DELTA LEVEES SPECIAL FLOOD CONTROL PROJECTS

PROJECTS
SOLICITATION PACKAGE
FOR
MULTI-BENEFIT PROJECTS

June 13, 2014

Delta Levees Special Flood Control Projects
SOLICITATION PACKAGE

The California Department of Water Resources (Department or DWR) invites eligible applicants to submit Project proposals under the Delta Levees Special Flood Control Projects' 2014 Guidelines for Providing Funding to Local Public Agencies (Guidelines), dated June 13, 2014.

The goal for this Delta Levees Special Flood Control Projects' Projects Solicitation Package (PSP) is to seek applications for projects that fully integrate levee improvement, habitat enhancement features, and export water supply reliability. Further, this PSP specifically targets the freshwater corridor from the Clifton Court Forebay north along the Old and Middle rivers to the San Joaquin River. Fish Friendly Levee Habitat (Delta-specific Channel Margin Habitat) projects will be targeted along the main stem of the Sacramento and San Joaquin rivers, and the North and South forks of the Mokelumne River (see Appendix 1). Projects that simultaneously improve the integrity of a Local Agency's levee(s), contribute to increased reliability of the export water supply from the Delta for the State and federal water projects, and provide long term ecosystem enhancements with a particular emphasis on Fish Friendly Levee Habitat will score the highest.

This solicitation makes $75 million available for selected projects. All project proposals MUST INCLUDE specific features that increase export water supply reliability, provide long term ecosystem enhancements, ***and*** provide improvements to levee system integrity. In accordance with Section XI of the Guidelines, DWR will use a two phase application approach. The first submission is abbreviated and consists of Concept Proposals only. Applicants with Concept Proposals determined by DWR to meet the PSP requirements will be invited to provide a second phase submission of a Full Application for funding consideration. The complete Application Timeline is presented on Page 13 of this PSP.

CONCEPT PROPOSAL SUBMITTAL

Submit the Concept Proposal to: DeltaLeveesProgram@water.ca.gov.

Concept Proposals must be electronically submitted by no later than 4:00 p.m. on July 17, 2014.

QUESTIONS? NEED ASSISTANCE? CONTACT:

Andrea Lobato Department of Water Resources (916) 651-9295 Andrea.Lobato@water.ca.gov	OR	Chuck Tyson Department of Water Resources (916) 651-7019 Charles.Tyson@water.ca.gov

For a copy of the Projects Solicitation Package, please go to
http://www.water.ca.gov/floodsafe/fessro/levees/special_projects/project_solicitation.cfm

Delta Levees Special Flood Control Projects
Multi-Benefit Projects

Projects Solicitation Package (PSP)

1. INTENT

The intent of this PSP is to provide funding for projects that protect and address three areas: levee improvement, habitat enhancement features, and export water supply reliability from the Delta for the State and federal water projects. In particular, projects should focus on levee integrity along the freshwater corridor from the Clifton Court Forebay north along the Old and Middle Rivers to the San Joaquin River. Additionally, Fish Friendly Levee Habitat (Delta-specific channel margin habitat) projects will be targeted along the main stem of the Sacramento and San Joaquin rivers, and the North and South forks of the Mokelumne River (see Appendix 1). Preventing salinity intrusion and preparing for the effects of climate change should be addressed in proposed projects as well.

2. BACKGROUND

Legislation

On November 7, 2006 California voters approved Proposition 1E and Proposition 84 which authorized use of funds to provide grants to Local Agencies in the Delta through the Delta Levees Special Flood Control Projects Program (Program).

On November 6, 2009, Senate Bill X7 8 was signed into law and allocated $202 million for levee improvement projects. Subsequently, Senate Bill 855 clarified this amount shall be $170 million from Proposition 1E and $32 million from Proposition 84 for flood control projects to reduce the risk of levee failure in the Delta.

Section 12311 of the California Water Code identifies the primary purpose of the Program as the protection of discrete and identifiable public benefits, including the protection of public highways and roads, utility lines and conduits, and other public facilities, and the protection of urbanized areas, water quality, recreation, navigation, and fish and wildlife habitats, and other public benefits. For funds made available under California Public Resources Code Section 5096.820, Subsection (b)(2) requires the prioritization of project selection and project design to achieve maximum public benefits from the use of those funds.

Under California Water Code Section 12314, the Program must fully mitigate the habitat impacts of each Project it funds, and ensure that the Program results in net long-term habitat improvements in the Delta.

Framework for Local Assistance Funding

The Department has developed "A Framework for Department of Water Resources Investments in Delta Integrated Flood Management" (Framework). This refers to the current version of the Framework (DRAFT V3 DHF and SMB), or any approved successor, including the final document. It is available at: http://www.water.ca.gov/floodsafe/fessro/docs_policies.

Table 1-1 from the Framework provides guidance for State funding to support Integrated Flood Management in the Delta based on categories of statewide benefit. It gives a high priority to projects that modify the Delta's levee system to support the legislated goals for the Delta, including improving water supply reliability and ecosystem enhancement, while also protecting the Delta as an evolving place.

Guidelines

In June 2014, the Department published the 2014 Guidelines for Providing Funding to Local Public Agencies for the Delta Levees Special Flood Control Projects Program (cited here as the Guidelines). These Guidelines offer details on the purpose, process, and requirements of the project selection and are incorporated as part of this PSP. All definitions of terms and requirements for Projects under the Guidelines apply to this PSP. A copy of the final 2014 Guidelines is available at: http://www.water.ca.gov/floodsafe/fessro/docs/special_guidelines14_final.pdf.

This PSP provides a summary of the application process requirements, an application timeline, and the eligibility, ranking, and cost share criteria for this offering. In addition, the applicant is still subject to all requirements as specified in the Guidelines.

Consistency with the Delta Stewardship Council's Delta Plan

Successful applicants for funding under this PSP must complete any necessary Consistency Determination as required by the Delta Plan adopted by the Delta Stewardship Council.

