

Proposed Yolo Bypass System Integrated Comprehensive Study

National Waterways Conference
September 2019

California Central Valley



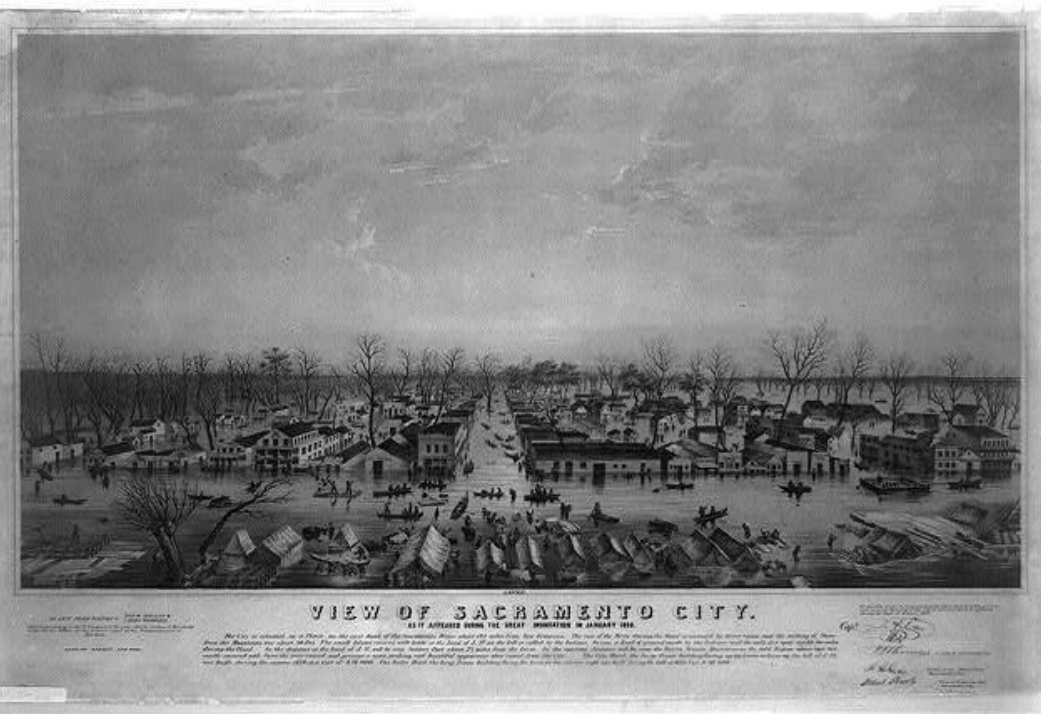
- It is California's single most productive agricultural region and one of the most productive in the world
- Using fewer than 1% of U.S. farmland, the Central Valley
 - Supplies 8% of U.S. agricultural output (by value)
 - Produces 1/4 of the Nation's food, including 40% of the Nation's fruits, nuts, and other table foods
- **Historically can become one large inland sea**

Sacramento River Basin



- Flows south for 400 miles before reaching the Sacramento–San Joaquin River Delta and San Francisco Bay.
- The river drains about 26,500 square miles in 19 California counties
- Mostly within the **flat**, fertile agricultural region known as the Sacramento Valley
- The Spanish explorer Gabriel Moraga named the river Rio de los Sacramentos in 1808

City of Sacramento Flooding in 1850



City of Sacramento Flooding in 1861/62

A 43-day storm that began in December 1861 put the Central Valley underwater for six months





