

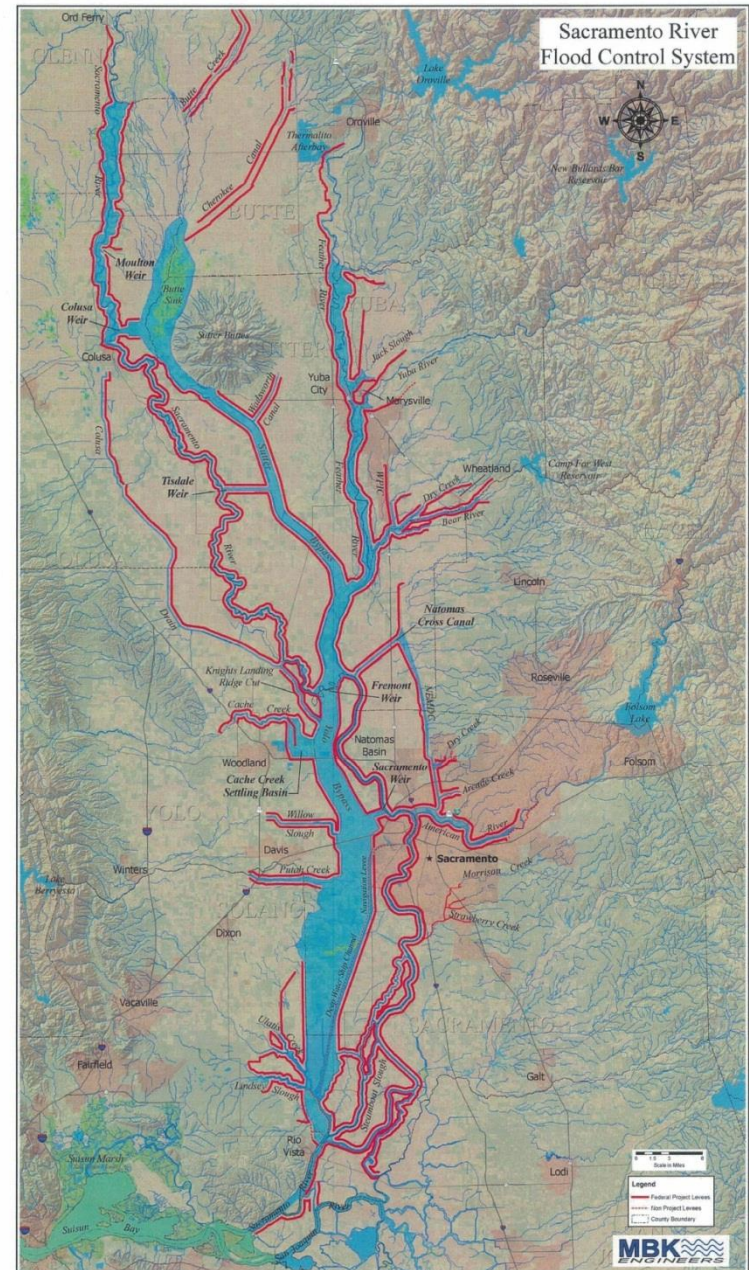
U.S. Army Corps of Engineers Comprehensive Study of Yolo Bypass

National Waterways Conference
March 2024

Sacramento River Flood Control System

Sacramento one of the most at-risk cities in America for riverine flooding

- Confluence of two major rivers (American and Sacramento Rivers)
- Over half million people in the floodplain
- About \$70 billion in damageable property
- **Deep flooding, cold water**



A satellite map showing a large watershed area outlined in blue. The terrain is a mix of green forested areas and brownish, cleared land. A large reservoir is visible in the upper right. In the bottom left, a red line indicates a different boundary, possibly a city or county limit. The text 'American River Watershed 1,900 square miles - the size of the State of Delaware' is overlaid in the center-right. 'Image Landsat' and 'Google earth' are visible in the bottom right corner.