3. ELIGIBILITY REQUIREMENTS

Consistent with the Guidelines, all applicants must be in compliance with the requirements set forth in Sections 12300 – 12318 of the California Water Code, as well as all the requirements associated with the Delta Levees Special Flood Control Projects and Subventions Programs. All Concept Proposals and subsequent Full Applications must meet the general eligibility criteria described in the Guidelines. Applicants must also be in good standing on past funding agreements for both the Special Projects and Subventions Programs.

The Department reserves the right to deny project proposals that do not adequately meet the requirements of California Water Code Sections 12310-12318; deny projects that do not adequately meet the criteria for this PSP; and to check the reasonableness and accuracy of submitted materials.

4. ELIGIBLE APPLICANTS

An Applicant must be a Local Agency responsible for maintaining a Project or Non-Project levee in the Primary Zone of the Delta or a Non-Project levee in the Secondary Zone of the Delta, and be in good standing with all components of the Delta Flood Protection Program, including the Delta Special Flood Control Projects Program and the Delta Levees Maintenance Subventions Program. Eligible applicants must also be in good standing with the California Department of Fish and Wildlife for habitat mitigation obligations under the Program.

5. ELIGIBLE PROJECTS

Eligible projects under this PSP will only be considered from Local Agencies with areas sufficiently large enough to affect water quality. As a representation of this size, Anthropogenic Accommodation Space[1] (AAS) will be used, as it reflects the volume of space that can be flooded. A Local Agency with an AAS greater than 10,000 acre-feet can affect export water quality, and would therefore be eligible to submit a project under this PSP. Eligible projects under this PSP should simultaneously improve the integrity of a Local Agency's levee(s), contribute to increased reliability of export water from the Delta for the State and federal water projects, and provide long term ecosystem enhancement, especially for aquatic species. Levee integrity along the freshwater corridor from the Clifton Court Forebay north along the Old and Middle Rivers to the San Joaquin River will be targeted, as will Fish Friendly Levee Habitat projects along the along the main stem of the Sacramento and San Joaquin rivers, and the North and South forks of the Mokelumne River (see Appendix 1). Proposals should be consistent with Applicants' Five-Year Plans. Applications for projects that differ significantly from the Local Agency's Five-Year Plan must contain a full justification for the relevant differences.

6. AVAILABLE FUNDS

This PSP is limited to a maximum of $75 million **IN TOTAL GRANT FUNDING**. The fund sources for this PSP are Propositions 1E and 84. The Department is under no obligation to release funding if insufficient responsive Applications are submitted for consideration. The Department may also choose to withhold and/or redirect a portion of this amount based on emergency needs in the Delta, or other considerations within the Department's authority.

Applications submitted in response to this PSP will be limited to no more than $10 million in State funding per successful project, and are expected to commence within two construction seasons of execution of the funding agreement.[2]

[1] AAS = Acreage x Average Depth (e.g. Flood Volume in acre feet (ac-ft)). This is directly related to the acreage of the District and the depth below mean high tide elevation.
[2] Exceptions to these limitations are subject to sufficient justification and approval by DWR.

7. APPLICATION AND SELECTION PROCESS

Project funding will be based on a two-phase submittal process. The first-phase submittal is open to all eligible applicants and requires the submission of a Concept Proposal. The Concept Proposal must provide a short description of the elements (levee integrity, habitat enhancement, and water supply reliability) of the proposed project. The Concept Proposal will be evaluated for completeness and how well it meets the intent of this solicitation. Eligible Applicants submitting a Concept Proposal judged to meet the intent of the PSP will be invited to submit a Full Application for the project described in their Concept Proposal.

The purpose of this two-phase submittal process is to allow applicants to submit proposals for DWR's consideration before preparing a Full Application. This is intended to limit the expense and work that comes with the submittal of a Full Application in the event that a project may not be selected.

7A. Concept Proposals

Submittal of Concept Proposals

Proposals should be submitted electronically, using the Concept Proposal Form available at: http://www.water.ca.gov/floodsafe/fessro/docs/special_PSP14_concept.pdf (Adobe Reader 9 can be downloaded at www.adobe.com/go/reader). Electronic Concept Proposal Forms must be submitted to DWR by 4:00 p.m. on July 17, 2014. The time/date stamp on the e-mail accompanying the electronic Concept Proposal Form will establish the official date and time of submittal. Please submit electronic Concept Proposal Forms to: DeltaLeveesProgram@water.ca.gov.

Hard copies of the Concept Proposal Form will be accepted, and are available upon request. If an applicant chooses to submit a hard copy Concept Proposal by mail, it must be postmarked or in DWR offices by 4:00 p.m. on July 17, 2014.

Evaluation of Concept Proposals

DWR personnel will review each Concept Proposal to make sure that all information requested in the Concept Proposal Form has been provided and that the Concept Proposal meets the stated intent of the PSP. Submittals that are incomplete or do not meet the intent of this PSP will not be further considered, and applicants will be notified of this determination. Applicants with Concept Proposals that are complete and are judged by the Program to meet the intent of this PSP will be invited to continue to the second phase, the submission of a Full Application.