1907 Central Valley Flooding

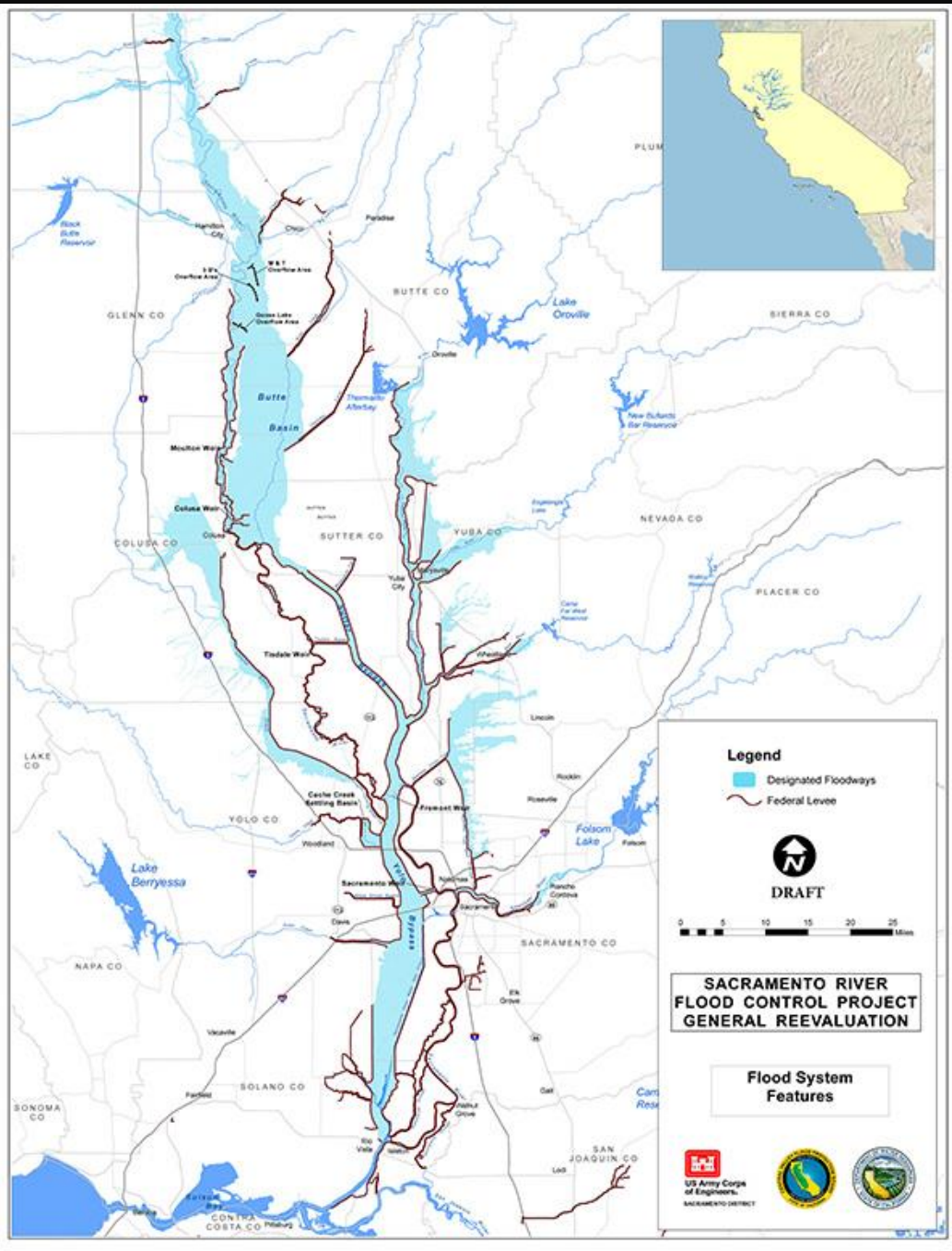
1909 Central Valley Flooding





- **Locally constructed levees integrated into a single State Plan by the California Legislature in 1911**
- **The Federal Flood Control Act of 1917 authorized the Corps of Engineers to take on Flood Control Projects**
- **Provisions of the 1917 Act were designed to reduce flood damage along the Mississippi, Ohio, and Sacramento Rivers**





- **USACE constructed channels**
 - **Standardized levee design**
 - **Sufficient channel capacity**
 - **Bypass systems**
 - **Constructed to contain the record floods of 1907 and 1909**

