



Yolo Bypass Widening into the Elkhorn Basin: A Multi-Benefit Opportunity for Flood Control, Floodplain Habitat and Fish Passage

**Bay Delta Science
Conference 2014**

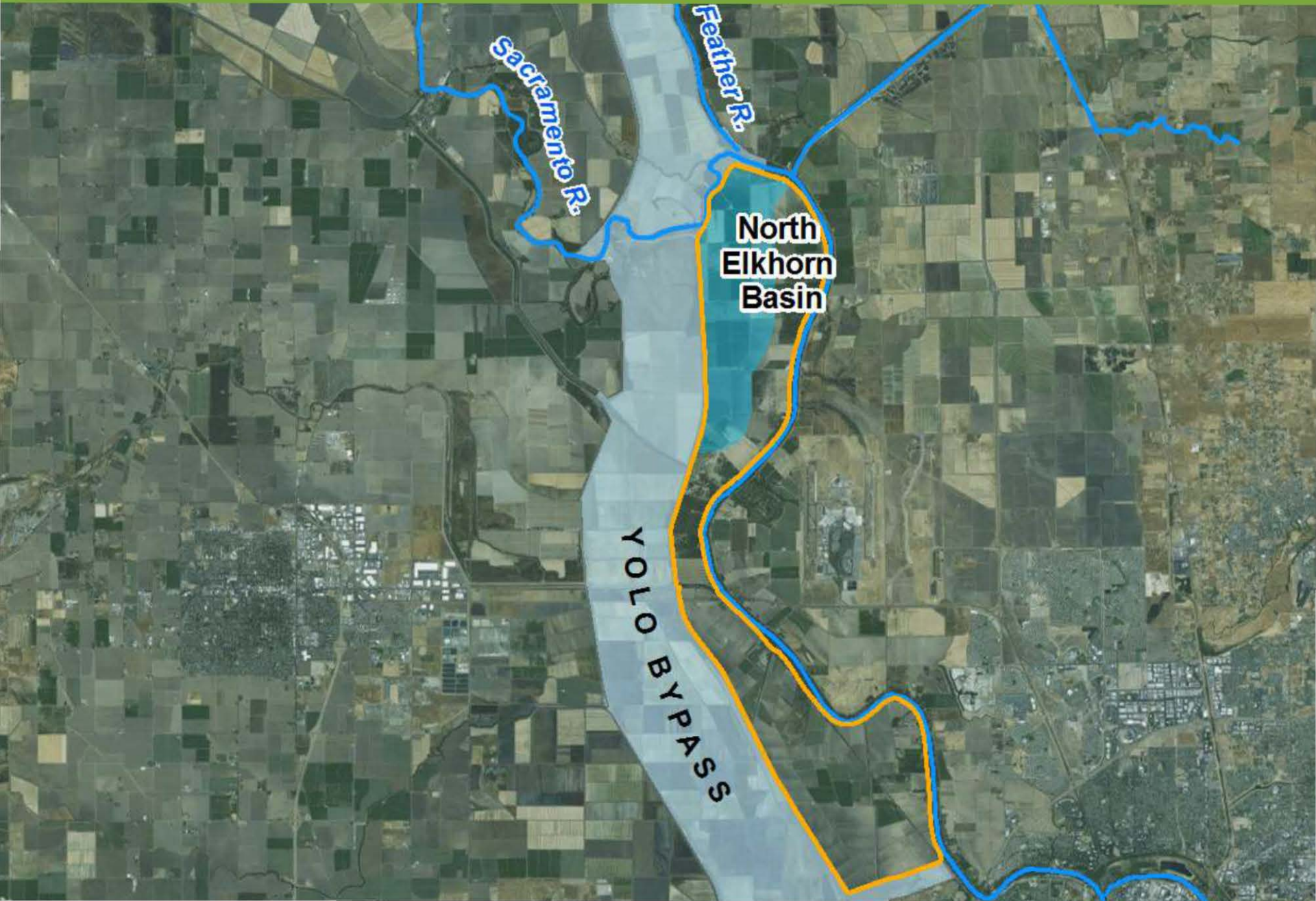
**Jai Singh, BS
Chris Bowles, PhD, P.E.
Chris Campbell, MS**



