

# ARCF 2016 MITIGATION PROGRAM

Brief To: Bank Protection Working  
Group on LAR Mitigation

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Sacramento District  
Date: 02 June 2022

\*the information contained herein is based on estimates at  
the time and is subject to change.



US Army Corps  
of Engineers®



# COMMON QUESTIONS



- What is mitigation?
- Why are we mitigating?
- What laws and regulations apply?
- What are the requirements?
- How do we determine impacts?
- What are the impacts?
- How are sites selected?
- Who is involved?
- When will work occur?
- Where are the sites?
- What are you planting?
- What will it look like?
- How are sites protected?
- How can I stay informed?







# WHAT LAWS, AND REGULATIONS APPLY?



- Clean Air Act of 1972, as amended (42 U.S.C. 7401, et seq.)
- Clean Water Act of 1972, as amended (33 U.S.C. 1251 et seq.)
- Endangered Species Act of 1973, as amended (16 U.S.C. 1531, et seq.)
- Fish and Wildlife Coordination Act of 1958, as amended (16 U.S.C. 661, et seq.)
- Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801, et seq.)
- Migratory Bird Treaty Act of 1936, as amended (16 U.S.C. 703, et seq.)
- Executive Order 11988, Flood Plain Management
- Executive Order 11990, Protection of Wetlands
- Executive Order 12989, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- Executive Order 13112: Invasive Species
- Farmland Protection Policy Act (7 U.S.C. 4201, et seq.)
- National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321, et seq.)
- National Flood Insurance Program
- National Historic Preservation Act of 1966, as amended (54 U.S.C. 300101)
- Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (49 CFR Part 24)
- Wild and Scenic Rivers Act (16 U.S.C. 1217, et seq.)
- Alquist-Priolo Earthquake Fault Zoning Act
- California Clean Air Act
- California Endangered Species Act
- California Environmental Quality Act
- California Seismic Hazards Mapping Act
- California Surface Mining and Reclamation Act
- California Water Code
- Porter-Cologne Water Quality Control Act



# NMFS BIOLOGICAL OPINION REQUIREMENTS



Issued May 12, 2021

Four Listed Species: Sacramento River Winter run Chinook Salmon, Central Valley Spring run Chinook Salmon, Central Valley Steelhead and Green Sturgeon

### Mitigation Ratios:

- Before Construction 1:1
- During Construction 2:1
- After Construction 3:1

### Constraints:

- Must be on the Main Stem of the Sacramento River
- Preferred area is 20 river miles or less from the impacts
- Outside of the 20 river miles increases the ratio
- Impacts need to be mitigated for on their respective River

### Updates:

- Funding the Green Sturgeon Research Grant accounts for the temporal impacts and reduces the ratio by 1

Sailor Bar, LAR





# USFWS BIOLOGICAL OPINION REQUIREMENTS



Sac River

Issued March 31, 2021

Two Listed Species: Valley Elderberry Longhorn Beetle (VELB), and Western Yellow billed Cuckoo (YBCU)

Mitigation Ratios:

- VELB 3:1
- YBCU 2:1

Constraints:

- VELB transplants on the LAR when ever possible
- YBCU ratio aligns with the FWCA Report for Riparian
- Impacts need to be mitigated for on their respective River





# FISH AND WILDLIFE COORDINATION ACT REQUIREMENTS



Issued: October 5, 2015

## Habitats and Mitigation Ratios:

Oak Woodland / 2:1

Riparian Forest / 2:1

Riparian scrub-scrub 2:1

Emergent wetland 2:1

## Recommendations:

- Provide onsite mitigation to the extent possible by replant protection sites with diverse native species.
- Woody vegetation removal and trimming should occur outside of bird nesting season
- Participate in the development of a Riparian Plan on the LAR

## Updates:

- Lower American River Conservation Strategy was completed Oct 2020.
- LAR Natural Resource Management Plan was draft complete May 2021.
- Riparian Forest / Scrub-scrub = YBCU mitigation.
- Wetlands below the OHWM = Riverine/Salmonid mitigation