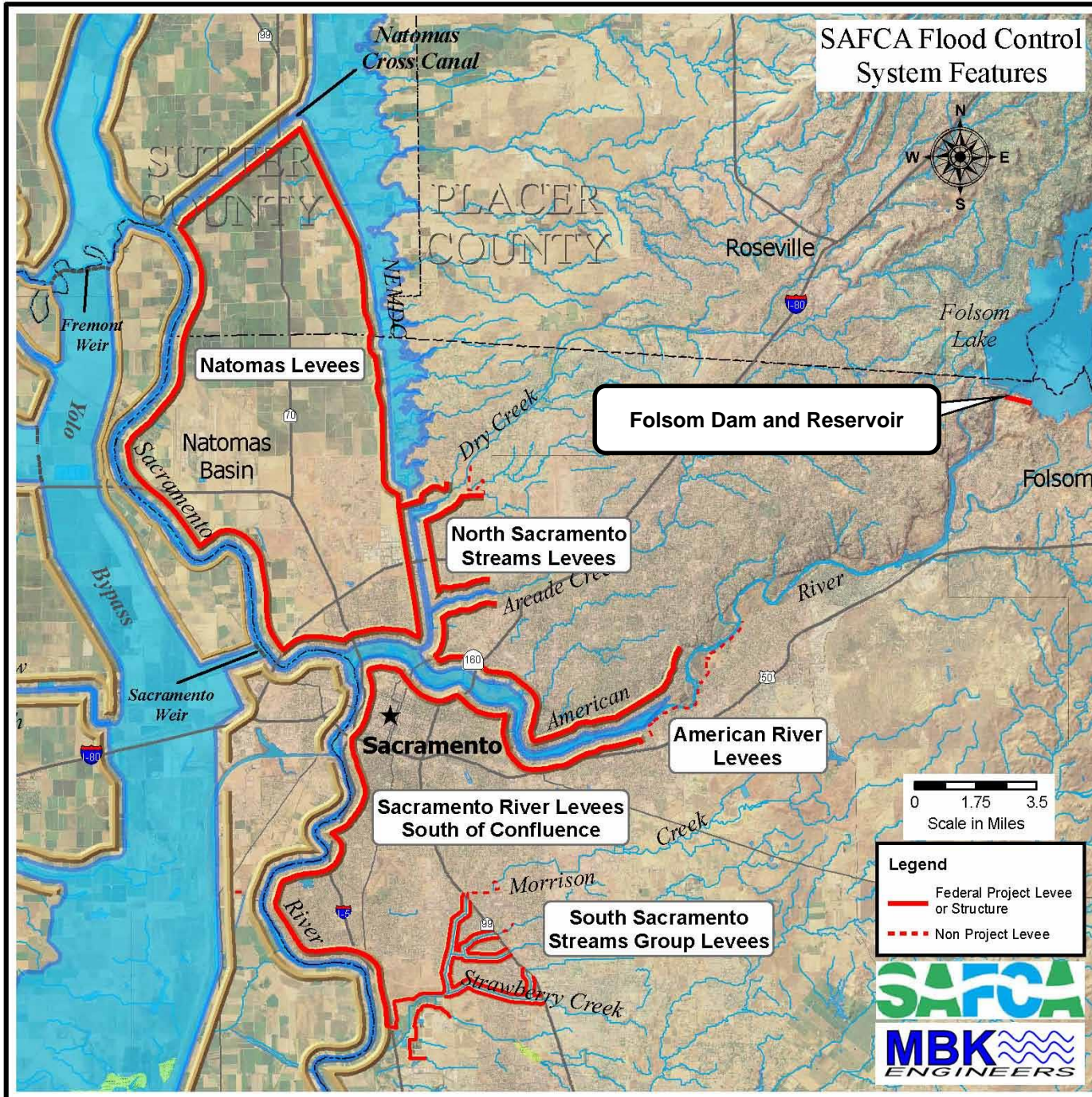
- **Channel capacity augmented by the construction of Dams with winter flood space:**
 - **Shasta Dam**
 - **Folsom Dam**
 - **New Bullards Bar Dam**
 - **Oroville Dam**

Folsom Dam

- Completed in mid-1950's on the American River
- Last levee work in the Sacramento area completed about the same time
- The system was designed to provide Sacramento with a “Standard Project Flood” (SPF) level of protection
- The SPF did not have a uniform frequency, but was a site specific determination
- The volume of the SPF for Sacramento approximated a 400 to 500 year event