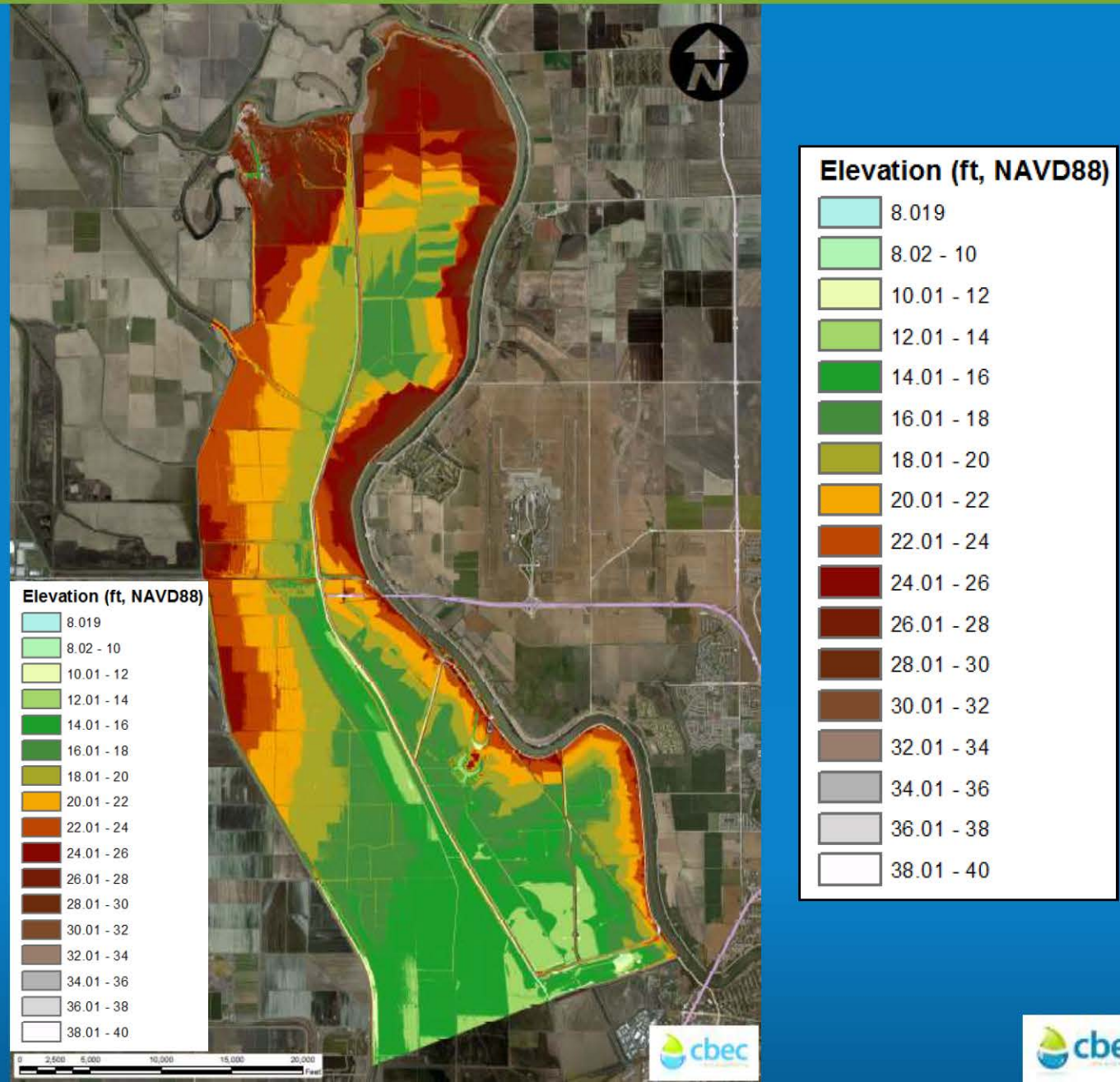
Acknowledgements

- DWR
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- Knaggs Ranch
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- HDR
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- American Rivers
- Douglas Environmental
- AECOM
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- Sacramento County
- Mick Klasson
- 2014 BiOp Hydrodynamic Modeling
- 2014 SAFCA Hydrodynamic Modeling