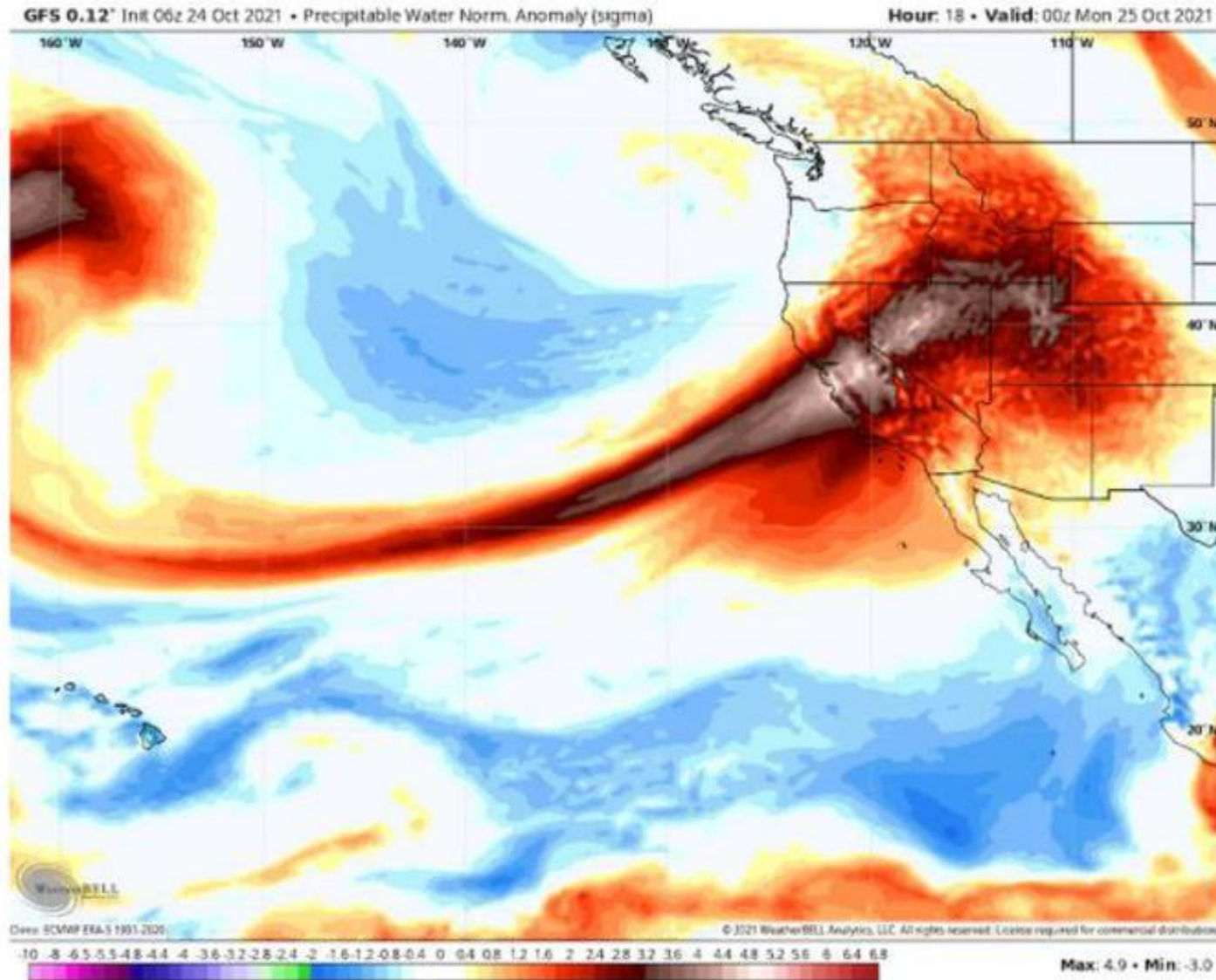
American River Watershed
1,900 square miles - the size of the State
of Delaware