# WILD AND SCENIC RIVER ACT REQUIREMENTS

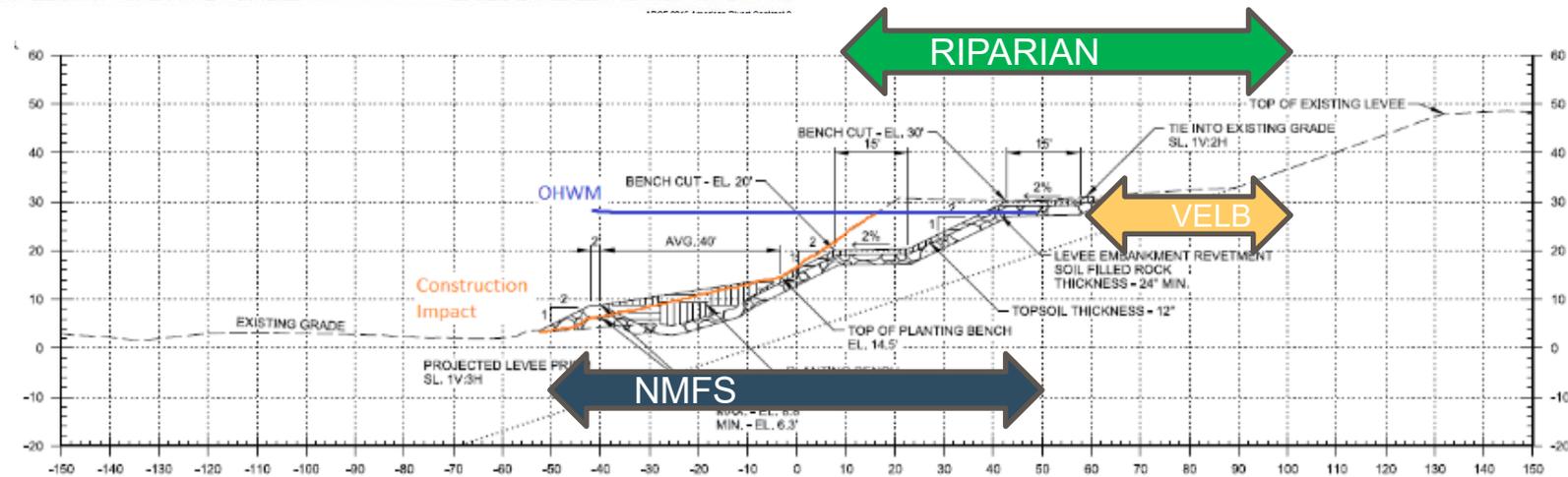