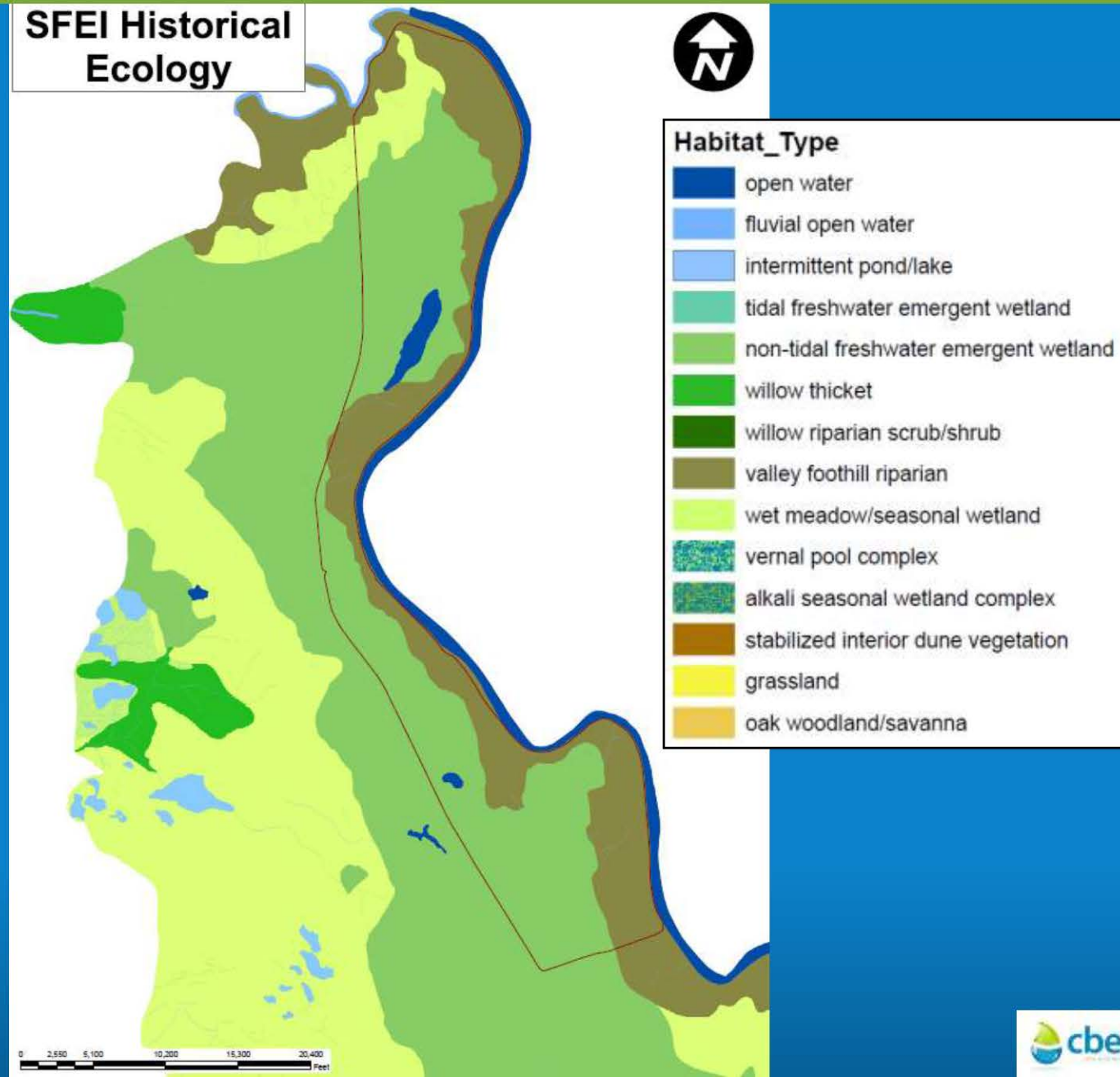
Elkhorn Basin Site Location



Elkhorn Basin and Yolo Bypass Topography



Elkhorn Basin Historical Habitat



Site Overview



Site Overview



View South from Fremont Landing



Orchards on Eastern Side of Northern Elkhorn Basin



Photo by Mick Klasson

Elkhorn Concept Development - April 2014

Mitigation Site



Elkhorn Basin and Yolo Bypass Land Ownership

Land Ownership



Land Owners

- Other
- AJK Farms LLC
- Conoway Ranch Preservation Group, LLC
- Heer Pistachio Farms Inc.
- Knaggs Ranch LLC
- Lang Fam Partnership
- Riparian Ranch LLC
- Sacramento River Ranch LLC
- Sacramento Valley Conservancy
- Siddiqui Family Partnership
- Stanley Trust
- Te Velde Trust
- Woodland Development Co. LLC
- Yolo Land Trust

Benefits of Yolo Bypass Expansion into Elkhorn

- Flood relief
 - Decreased peak flood stage at Verona and reduced backwater effects on Natomas Cross Canal tributaries
 - Decreased peak flood stages along Sacramento River further downstream (Sacramento metro area)
- Floodplain habitat creation
 - Increased acreage of juvenile salmonid rearing habitat
 - Increased duration and improved timing of inundation
- Fish passage
 - Improved upstream passage for sturgeon and salmonids