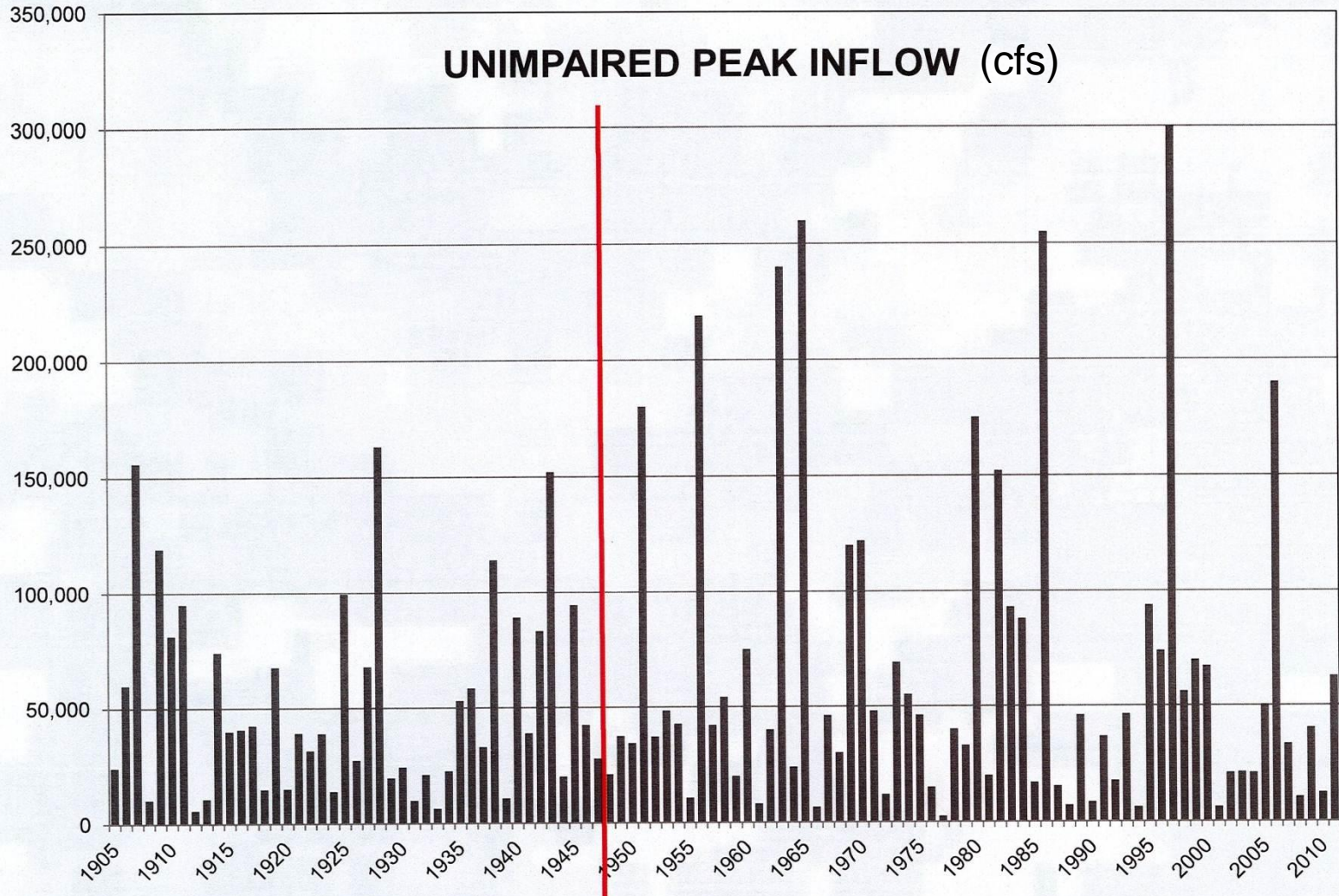


System



- Folsom Dam and Reservoir on American River
- 106 miles of levees and channels
- Sacramento Weir and Bypass
- Fremont Weir and Yolo Bypass

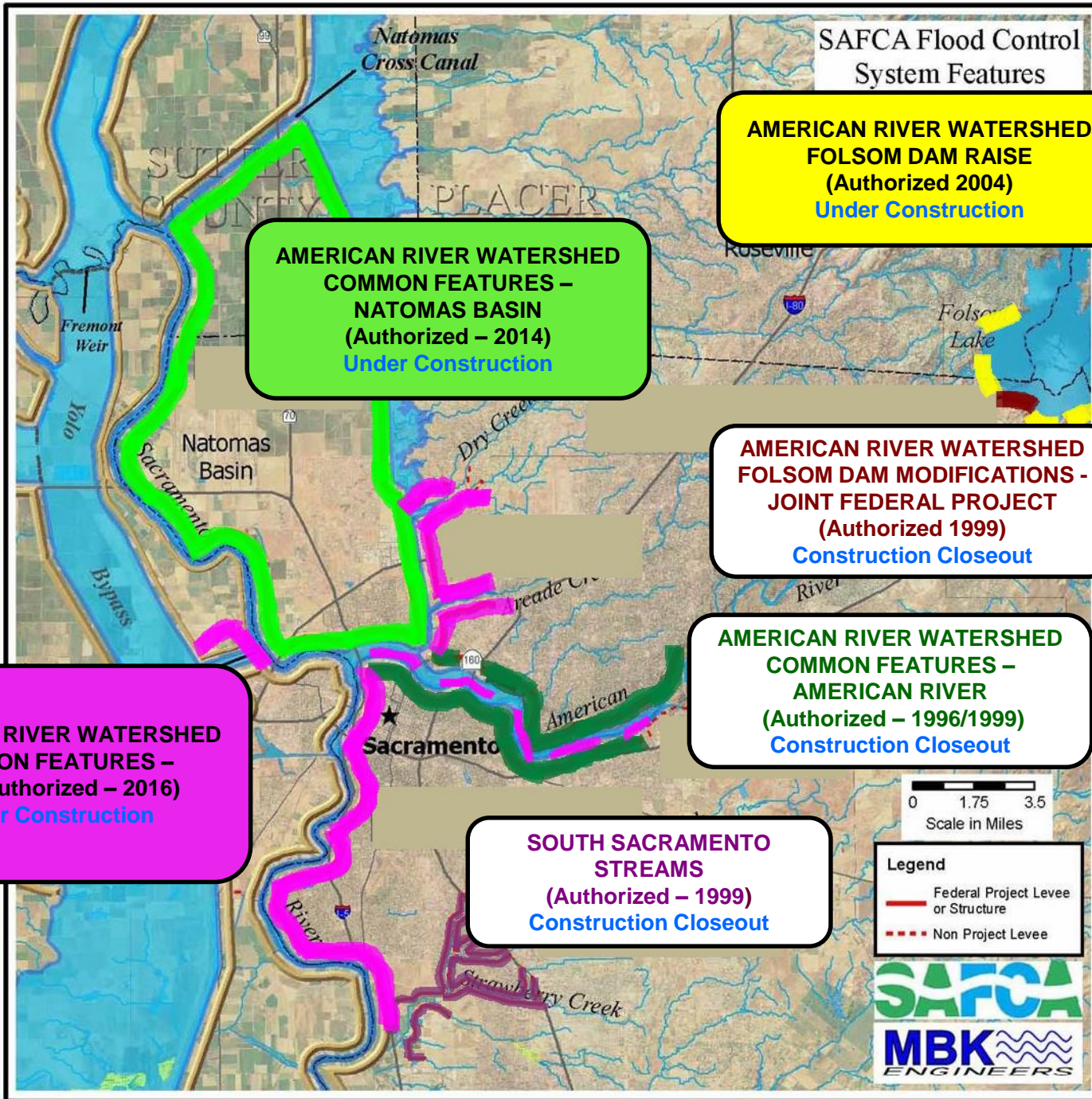
Historic American River Flows





After the 1986 and the 1997 floods, the level of protection provided by the system was dropped from an “SPF” level to about a 70-year level.