7B. Full Applications

Applicants must include the following when submitting their Full Application:[3]

[3] Applicants with questions about what to provide should consult with the Department. Typical FloodSAFE projects require an economic justification. Projects eligible under the 2014 Guidelines, however, do not need to provide any

- A cover sheet that provides an overview of the Project;
- A statement identifying the Applicant's representatives;
- A completed Local Agency Information Sheet (Appendix 3);
- A resolution signed by the Local Agency authorizing submission of the Application and designating a representative to sign the application, enter into a contract with the State of California, implementing a flood protection program, and providing the local cost share (Appendix 4);
- A detailed Project Description; including maps, drawings and a statement explaining the assets the Project will protect, how the project will affect export water supply reliability from the Delta for the State and federal Water Projects and the habitat features incorporated with the project along with a justification for the project. The level of detail provided in the Project Description is at the discretion of the Applicant, but it is in the Applicant's interest to offer as much detail and documentation as possible, as the eligibility and ranking criteria in these Guidelines require a great deal of specific information;
- The Fish Friendly Levee Habitat (Delta-specific channel margin habitat) portion of the project must be clearly identified;
- A statement from a professional civil engineer registered in California who has reviewed the Project Description, discussing the levee stability and water supply reliability benefits of the project;
- A statement from a qualified biologist or Restoration Ecologist who has reviewed the Project Description, discussing any proposed environmental impacts and the habitat enhancement benefits of the project;
- A detailed statement of expected Project costs and detailed financial plan;
- A detailed description of the impact the Project will have on habitat and the environment, a detailed discussion of the environmental permits required for the Project, and a schedule for permit completion;
- A detailed description by a qualified biologist or Restoration Ecologist of how the Project proposes to meet the requirements of Water Code Section 12314, which requires no net long-term loss of habitat and net habitat improvement;
- A statement of grants, loans, or bonds from other sources that are associated with the Applicant’s financial plan for completing the proposed work; and
- A completed checklist of the materials required (presented in Section XII of the 2014 Guidelines).

---

economic justification since the California Water Code includes specific mandates for the Delta Special Projects Program.

Submission of Full Applications

Eligible applicants invited to submit Full Applications shall submit **four (4) hard copies** and one electronic copy of all documents by 4:00 p.m. on September 16, 2014. All copies and attachments must be legible and suitable for copying.

Applications shall be submitted to:

Andrea L. Lobato, P.E., Chief
Delta Levees Program
FloodSAFE Environmental Stewardship and Statewide Resources Office
Department of Water Resources
1416 9th Street, Room 1641
Sacramento, CA 95814

Full Applications that do not meet this deadline will not be reviewed. Applications received by the deadline will be reviewed for eligibility and completeness. Applications that are not substantially complete will not be reviewed further. The Department may contact applicants submitting Full Applications that are substantially complete but missing some items. If an applicant is contacted by the Department with a request for more information, the applicant will have one week from the date of contact to provide all requested information.

Completed Full Applications will be scored and ranked by the Program using the Full Application Scoring Criteria in Section 7C. Based on the results of the ranking, the Full Applications will be selected, available funds will be committed, and the Department will notify the applicants of their standing. Only the most qualified Full Applications will be selected for funding. Once the selection process is complete, successful applicants will be invited to enter into a Project Funding Agreement (PFA) with the Department. Funding may be disbursed only after full execution of a PFA.

7C. Full Application Scoring Criteria

Full Applications will be selected for funding based on scoring and subject to available funds based on an estimate of the total Project cost and the estimated State cost share. Full Applications will be evaluated and scored based on the four categories of criteria:

- General Considerations – 100 points Maximum
- Export Water Supply Reliability – 100 points Maximum
- Ecosystem Enhancement – 100 points Maximum
- Levee System Integrity – 100 points Maximum

Local Agencies must offer sufficient information for the Department to evaluate their Full Applications under each scoring criterion. Any criterion that is not met will receive a score of zero for that component. The Department retains the discretion to check the reasonableness and accuracy of submitted materials.

The specific criteria and scoring for each criterion are as follows:

General Considerations (Maximum 100 Points)		
Criterion	**Score**	**Notes**
Project Description	0 to 10 points	Score will be based on a Project Description that is complete, detailed, and thorough. Description should include elements such as design, accurate stationing, legible maps, project duration, necessary permits identified, levee logs, etc.
Construction Start	0 to 10 points	Score will be based on projects that are anticipated to begin construction within two years of grant award. Projects that require regulatory permits may qualify for maximum points if District commits, in writing, to consulting with the regulatory agencies immediately after development of the Scope of Work. Note: DWR anticipates that obtaining the required permits can occur simultaneously with the planning process and the first phase of landside levee construction. Waterside construction can be completed after obtaining approved permits, likely within a two year period of grant award.
Cost Considerations • Partnerships/ Matching Funding	**Maximum 50 points** 40 = 100% 20 = minimum of 75% 10 = minimum of 50% 0 = less than 50%	Score will be based on the percentage of the non-State cost-share that will be provided by an outside party (i.e., does not include the Local Agency or DWR).
• Project Cost Estimate	0 to 10 points	Score will be based on a Project Cost estimate that is complete, detailed, and thorough. The specificity and reasonableness of the estimate will also be taken into consideration.
Public Benefits (within the boundaries of the Local Agency) • Statewide Infrastructure/ Assets	**Maximum 20 points** 0 to 15 points Project will increase protection of assets of statewide benefit	Score will be based on a project that provides protection to assets of statewide benefit, including State highways, railroads, gas transmission lines, etc.

General Considerations (Continued)		
Criterion	**Score**	**Notes**
• Emergency	0 to 5 points Project increases protection of emergency infrastructure	Score will be based on a project that provides protection of local public utilities, roads, services, fuel centers, and food centers, etc.
Habitat Impacts	0 to 10 points	Score will be based on the level of detail and accuracy provided in the project's assessment of potential habitat impacts.[4]

[4]Applicant needs to provide sufficient detail and accuracy regarding the overall habitat portion of the work, as well as the enhancement portions.

Export Water Supply Reliability (100 Points Possible)		
Criterion	**Score**	**Notes**
Water Supply Corridors	**Maximum 0 to 50 points** 40 points on Middle River 10 points on Old River	Score will be based on the extent to which the project has a nexus with the protection of the Old and Middle River corridors.
Water Quality Effects/Benefits	0 to 30 points	Score will be based on how well the project may help prevent salinity intrusion from the San Francisco Bay Estuary. This includes, but is not limited to, strengthening structures to prevent or recover from levee failures and may include placement of landside stability berms to enhance post seismic recovery.
Avoidance of Negative Project Impacts (The project should not negatively impact other portions of the Delta's Integrated Flood Management System)	0 to 20 points	Score will be based on the project's ability to avoid and/or mitigate negative impacts to flood water conveyance.