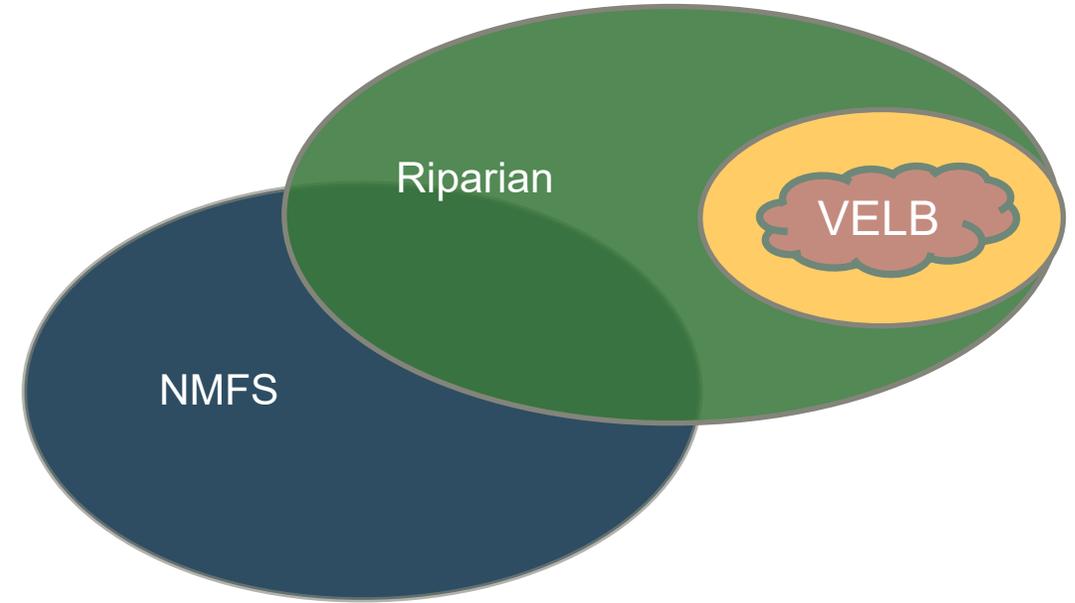
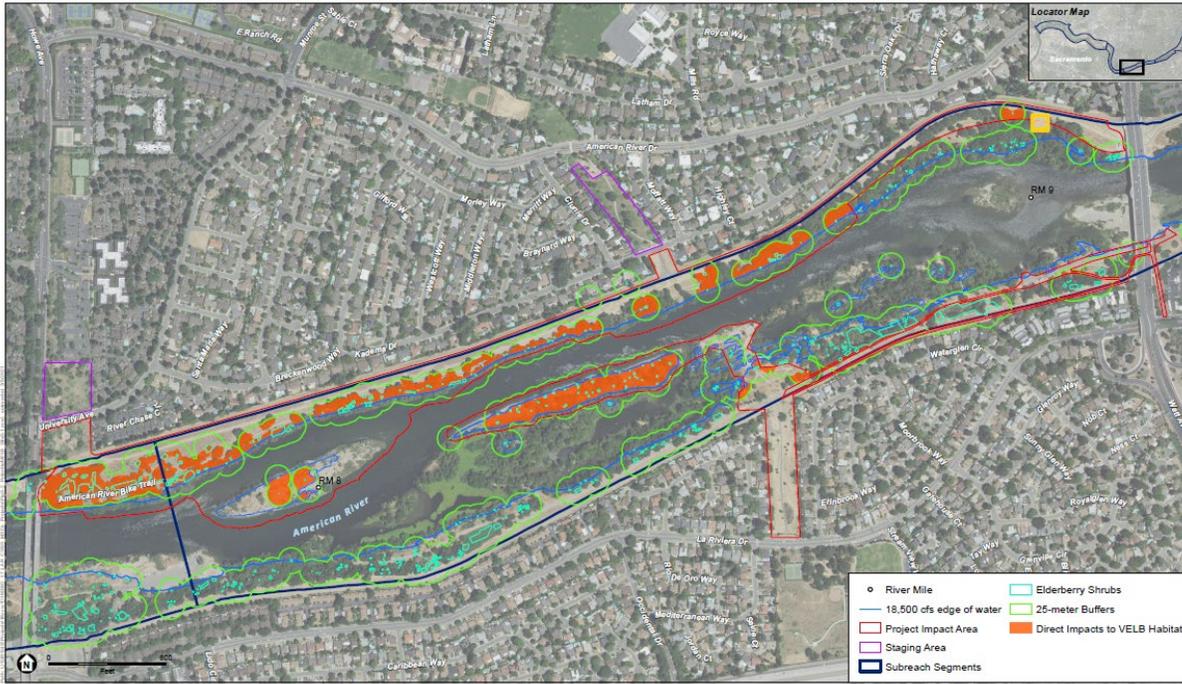