- **Post-Katrina**
 - Analyzed past 100 levee failures across the country
 - **80% Seepage**
 - Half through seepage
 - Half under-seepage
- **Result – New Federal and State Requirements for Urban Levees Addressing Seepage**
- **As a result of evaluating Sacramento’s system to address seepage, parts of Sacramento had less than 30-year level of protection**
 - Over half million people in the floodplain
 - \$70 billion in damageable property



SAFCA Flood Control System Features

AMERICAN RIVER WATERSHED FOLSOM DAM RAISE
 (Authorized 2004)
 Under Construction

AMERICAN RIVER WATERSHED COMMON FEATURES – NATOMAS BASIN
 (Authorized – 2014)
 Under Construction

AMERICAN RIVER WATERSHED FOLSOM DAM MODIFICATIONS - JOINT FEDERAL PROJECT
 (Authorized 1999)
 Construction Closeout

AMERICAN RIVER WATERSHED COMMON FEATURES – AMERICAN RIVER
 (Authorized – 1996/1999)
 Construction Closeout

AMERICAN RIVER WATERSHED COMMON FEATURES – 2016 (Authorized – 2016)
 Under Construction

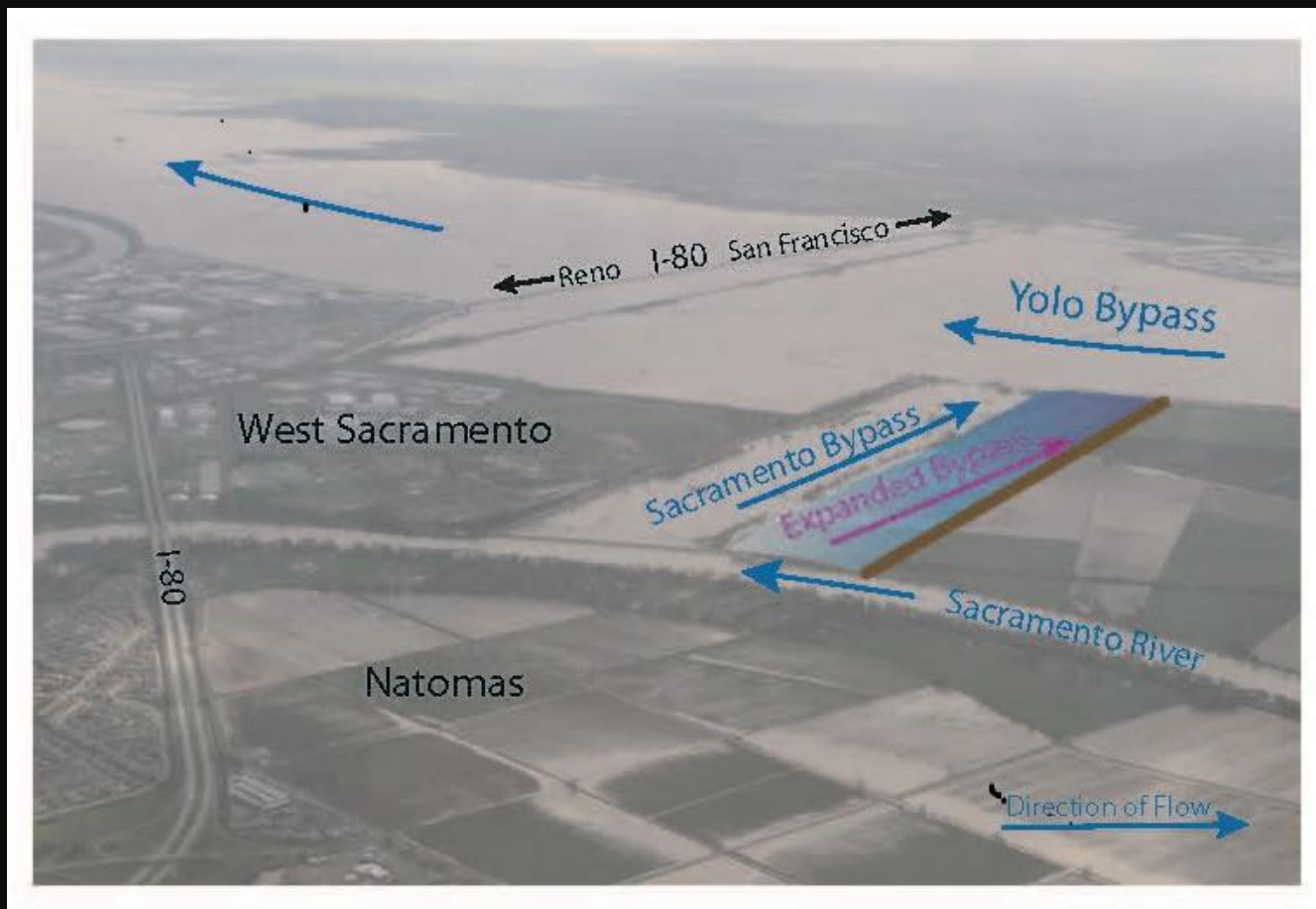
SOUTH SACRAMENTO STREAMS
 (Authorized – 1999)
 Construction Closeout