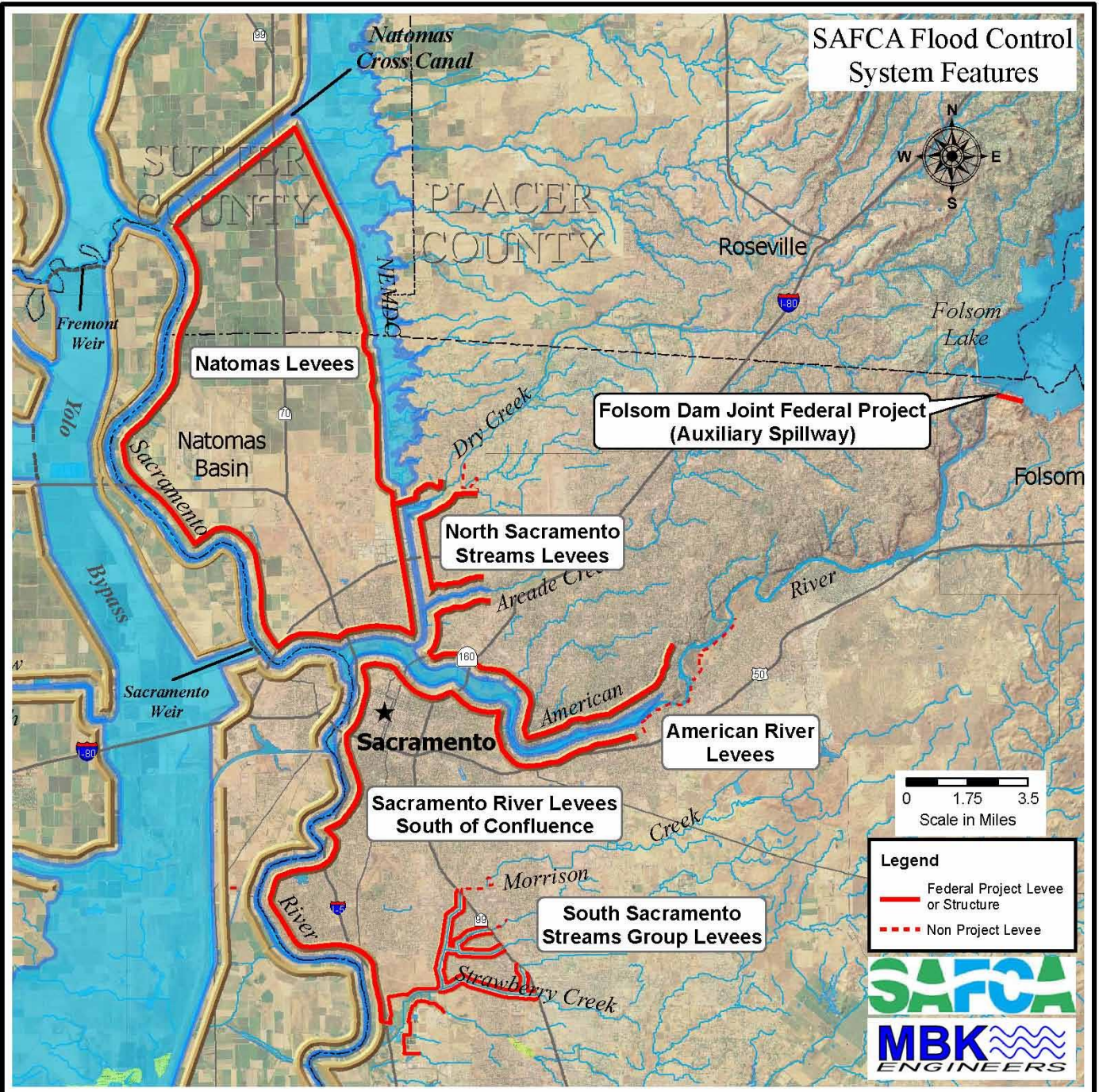
Image Landsat

Google earth

Atmospheric Rivers

Average atmospheric river carries 25 times the water equivalent of the Mississippi River in the form of vapor instead of liquid.