Issued: July 20, 2021

- Minimize paved trail closures.
- Coordinate closures and re-routing of the bike routes with the Sacramento County Regional Parks in addition to the City of Sacramento.
- For permanent re-routes of the trail, replace the equestrian/hiking trail and the bike path in-kind with a similar experience as currently provided.
- Reduce temporary, short-term construction effects on recreational facilities.
- Coordinate with recreation user groups prior to and during construction.
- Restore riparian and aquatic vegetation by utilizing planting benches.
- Be consistent with the Natural Resources Plan.
- Provide Long-Term Maintenance of Bank Protection Sites and mitigation areas.



# HOW DO WE DETERMINE IMPACTS?



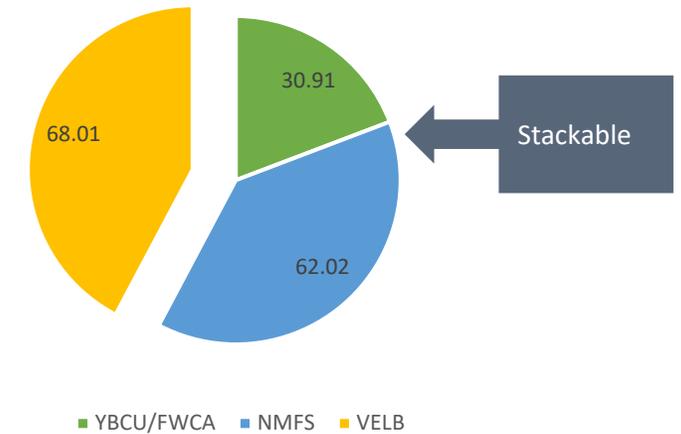


# WHAT ARE THE ESTIMATED IMPACTS?



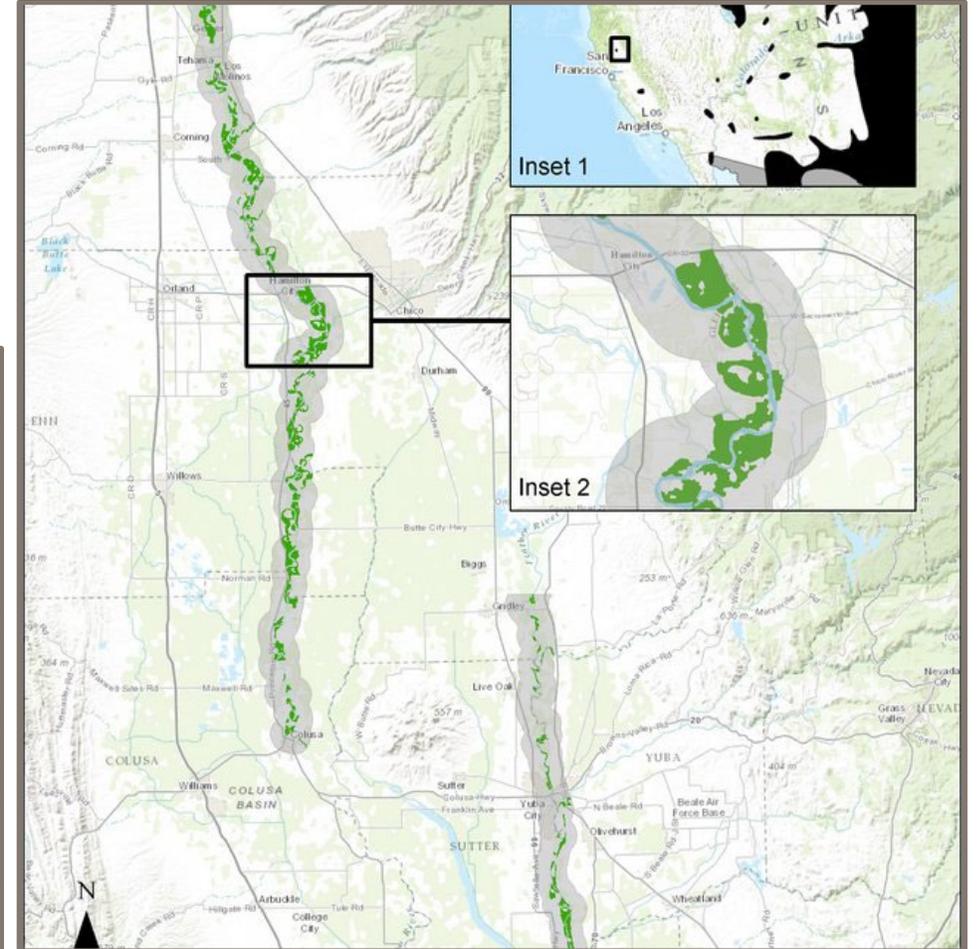
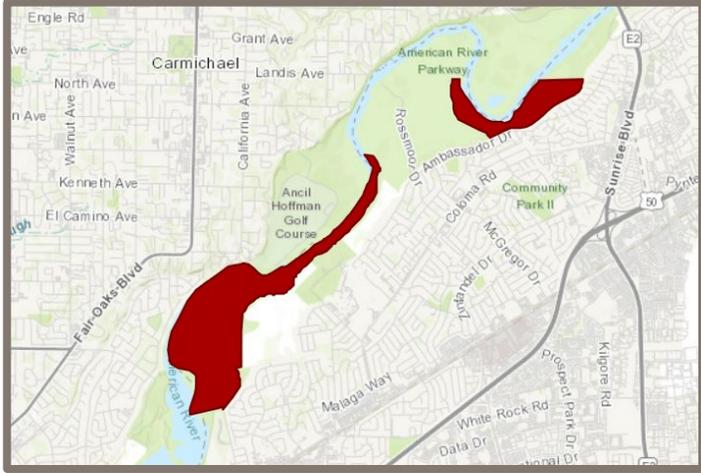
Contract	YBCU/FWCA Impact (acres)	On-site mitigation	NMFS Impact (acres)	On-site mitigation	VELB Impact (acres)	On-site mitigation
Ratio	2:1		2:1		3:1	
C1	10.33	12.86	8.5	7.59	0.1	0
C2	8.79	15.76	5.44	8.65	9.67	0
C3A	3.49	4.21	8	3.72	3.05	0
C3B	9.22	-	19.05	-	9.84	0
C4	0.04	-	-	-	0.01	0
Total	31.87	32.83	40.99	19.96	22.67	0
Total Mitigation Need	64.22		81.98		68.01	
Remaining Need	30.91		62.02		68.01	