Legend

- Federal Project Levee or Structure
- Non Project Levee



- Once current projects complete most areas will have between 200 and 300 year LOP
 - Inadequate for urban area
- Need to get back to SPF level of protection (500-year level is our goal)
- Need to widen the Fremont Weir and Yolo Bypass

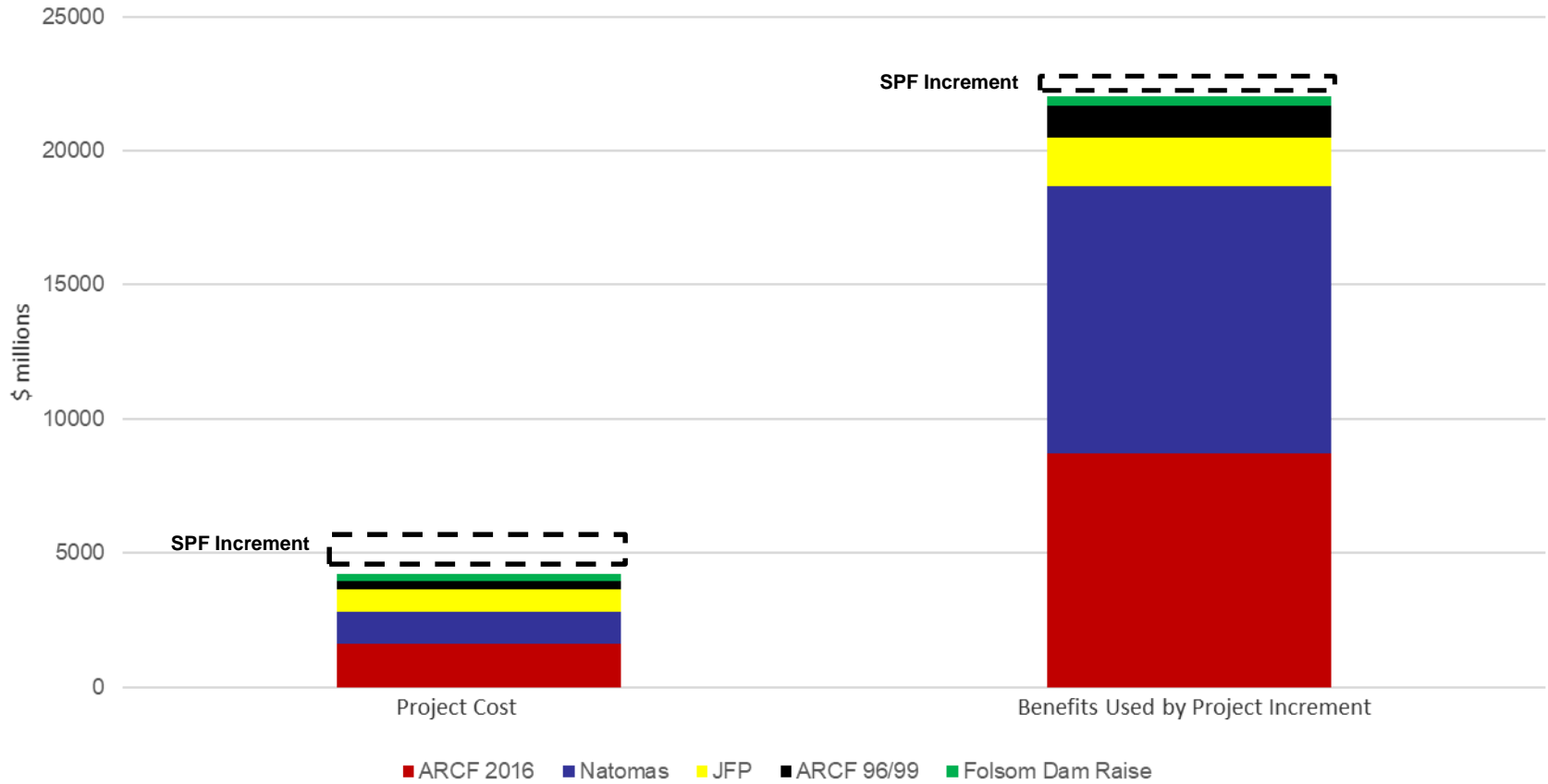


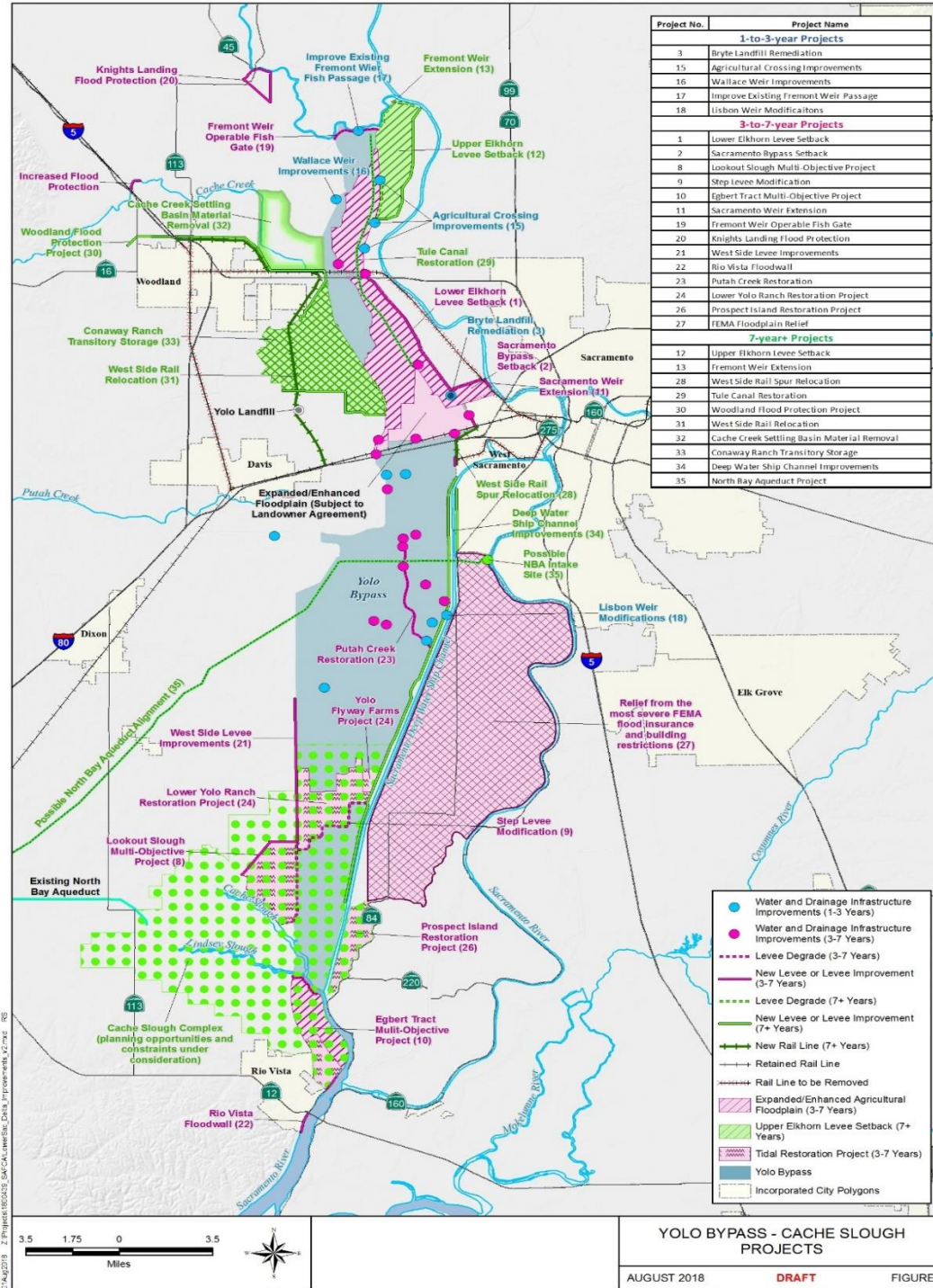
Factors Making it Difficult to Justify Federal Interest in System-wide Studies

**Current Process and Procedures Do Not
Allow Recognition and Inclusion of All
Actual Benefits of Corps Projects**

**Incremental Analysis Drives the Answer
Away from System-wide Solutions Often
Resulting in Incomplete Projects**

Present Value of Project Incremental Costs and Benefits





- Yolo Bypass constructed as single-purpose Federal flood control facility
 - Operated by State of California
- Evolved into a multi-purpose facility
- Currently 35 projects in some phase of study/implementation
 - Flood Control
 - Water Supply
 - Ecosystem Restoration
 - Environmental Mitigation
 - Drainage
 - Agricultural Enhancement
- Numerous Federal, State, and Local Agencies
- Insufficient coordination between projects and activities
- All will need a 408 Permit