Ecosystem Enhancement (100 Points Possible)[5]		
Criterion	**Score**	**Notes**
Waterside Levee Features • Fish Friendly Levee Habitat (FFLH) (Delta-specific Channel Margin Habitat), representing in-water habitat and associated Shaded Riverine Aquatic Habitat, Riparian Forest, and/or Scrub Shrub. • Shaded Riverine Aquatic (SRA) Habitat, Riparian Forest, and/or Scrub Shrub, without in-water habitat.	**Maximum 50 points** 0 to 50 points for FFLH and other associated habitat. 0 to 30 points for waterside habitat without FFLH.	Scoring will be based on the extent to which Fish Friendly Levee Habitat (Delta-specific Channel Margin Habitat), Shaded Riverine Aquatic (SRA), or small rock rip rap infill is incorporated into the design of the overall project. (See Appendix 5 for details on FFLH and Appendix 6 for SRA and other Delta Levees Program habitat types.) Projects will be targeted along the main stem of the Sacramento and San Joaquin rivers, and the North and South forks of the Mokelumne River. FFLH projects will not be encouraged along the Old and Middle rivers, except near the confluence of the San Joaquin River.
Landside Features • Riparian Forest, Scrub shrub, and native grass levee plantings	**Maximum 25 points**	Scoring will be based on the extent to which landside levee vegetation features are incorporated in to the overall project design, including strategies for weed management and maintenance of planted vegetation.
Approach and Feasibility	**Maximum 20 points**	Scoring will be based on the technical merits of the habitat enhancement features as proposed, described, and delineated by the applicant's biological and restoration ecology design, including detailed plans for long-term habitat management.

[5]Applicant needs to provide sufficient detail and accuracy regarding the overall habitat portion of the work, as well as the enhancement portions.

Ecosystem Enhancement (Continued)[6]		
Criterion	**Score**	**Notes**
Permitting	**Maximum 5 points**	Scoring will be based on the thoroughness of the applicant's plan to pursue and obtain the required permits in relation to the description of proposed habitat enhancement design features. The proposal will include an identification of all required permits, with corresponding budget and timeline for obtaining them.

[6]Applicant needs to provide sufficient detail and accuracy regarding the overall habitat portion of the work, as well as the enhancement portions.

Levee System Integrity (100 Points Possible)		
Criterion	**Score**	**Notes**
Static Stability	**Maximum 25 points**	This criterion evaluates how the project improves static stability of the proposed levee. This can include proposed factors of safety, the overall resiliency of the levee, and provisions to increase the rapidity with which the levee system may be restored after damage or failure.
Seismic Stability	**Maximum 25 points**	This criterion evaluates how the project improves seismic stability of the proposed levee. This can include placement of landside berms to enhance post seismic recovery, proposed factors of safety, the overall resiliency of the levee, and provisions to increase the rapidity with which the levee system may be restored after a seismic event.
Levee Standard	**Maximum 20 points**	This criterion rates the adequacy of the Project's justification for the levee standard chosen and its consistency with the District's Five-Year Plan.
Flood Protection for Legacy Communities	**Maximum 20 points**	This criterion rates the Project based on protection of Legacy Communities.
Climate Change Accommodation	**Maximum 10 points**	Scoring will be based on the degree to which the applicant defines how anticipated rising sea levels are taken into account in the planning and design of the Project.

7D. Cost Share

The State will determine its final cost share once the evaluation is complete. The State minimum cost share for this PSP will be 75 percent of the total project cost. Projects evaluated under this PSP will be cost shared according to the rules set forth in the 2014 Guidelines Pages 21 through 24.

8. APPLICATION TIMELINE

The following is the anticipated schedule for the application and review process:

June 13, 2014	PSP released to the public.
July 17, 2014	**Concept Proposals due electronically by 4:00 p.m.**
September 16, 2014	**Full Applications due by 4:00 p.m. (four hard copies)**
January 30, 2015	Department notifies Local Agencies of funding decisions.