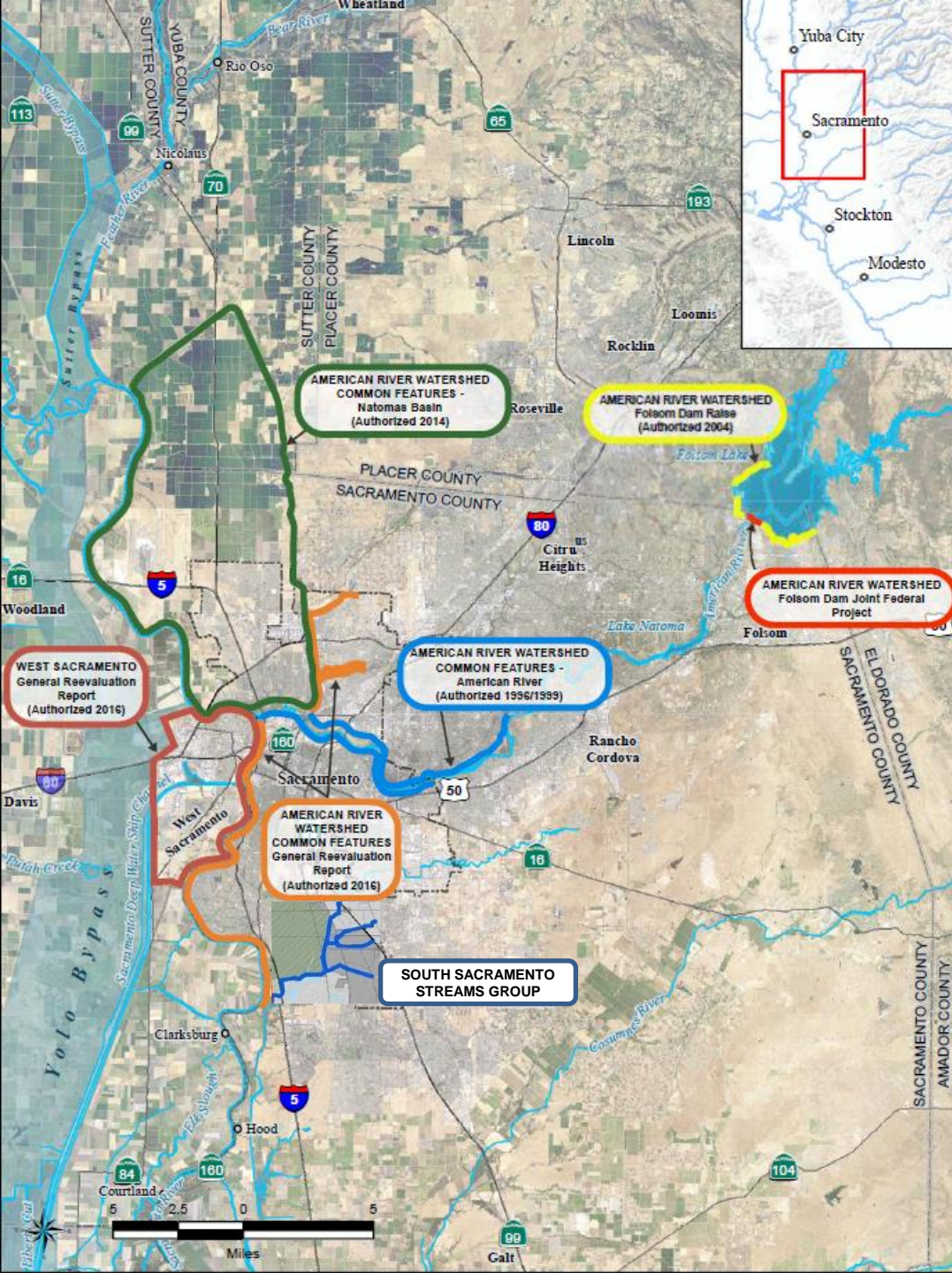




SAFCA Flood Control System Features

Sacramento Flood Control System Features

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



All Sacramento Flood Control Features Are Being Upgraded Except for the Yolo Bypass

- The Yolo Bypass was constructed by the USACE about a century ago
- Carries 80% of Sacramento River flood flows safely past Sacramento
- Has evolved into a multi-purpose facility
 - Flood Control
 - Agriculture
 - Habitat
 - Water supply
 - Water quality
 - Recreation.