Two Problems in Yolo Bypass

Problem 1

Numerous projects and interests with no mechanism to ensure coordination and assist with implementation

Problem 2

Current Corps process does not allow recognition of all the multi-purpose benefits of a system-wide approach that can provide high level of flood protection

Yolo Bypass System Integrated Comprehensive Study



**Master Plan for
the Yolo Bypass**



**Coordinates Stakeholder
Interests & Projects**



To Address Problem 1



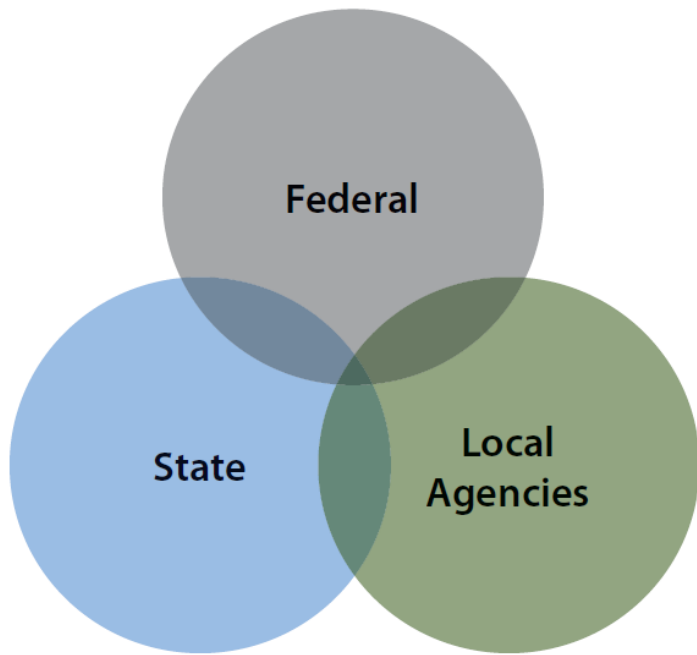
**Comprehensive
Study for the Yolo
Bypass System**



**Recognizes All Multi-
Purpose Benefits of a
System-wide Approach that
Can Provide a High Level
of Flood Protection**



To Address Problem 2



Master Plan

- **Needs, Challenges, Opportunities**
 - Agencies all Levels
- **Identifies Specific Projects**
- **Programmatic Framework**
 - Technical Reviews
 - Environmental Evaluation
- **Establish Baselines**
 - Ecosystem
 - 408 Permitting
 - Hydraulic
 - Regulatory & 408 purposes
- **Develop Overarching Process, Governance and/or Advisory Structure**
 - Coordination
 - Recommendations
 - Implementation

Comprehensive Study

YOLO BYPASS SYSTEM INTEGRATED COMPREHENSIVE STUDY

FISH PASSAGE

- FREMONT WEIR
- WALLACE WEIR
- LISBON WEIR
- AG ROAD CROSSING

HABITAT RESTORATION

- 1 - FLOODPLAIN SALMONID HABITAT TIDAL WETLANDS INUNDATION (8,000 ACRES)
- 2 - LEVEE SETBACK AREA RESTORATION
- 3 - PUTAH CREEK RESTORATION (1,500 ACRES)
- 4 - LITTLE EGBERT AND CACHE SLOUGH RESTORATION

FLOOD RISK MANAGEMENT

- EXPANSION AT FREMONT WEIR, LOWER ELKHORN, UPPER ELKHORN, SACRAMENTO WEIR, SACRAMENTO BYPASS, AND PUTAH CREEK LEVEE SETBACK
- DEEP WATER SHIP CHANNEL
- LOWER YOLO BYPASS LEVEE IMPROVEMENTS
- RIO VISTA FLOOD WALL AND SMALL COMMUNITIES FRR



- Full scope of “Federal Interest”
 - Among the various Federal agencies
 - Flood Risk Management
 - Ecosystem Restoration
 - Other
 - Thorough assessment of Congressional directives in WRDAs 2014, 2016 and 2018
 - Including USACE Planning Bulletin 2019-04 : “Incorporating Life Safety into Flood and Coastal Storm Management Studies”

Congressional Provisions WRDA's 2014, 2016, 2018



- **Improve system-wide, multipurpose approach to Corps projects**
- **Better quantification and demonstration of actual benefits provided by Corps projects**
 - **Improve quantification of multi-purpose benefits**
 - **Improve quantification of urban flood benefits**
- **Improve process for addressing flood-risk management for urban areas**
- **Improve utilization of non-Federal Sponsors resources, capabilities, and knowledge**

**Intended Results of Yolo Bypass
System Integrated Comprehensive
Study**



**Master Plan for
the Yolo Bypass**



**Authorized Master
Plan**



**Comprehensive
Study for the Yolo
Bypass System**



**Authorized Multi-
Purpose Project(s)**

Thank You

Questions?



Sacramento Area Flood Control Agency