Off-site Mitigation Need in Acres



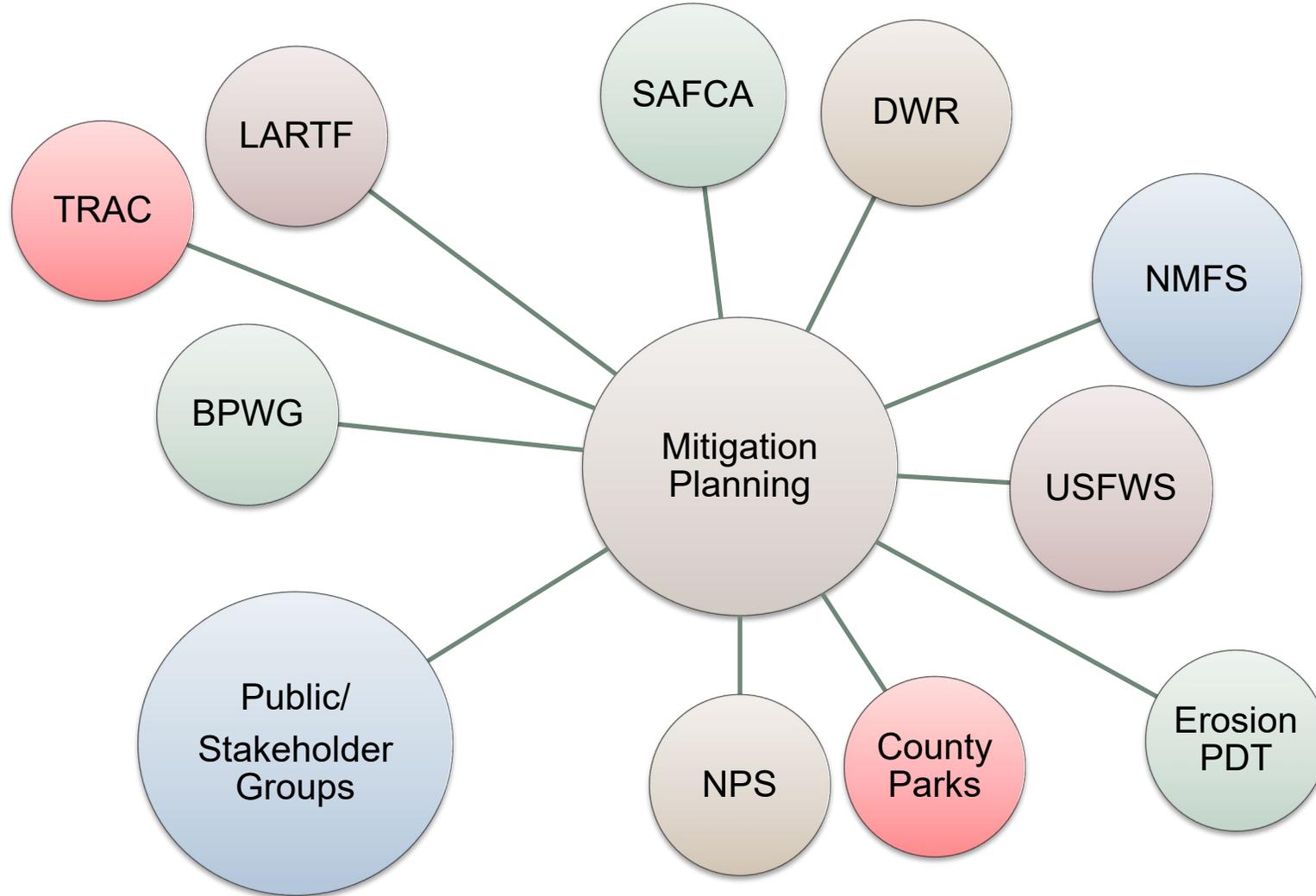


# HOW ARE SITES SELECTED?



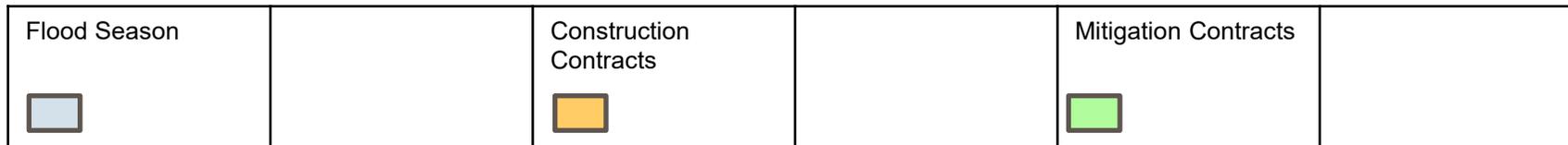
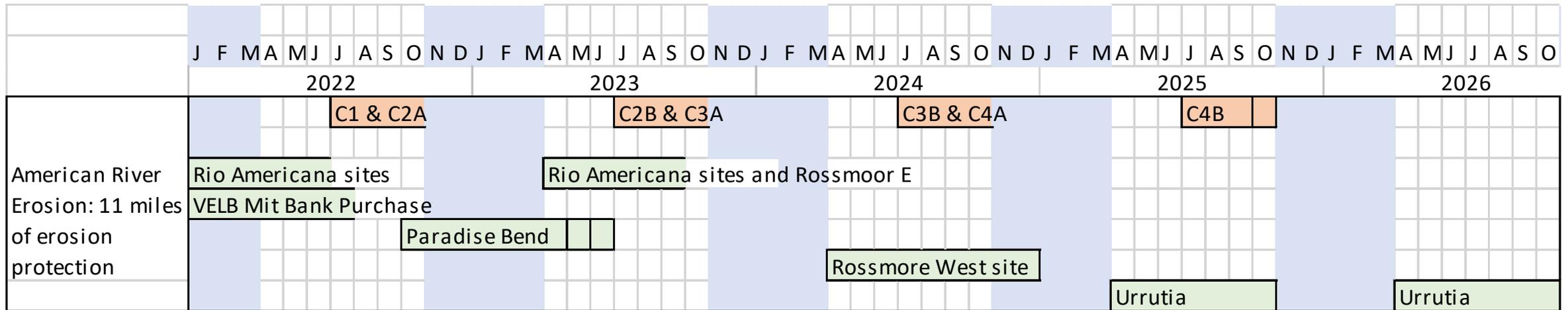