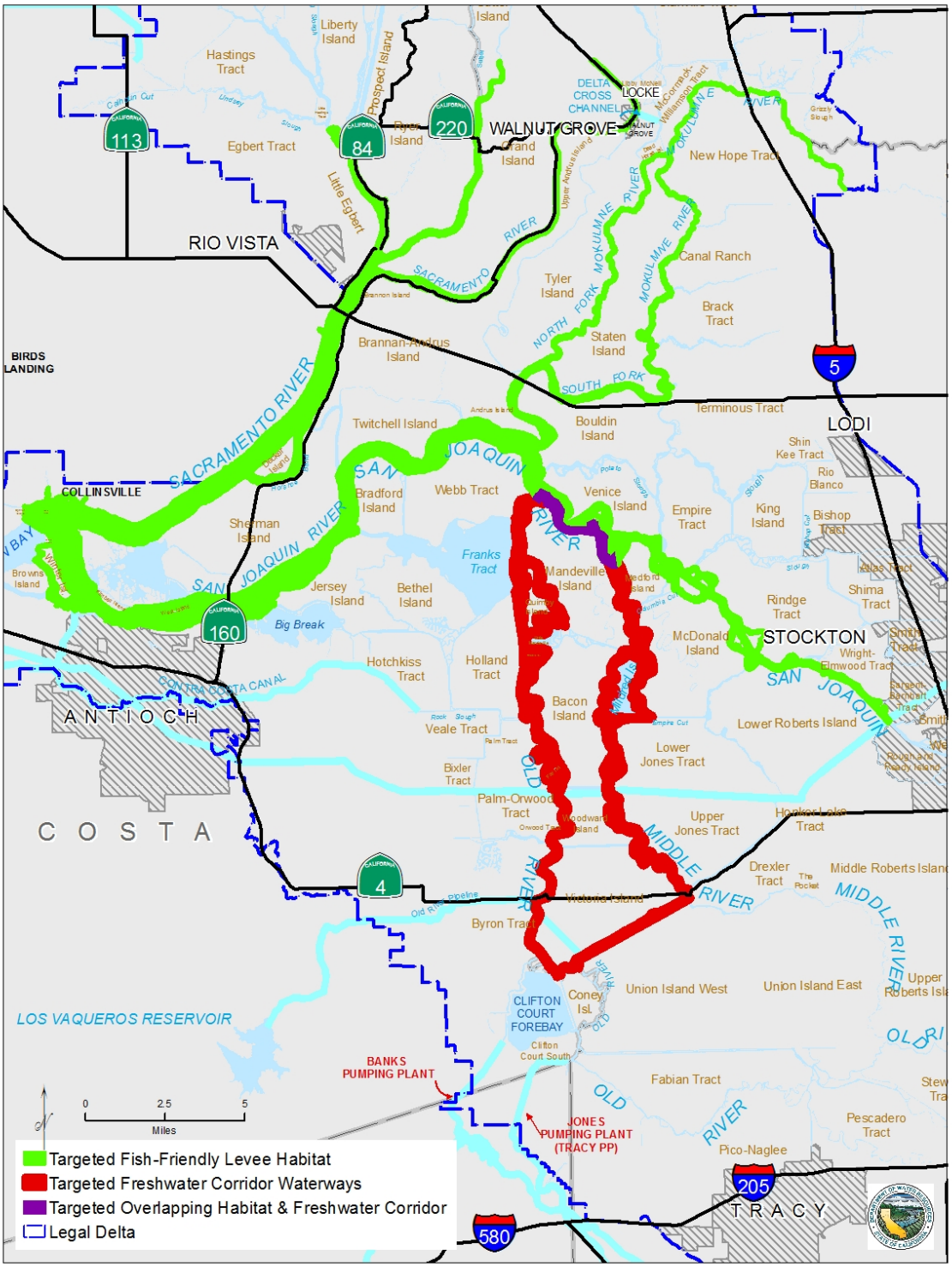
9. CONFLICT OF INTEREST AND CONFIDENTIALITY

All participants are subject to State and Federal conflict of interest laws. Failure to comply with these laws, including business and financial disclosure provisions, will result in the Application being rejected and any subsequent contract being declared void. Other legal action may also be taken. Applicable statues include, but are not limited to, Government Code Section 1090 and Public Contract Code Sections 10410 and 10411.

Applicants should note that by submitting a Concept Proposal or Full Application, they waive their rights to the confidentiality of that Concept Proposal or Full Application, though Department staff will endeavor to keep all Concept Proposals and Full Applications confidential until Project selection. After the Projects are selected, all Concept Proposals and Full Applications (those selected and those not) will be public documents.

Appendix 1

Areas for Freshwater Corridor and Fish Friendly Levee Habitat



Appendix 2

Table 1-1 from "DRAFT V3 DHF and SMB, FloodSAFE, A Framework for Department of Water Resources Investments in Delta Integrated Flood Management"

Table 1-1 Preliminary Recommendations for DWR Investment Priorities

Priority for DWR Investment in Delta Integrated Flood Management	Categories of Benefit Analysis		
	Localized Flood Protection	**Levee Network**	**Ecosystem Conservation**
First	Protect Urban Areas	Protect Water Quality and Water Supply Conveyance in the Delta	Protect Existing and Provide for Net Increase in Channel-margin Habitat
Second	Protect Small Communities and Critical Infrastructure (Located Outside of Urban Areas)	Protect Flood Water Conveyance in and through the Delta	Protect Existing and Provide for Net Enhancement of floodplain habitat
Third	Protect Agriculture and Local Working Landscapes	Protect Cultural, Historic, Aesthetic, and Recreational Resources (Delta as Place)	Protect Existing and Provide for Net Enhancement of Wetlands

Appendix 3

Local Agency Information

Title of Project :

Short Description :
:

Applicant Agency
Legal Name:
Mailing Address:
City, State, Zip Code:
Telephone: ( )
Fax: ( )
E-Mail:

Authorized Representative
Name:
Title:
Telephone: ( )
Fax: ( )
E-Mail:

Alternate Contact
Name:
Title:
Telephone: ( )
Fax: ( )
E-Mail:

Cities/Communities in the Protected Area:

County :

Members of Congress
Name, District No.:
Name, District No.:

State Senators
Name, District No.:
Name, District No.:

Members of the State Assembly
Name, District No.:
Name, District No.:

Appendix 4

Resolution No. _____

Resolved **by the _____ of the**
(Name of Agency's Governing Body)

_____
(Name of Agency)

That pursuant to and subject to all of the terms and provisions of California Public Resources Code Section 5096.21 and/or California Water Code Section 75030 application by this _____
(Type of Agency)

be made to the California Department of Water Resources to obtain funding for _____.
(Project Title)

The _____ of the
(Authorized Representative)

_____ is hereby authorized and directed
(Type of Agency)

to prepare the necessary data, make investigations, sign certifications required as part of the application, and sign and file such application with the California Department of Water Resources.

Passed and adopted **at the regular meeting of the**

_____ of the
(Name of Agency's Governing Body)

_____
(Name of Agency)

on _____.
(Date)

Authorized Signature _____

Printed Name _____

Title _____

Clerk/Secretary _____

Appendix 5

Fish Friendly Levee Habitat as a type of Channel Margin Habitat

The Program is required to support net long-term habitat improvement (California Water Code Section 12311) within the Delta. The Program is also mandated to promote the co-equal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem (California Water Code Section 85054).

The development of CMH with maximum biological values requires a significantly wider water-to-land transition zone than is typically available in many Delta channels that are bordered by heavily rip-rapped levees. Given this reality, the Program has developed a Delta-specific CMH definition for waterside habitat that is created as an additional non-structural component of an existing levee structure. Delta-specific CMH that is designed to benefit native fish species within the confines of an existing levee system is henceforth being referred to as "Fish Friendly Levee Habitat (FFLH)." This FFLH is primarily intended to provide Delta-specific rearing and outmigration habitat for juvenile salmonids, while decreasing habitat for predators of native fishes.