Reduces Flood Risk

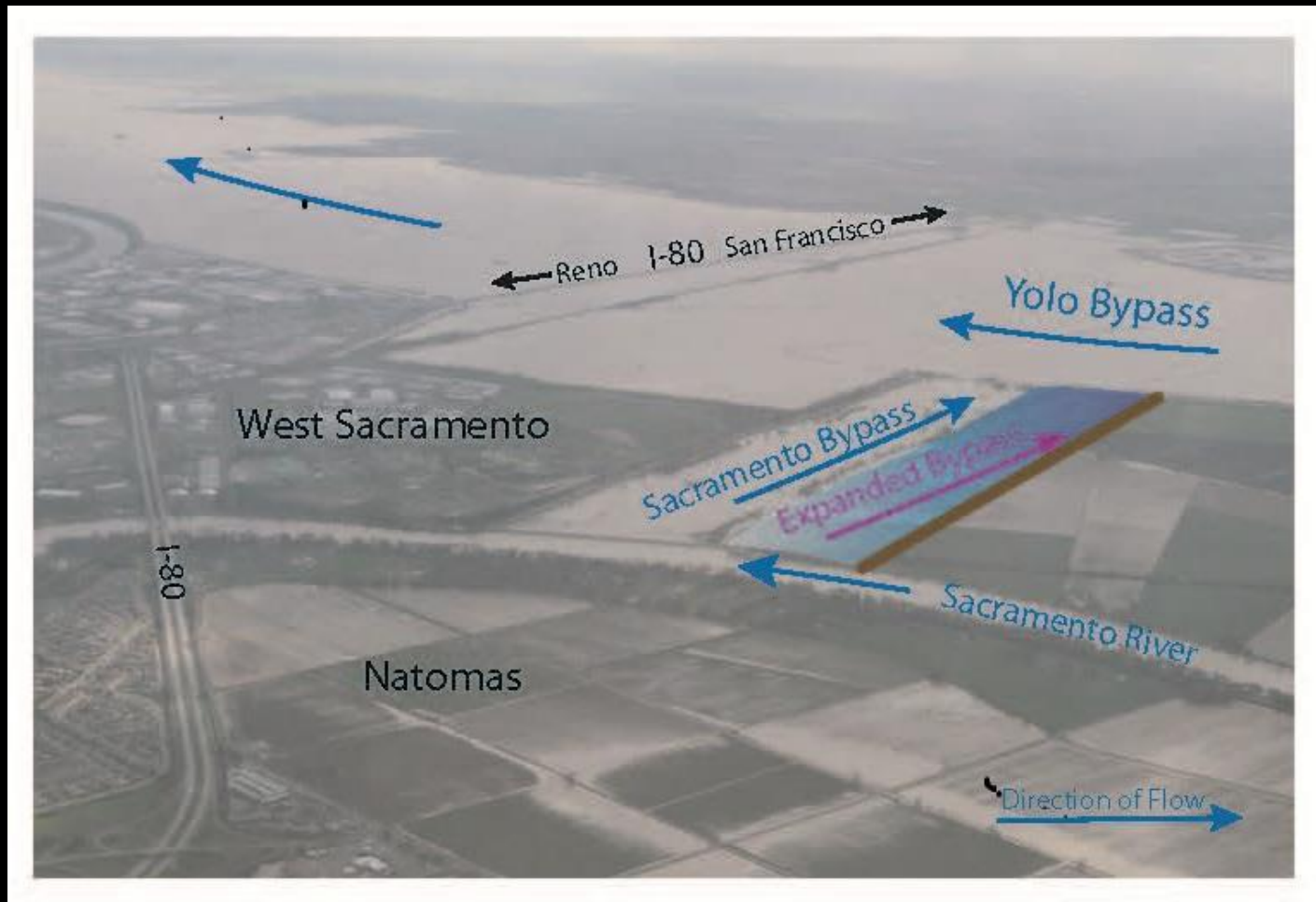
950,000 people, 284,000 structures, \$150 billion in critical infrastructure - urban homes and businesses, State Capital, rural towns, agricultural lands, numerous disadvantaged communities



The Yolo Bypass System conveys high flows from the Sacramento River, playing a crucial role in protecting the Sacramento region from flooding.

Supports over 500 terrestrial and aquatic species
Part of the Pacific Flyway providing habitat for millions of waterfowl