# WHO IS INVOLVED?



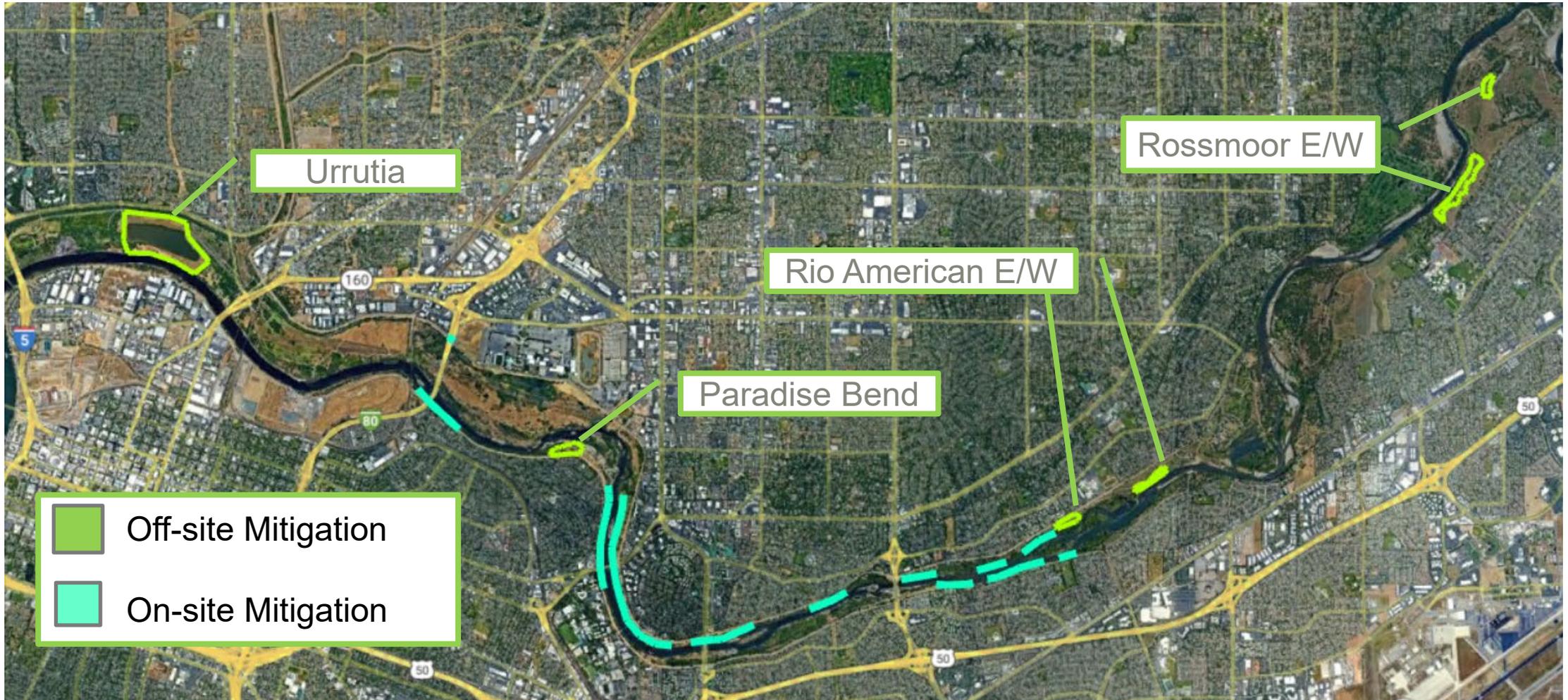


# WHEN WILL WORK OCCUR?





# WHERE ARE THE SITES?





# WHAT ARE YOU PLANTING?



SAMPLE PLANTING SCHEDULE		
	common name	scientific name
Overstory	Box elder	Acer negundo
	Oregon ash	Fraxinus latifolia
	Valley oak	Quercus lobata
	Interior Live Oak	Quercus wislizenii
	Cottonwood	Populus fremonti
Midstory	Western Redbud	Cercis occidentalis
	Coyote brush	Baccharis pilularis
	Rhamnus tomentella	Coffeeberry
	Rose	Rosa californica
	Blackberry	Rubus ursinus
	Elderberry	Sambucus mexicana
Understory	Mugwort	Artemesia douglassiana
	Western Goldenrod	Euthamia occidentalis
	Creeping wildrye	Leymus triticoides
	Deergrass	Muhlenbergia rigens
	Evening primrose	Oenothera hookerii
Vines	Pipevine	Aristolochia californica
	Clematis	Clematis lingustifolia
	Grape	Vitis californica
Auxiliary	Yarrow	Achillea millefolium
	Blue dicks	Dicheolostemma capitatum
	Gum Plant	Grindelia camphorum
	Purple needlegrass	Stipa Pulchra





# WHAT ABOUT INVASIVE AND NON-NATIVE TREES?



## List of non-native species removed from LAR C2 footprint

- Black Locust-193**
- Tree of Heaven-30**
- Cherry Plum-1**
- Chinese Tallow-3**
- Chinese Elm-1
- Japanese Privet-2
- Australian Pine-2
- Trident Maple-2
- European Hackberry-5
- Chinese Pistache-1
- Olive-1
- Cork Oak-1
- Holly Oak-1

(Trees shown in bold are listed as invasive or “watch” species by California Invasive Plant Council). Others listed are not native to this area

The non-native species account for over 40% of the tree species removed within the contract 2 footprint- these are still mitigated at a 2:1 ratio with native plantings





# WHAT WILL IT LOOK LIKE?



## PREVIOUS EROSION CONTROL

How a site near Sacramento State looked after similar work in 2001, and 9 years later:



## Proposed erosion work

Federal and local officials have begun planning a massive project that would add a layer of rocky erosion protection along up to 11 miles of levees in the American River Parkway. About 4 miles of similar work has been done in past years.

- Proposed erosion protection
- Previously completed

Source: Sacramento Area Flood Control Agency



# WHAT WILL IT LOOK LIKE?



Previously Constructed Erosion Protection Site Between Guy West Bridge and H Street