Fish Friendly Levee Habitat features a complex of aquatic, wetland, and riparian habitats at the edge of watercourses often associated with rip-rapped levees. FFLH provides sandy or muddy substrate at a range of elevations that include tidally submerged or shallow benches to seasonally-inundated riparian habitat (aka Shaded Riverine Aquatic). FFLH provides diversity in structure, topography, vegetation, and hydrology, with shallower depths and slower velocities than in the adjacent channel, which combine to dissipate the energy of moving water. The creation of FFLH also provides built-in accommodation for anticipated sea level rise and increased intensity of freshwater flows due to climate change.

The intention of creating Fish Friendly Levee Habitat is to include a mosaic of ecologically valuable water-to-upland habitats along fish migration corridors within the Delta that provide the food and shelter necessary for the successful rearing of native fish species.

The principal ecological functions of Fish Friendly Levee Habitat include the following:

- Provide food production and foraging opportunities for native fish species and especially for salmonids during their outmigration.
- Provide refuge from predation for salmonids during their outmigration through overhead cover and in-water finely branched woody material.
- Reduce predacious fish habitat through the filling of voids within submerged rip-rap with smaller rock material.
- Provide habitat diversity through the creation of seasonally and tidally influenced channel benches.

Appendix 6

Definition of Other Habitat Types

Shaded Riverine Aquatic (SRA) Habitat – is characterized by woody shoreline vegetation which overhangs the water's edge. Within the Delta, the woody vegetation component of SRA is most often provided by willows, alders, box elders, and cottonwoods. Shade provides cover for fish and wildlife and moderates high temperatures.

Riparian Forest (RF) Habitat – is characterized by woody vegetation (trees greater than 20 feet in height) that may or may not overhang the water's edge. The most common trees in the Delta included cottonwood, sycamore, alder, Oregon ash, willows, box elder, black walnut and various oaks. RF habitat provides food, cover, nesting, and roosting places for many birds, including hawks, owls, herons, egrets, wood ducks, woodpeckers, flickers, and numerous passerine species and can provide an important movement corridor for wildlife.

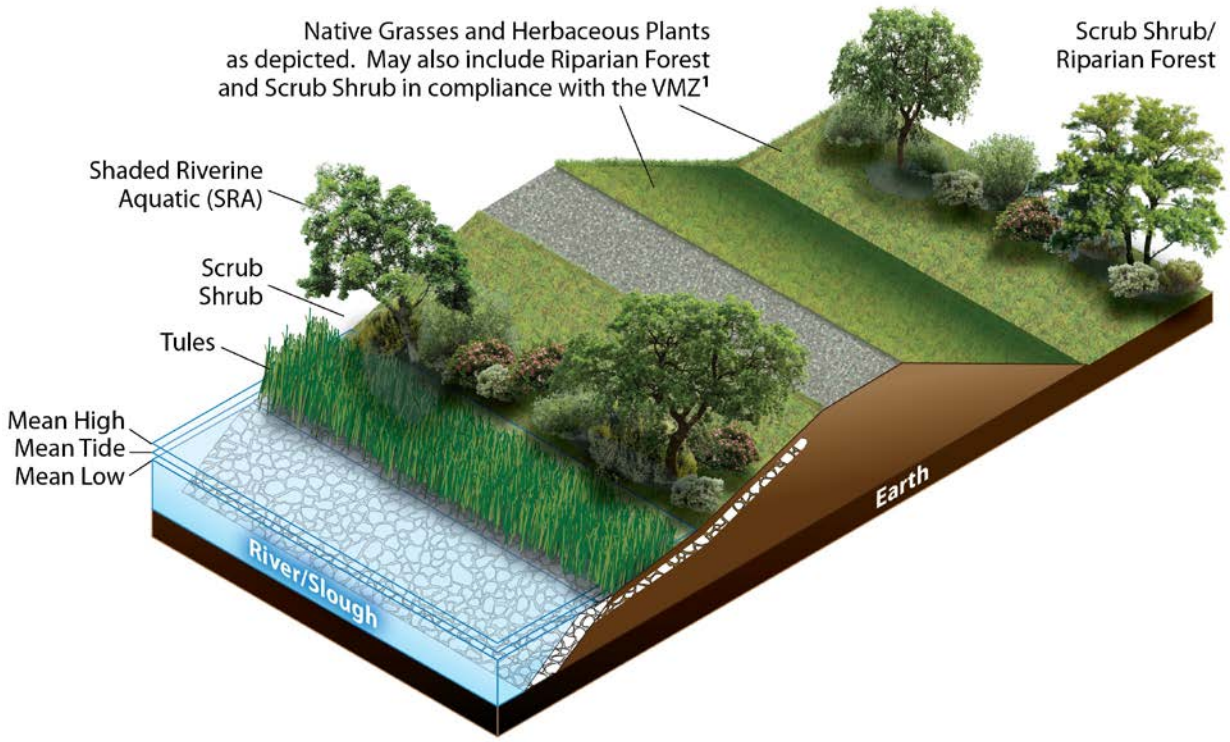
Scrub-shrub (SS) Habitat – is a stand of woody vegetation less than 20 feet in height. The various tree species that make up SS are generally the same as for RF, although in most instances alders and or willows are the dominant plants. SS also include such species as California blackberry, California wild rose, and coyote brush. Habitat value for fish and wildlife tends to increase with density and diversity of vegetative structure.

Freshwater Marsh (FM) Habitat – is a relatively shallow aquatic area, usually less than about 4.5 feet deep, where emergent plants are growing. In the Delta, freshwater marsh occurs in non-tidal or tidal regimes. The most common plants are tules, bulrushes, and cattails. Plant biomass and productivity is frequently high in freshwater marshes. Many resident and freshwater fish (e.g., various minnows including Sacramento Splittail and juvenile salmonids) use tidally-influenced FM for cover from predators and feeding areas.