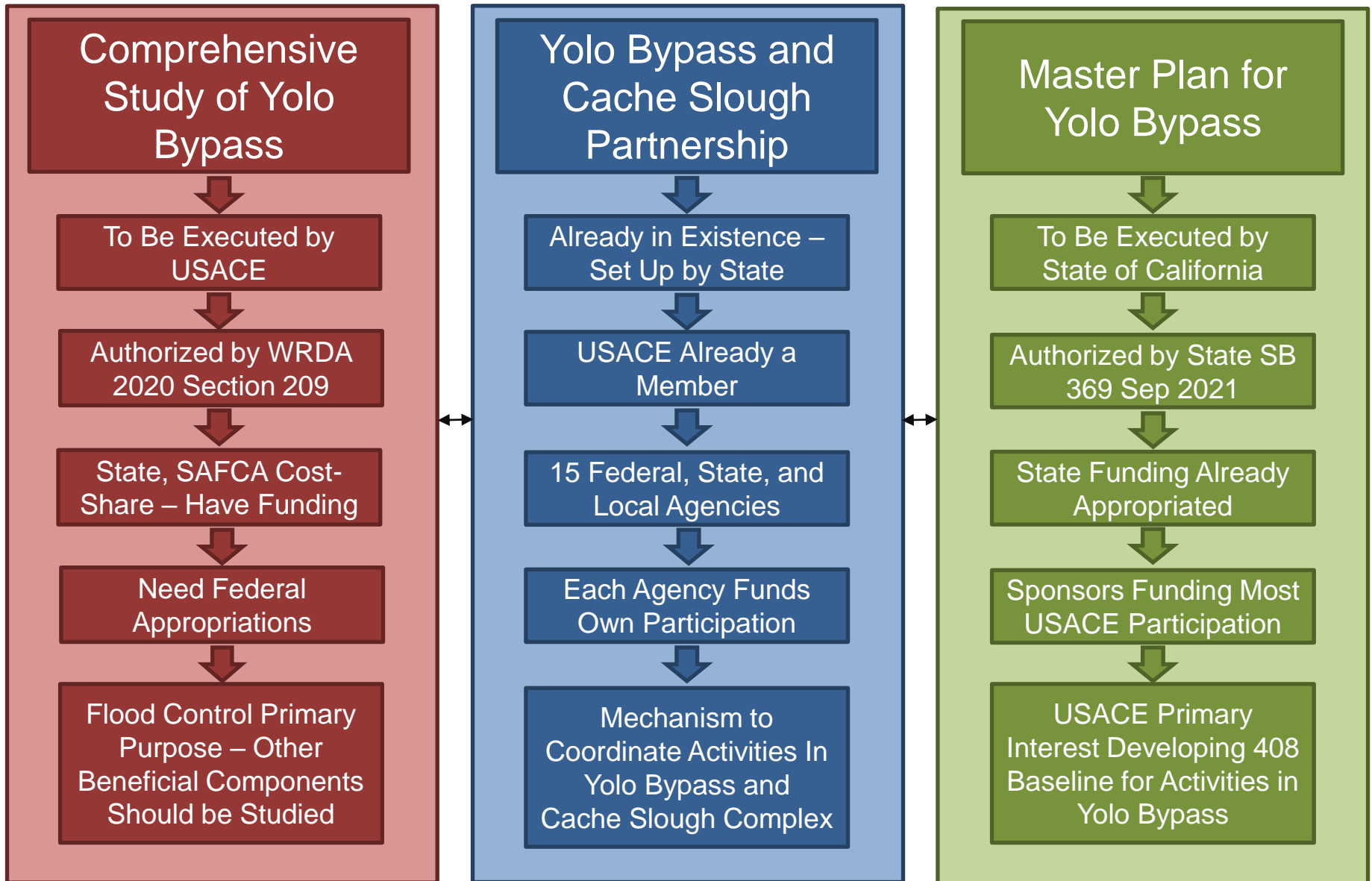
- **Critical flood risk reduction improvements to the Yolo Bypass are needed**
 - Larger events more common due to climate change
 - Improve system resiliency and reliability



Sacramento 2021/2022 Example of Extreme Events Due to Climate Change

- **Record for longest period without precipitation – 212 days**
- **8 days later wettest day since record keeping began in the 1800's**
 - **Greater than 500-year event in some areas**
- **December 2021- Record for the most snow ever in December – more than 200 inches**
- **January, February, March 2022 – Driest January – March on record**

