will be recorded with a GPS and the direction (aspect) and other relevant relocation information will be recorded. A map of photopoint locations and exposure directions as well as a photo appendix with all photos will be included in each monitoring report.

Wetlands

A re-delineation of jurisdictional wetlands will be performed five years following construction. The delineation may revisit any data points that have not been altered by construction and are accessible, and will also rely on new data points to identify wetland boundaries. Only the minimum number of sample points necessary to establish the extent of jurisdictional wetlands will be employed. Results of the re-delineation will be summarized in a wetland delineation technical memorandum with maps and data sheets, and will be provided to the USACE.

Flood Protection

The length and height of levee constructed will be surveyed and reported as part of the project as-built construction plans. Additional monitoring and maintenance specific to levee performance for flood protection will follow existing Contract Costa County Flood Control District (District) guidance and are not presented here.

The depth and duration of floodplain inundation and observations of levee performance for flood protection will follow existing Contract Costa County Flood Control District (District) guidance.

¹ Naturalized weeds that are part of the surrounding landscape and do not present an impediment to meeting the performance criteria will not be included in the weed survey. Examples include many non-native annual grasses.

Public Access

The length of levee and area of public access accommodation space will be surveyed and reported as part of the project as-built construction plans.

Sustainable Benefits

The area of transitional ecotone and uplands habitats will be surveyed and reported as part of the project as-built plans. This data will be used in coordination with data collected under vegetation succession and wetland extent to monitor site evolution.

The length and height of levee constructed will be surveyed and reported as part of the project as-built construction plans.

REPORTING

Annual Monitoring Reports

Annual monitoring reports shall be submitted to USACE, RWQCB, CDFW, and BCDC, by January 31 of the following year. Monitoring years include Year 1, 2, 3, 4, 6, 8, and 10. Annual reports will include, at the minimum, the following information:

- Summary description of the monitoring methods, including data collection and analysis;
- An overview of the restoration effort, including a general discussion of site conditions, changes in site conditions since the previous report, and quantitative and qualitative comparisons of vegetation and channel stability between previous monitoring years;
- Analysis of success in relation to success criteria;
- Discussion of maintenance actions undertaken that are directly relevant to restoration of wetlands;
- Color photographs of the revegetation areas taken from the photo-monitoring point locations; and
- A discussion of any corrective measures needed or undertaken (including weed control, replanting or reseeding, regrading for tidal circulation, or erosion control measures).
- The five-year wetland delineation will be provided with the year 6 monitoring report.

Wetland restoration data will also be uploaded to the EcoAtlas Project Tracker and applicable species data reported to the California Natural Diversity Database.

MAINTENANCE AND LONG-TERM MANANAGEMENT

The overall goal of maintenance and management of the site is to promote the long-term trajectory of the site in providing functions and services associated with the restored habitats. The approach to adaptive management of the project will be to conduct regular site visits and monitor selected characteristics to determine the stability of the site and ongoing trends in physical and biological processes. Unexpected trends in the biological or morphological characteristics of the site will require examination to determine if they are compromising the goals and objectives of the site. Further details on long-term and adaptive management strategies will be developed in association with the development and finalization of the project design.

The Project has been designed to minimize the need for active operations and ongoing maintenance. There are no operable facilities within the proposed Project area. The District will conduct maintenance of the project site, consisting of trash collection, security, trail inspections and maintenance as needed. Vegetation maintenance will be focused on restricting the spread of target invasive exotic species and may include mechanical treatment (mowing, manual pull, mechanical scrape) and/or herbicide application, as determined by the qualified biologist in response to particular site conditions.

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REFERENCES

- AECOM. 2016. San Francisco Bay Tidal Datums and Extreme Tides Study. Prepared with funding from FEMA and SF BCDC. February.
- NRC (National Research Council), 2012. “Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future.” National Academy Press: Washington, D. C.
- San Francisco Estuary Institute-Aquatic Science Center. 2017. Changing Channels: Regional Information for Developing Multi-benefit Flood Control Channels at the Bay Interface. A SFEI-ASC Resilient Landscape Program report developed in cooperation with the Flood Control 2.0 Regional Science Advisors, Publication #801, San Francisco Estuary Institute-Aquatic Science Center, Richmond, CA. Version 1.1, May 2017 (reflects minor revisions to v1.0)
- US Army Corps of Engineers. 2015. Final Compensatory Mitigation and Monitoring Guidelines for the South Pacific Division.

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