Appendix 7

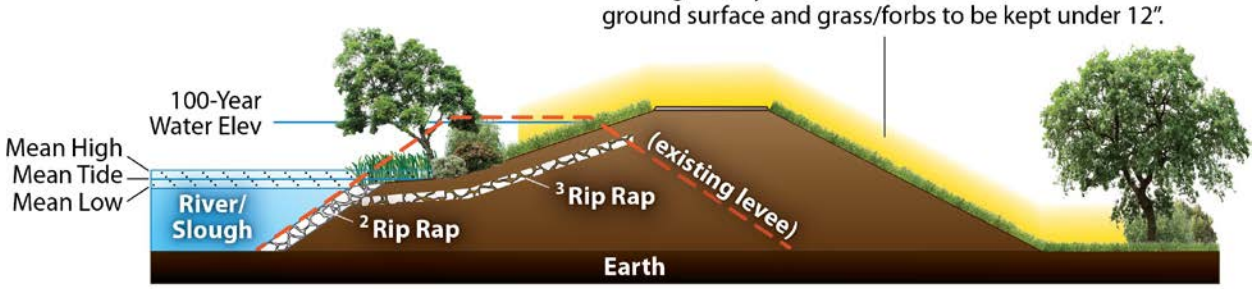
Waterside Habitat
Typical Cross-Sections

OPTION 1: FISH-FRIENDLY LEVEE HABITAT



[1] Vegetation Management Zone (VMZ)

Top 20′ of slope length on waterside and all of land side, including 15′ beyond levee toe. Trees trimmed 5′ above ground surface and grass/forbs to be kept under 12″.



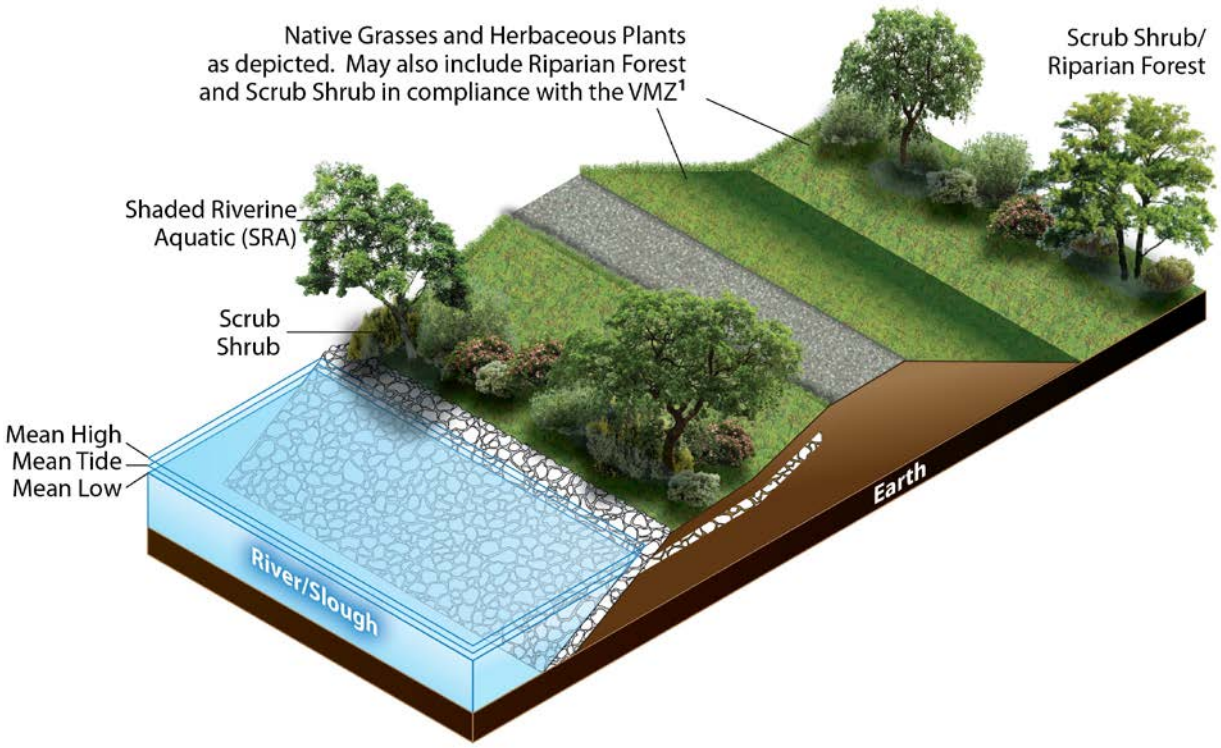
Notes:
[1] - 2012 Central Valley Flood Protection Plan - Conservation Framework
[2] - 10″ minus rock added to fill rip rap voids, discouraging predatory fish
[3] - Topped with soil slurry to fill voids

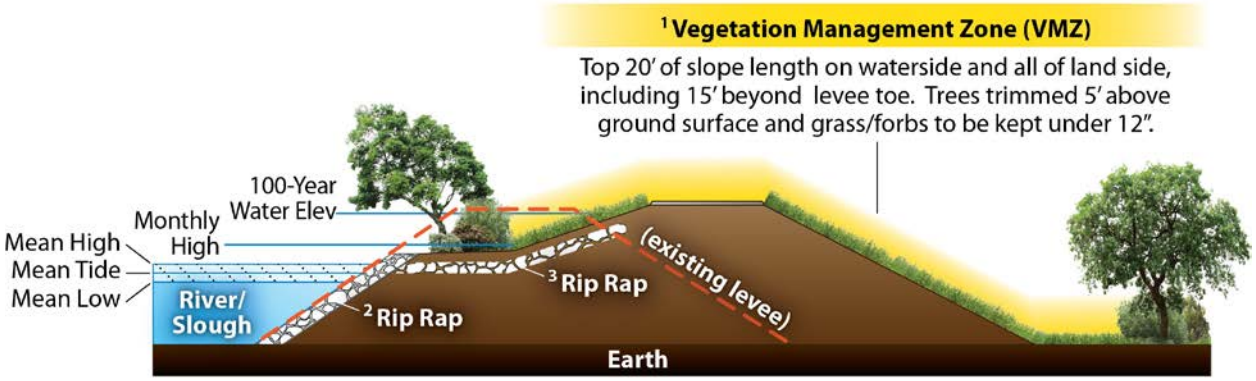
Disclaimer:
Drawings are idealized for how habitat should be incorporated into multi-benefit levee projects in order to benefit native delta species and are not meant to be used for levee design. Each levee improvement site will be considered on a case-by-case basis and may not include all features shown. Drawings are not to scale.