Yolo Bypass Activities

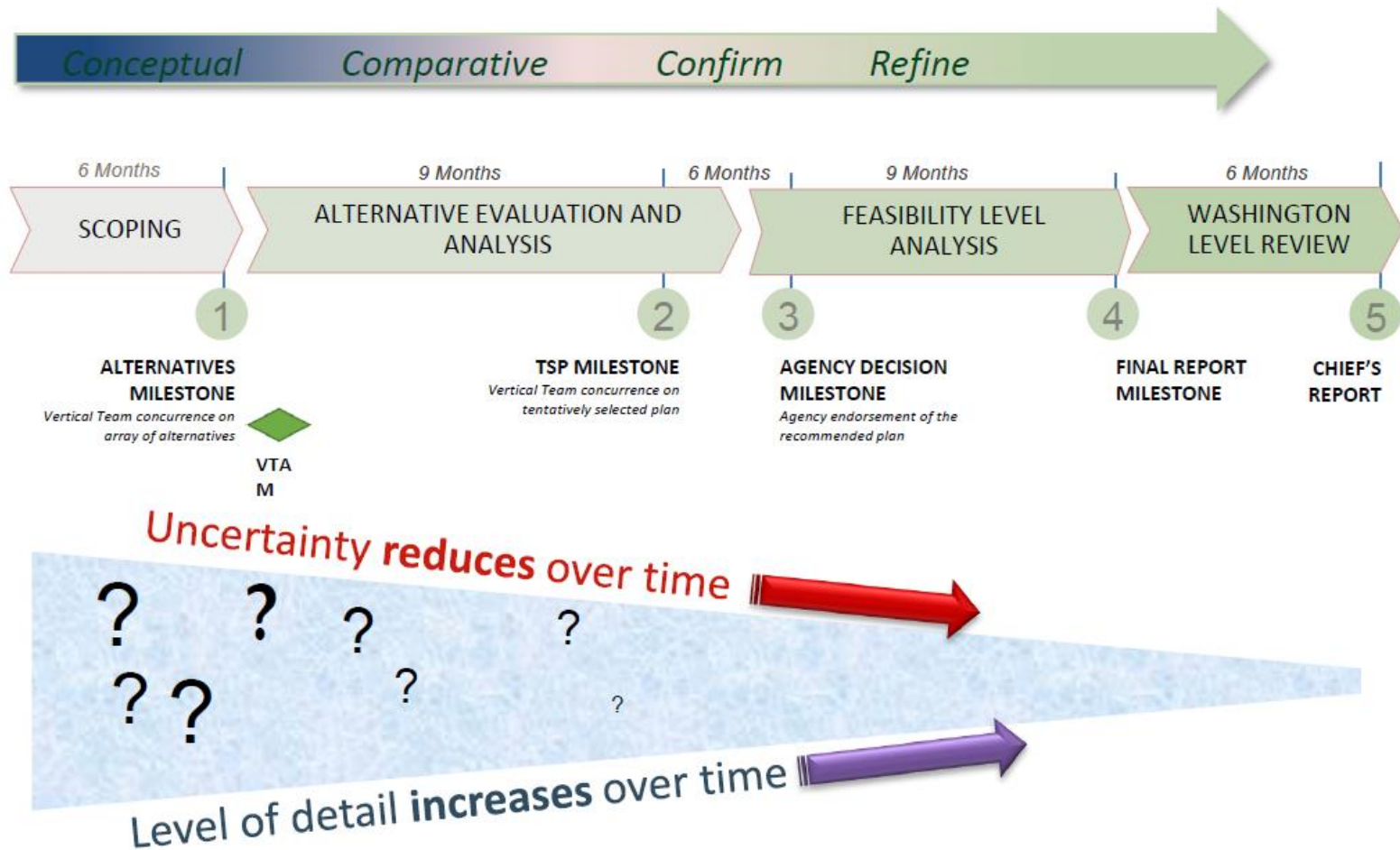


Yolo Bypass System Comprehensive Study

- **Authorized - Section 209(d) of WRDA 2020**
- **New Study Start Federal Appropriations FY 2023**
- **Cost Share Agreement signed September 25, 2023**
 - Study Initiated
- **2023 Interim Status Report to Congress December 2023**

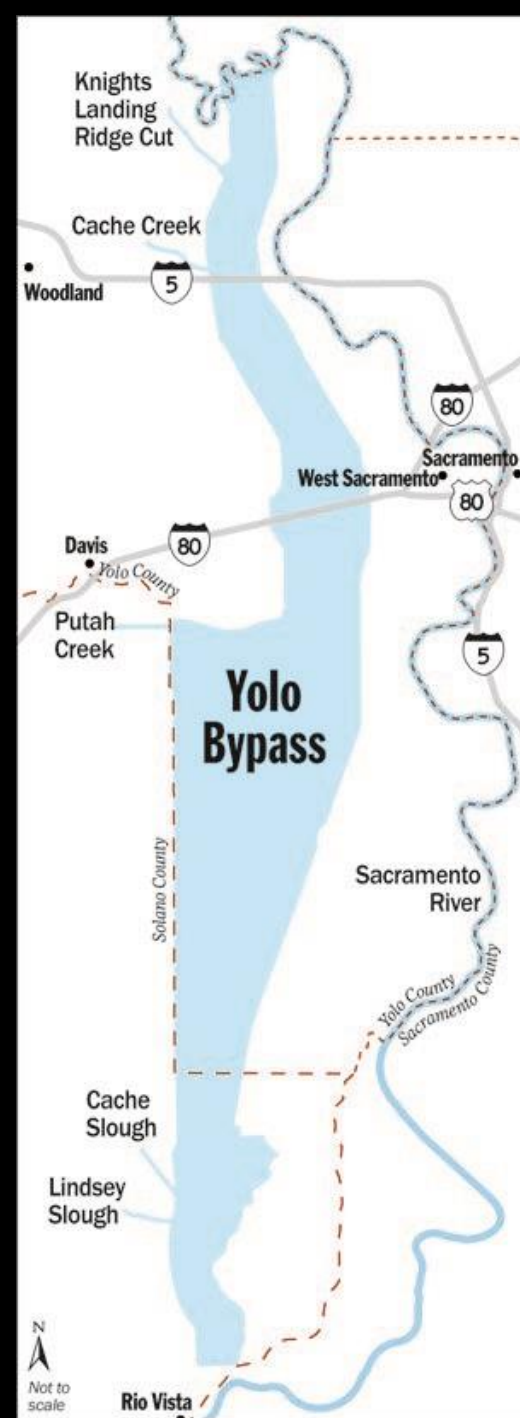
Question we are struggling with: How to perform a study looking at comprehensive benefits within the current USACE study process?