**May 2001**



**June 2005**



**July 2010**

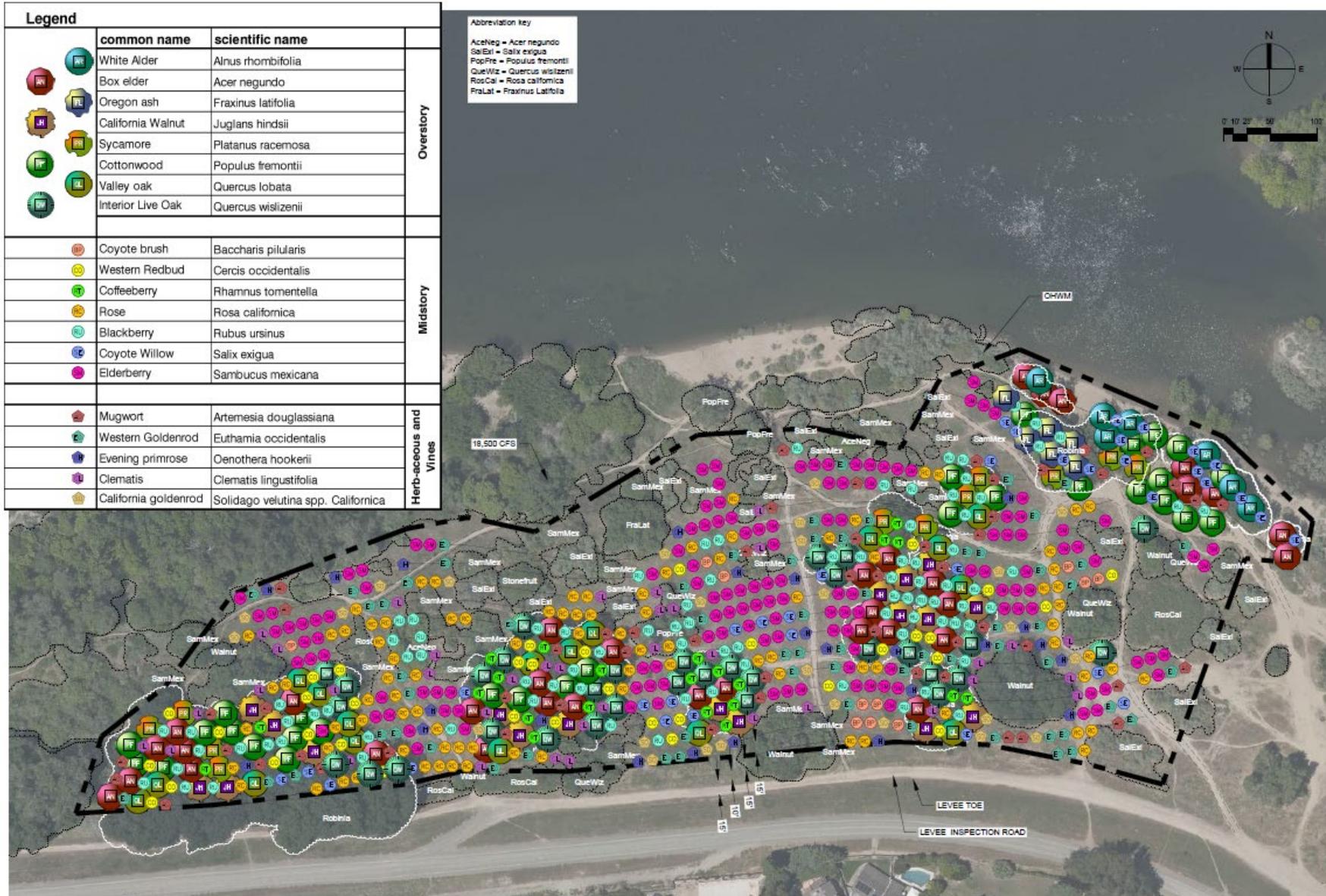


**June 2014**



**October 2015**

# OFFSITE MITIGATION PLANTING





# HOW ARE SITES PROTECTED?



- Site specific management plan
- Operations & Maintenance plans
- Parkway Plan/NRMP
- WSRA/Consistency Determination
- Biological Opinion
- Enforced by USACE/SAFCA/ Sac County Parks/ Contractor/ USFWS/ NMFS
- Physical signage/ temporary fencing





# HOW TO STAY INFORMED




**Project Overview**

- American River Levees
- Sacramento River Levees
- Sacramento Weir
- Mitigation

*Subscribe for Construction & Traffic email updates*

*Project Information Tri-fold*

*Construction Work Inquiry & Concern Submission Form*

**Reducing flood risk in Sacramento**

Greater Sacramento, California, is often considered to be the most at-risk region in America for catastrophic flooding, relying on an aging system of levees, weirs and bypasses and Folsom Dam to reduce its flood risk. But that system, just like a chain, is only as strong as its weakest link. Together, the U.S. Army Corps of Engineers, California's Central Valley Flood Protection Board, California Department of Water Resources, and the Sacramento Area Flood Control Agency have made tremendous progress in reducing the flood risk, but more work remains. Through the Bipartisan Budget Act, the Corps has received full upfront funding to modernize Sacramento's aging flood infrastructure. This allows us to more efficiently implement nearly \$1.8 billion in upgrades to Sacramento's flood risk management system. The authorized work includes up to: 13 miles of seepage cutoff walls, 21 miles of bank protection, 5 miles of levee stabilization, 5 miles of levee raises and widening the Sacramento Weir and bypass.

**Current Project Activities**

- Sacramento River East Levee Contract 2 Construction
- Sacramento River East Levee Contract 3 Construction
- Sacramento River East Levee Contract 4 Design
- Sacramento River Erosion Contract 1
- Sacramento River Erosion Contract 2
- American River Contract 1
- American River Contract 2

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