Appendix 7 (Continued)

Waterside Habitat
Typical Cross-Sections

OPTION 2: SHADED RIVERINE AQUATIC





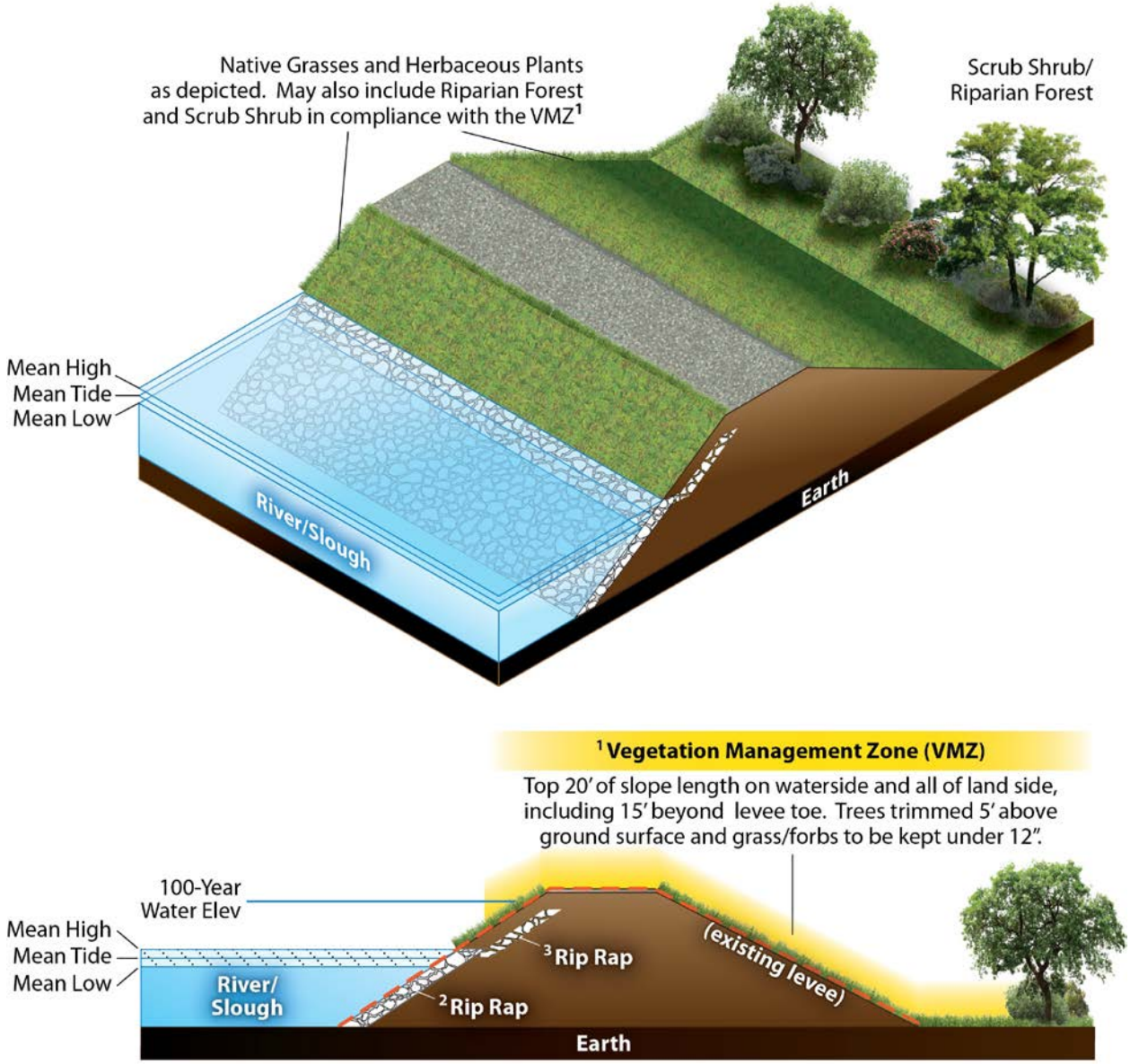
Notes:
[1] - 2012 Central Valley Flood Protection Plan - Conservation Framework
[2] - 10″ minus rock added to fill rip rap voids, discouraging predatory fish
[3] - Topped with soil slurry to fill voids

Disclaimer:
Drawings are idealized for how habitat should be incorporated into multi-benefit levee projects in order to benefit native delta species and are not meant to be used for levee design. Each levee improvement site will be considered on a case-by-case basis and may not include all features shown. Drawings are not to scale.

Appendix 7 (Continued)

Waterside Habitat
Typical Cross-Sections

OPTION 3: MINIMAL SETBACK



Notes:
[1] - 2012 Central Valley Flood Protection Plan - Conservation Framework
[2] - 10" minus rock added to fill rip rap voids, discouraging predatory fish
[3] - Topped with soil slurry to fill voids

Disclaimer:
Drawings are idealized for how habitat should be incorporated into multi-benefit levee projects in order to benefit native delta species and are not meant to be used for levee design. Each levee improvement site will be considered on a case-by-case basis and may not include all features shown. Drawings are not to scale.