SMART Feasibility Study Process



Study Considerations

- Flood-risk reduction
 - Natural and nature-based solutions
- Drought resiliency
- Climate Change
- Tribes and economically disadvantaged communities
- Ecosystem restoration
- Equity
- Life safety



Comprehensive Study Strategy

Study Goal: A Chief's Report that includes the framework for a long-term programmatic Comprehensive Plan of the Yolo Bypass System, utilizes a phased approach of studies and construction of authorized projects, supports construction authority for Phase 1 projects, and identifies federal interest in future feasibility studies

- 1. Develop a long-term Comprehensive Vision and Plan for a modernized Yolo Bypass**

- 2. Initial 3-Year Feasibility Study (Phase 1)**

Utilize a phased study approach where project features and related policy are recognized at a system level and addressed in a phased, manageable approach

- 3. Identify Future Phases of Feasibility Studies**

Future feasibility phase projects should be informed based upon partner alignment, funding strategy, technical readiness for identification of an LPP, potential policy issues, alignment to objectives and Master Plan.

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 EBERT 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

Current USACE Economic Analysis

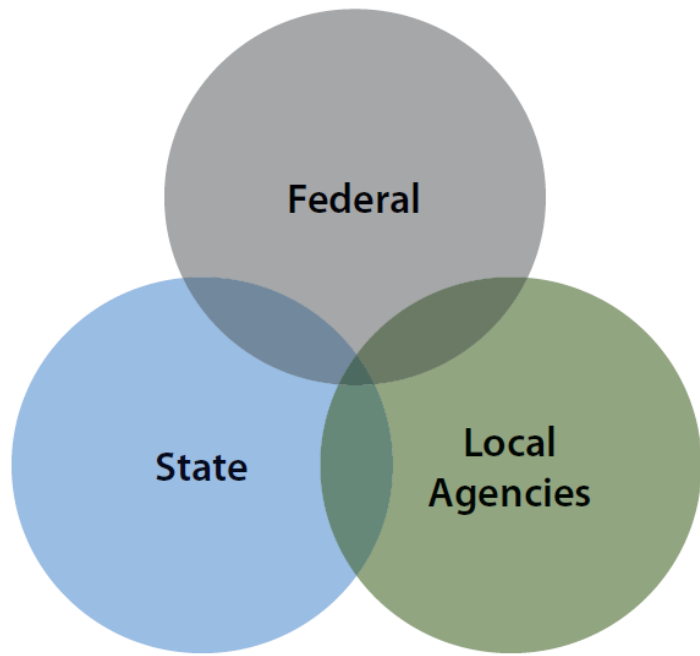
- Assumes hydrologic record repeats itself
- Benefits largely based on property values

Some specific items sponsors are examining:

- Accommodation of a **changing climate** as a component of resilience
- Better account for the benefit to **disadvantaged communities**
- Better account for the benefit of reducing **loss of life**



- Better account for the reduction in **emergency costs**
 - Secondary or tertiary economic effects
 - Business disruption and displacement time and cost
- Better account for secondary or tertiary **social effects** from a disaster
 - Impacts to physical health and mental stress and anxiety
- How to improve the **agricultural** base within the bypass
- Develop an **LPP increment** to account for **hydraulic impacts** of future projects
 - Biological opinions for water supply
 - Ecosystem restoration
 - Fish passage



Thank You!!

Questions?