Elkhorn Basin Site Constraints

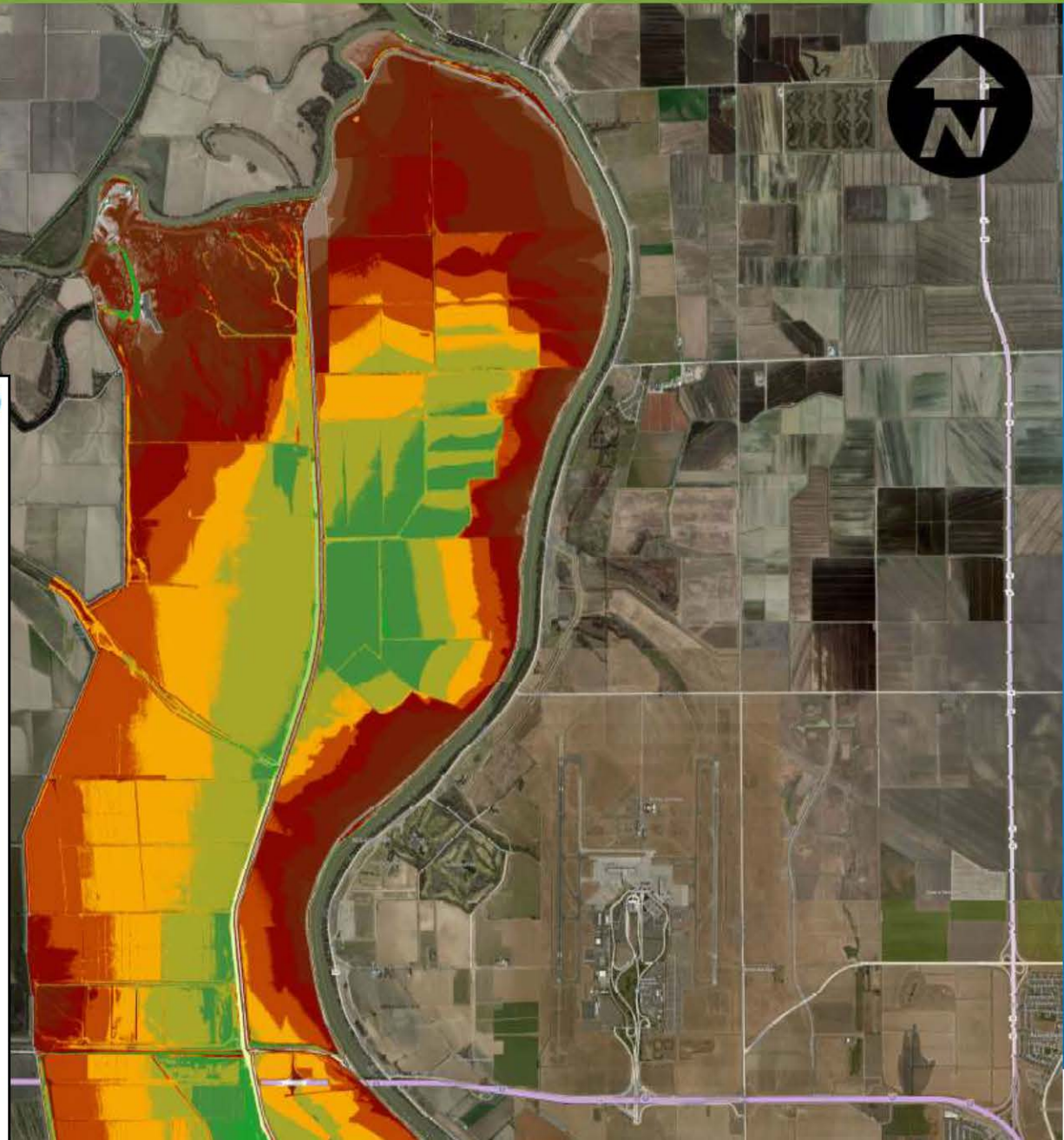
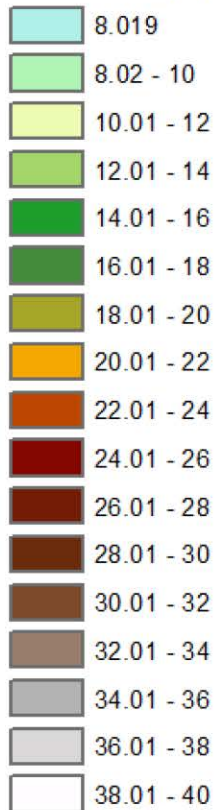
- Existing land use
 - Agriculture
 - Orchards
 - Annual crops
 - Agricultural structures
 - Residences
 - Mitigation banks
- Project compatibility with agriculture
- Existing levee under-seepage
- Discharges into Yolo Bypass



Elkhorn Basin and Yolo Bypass Topography



Elevation (ft, NAVD88)



Elkhorn Basin Site Constraints

- Existing land use
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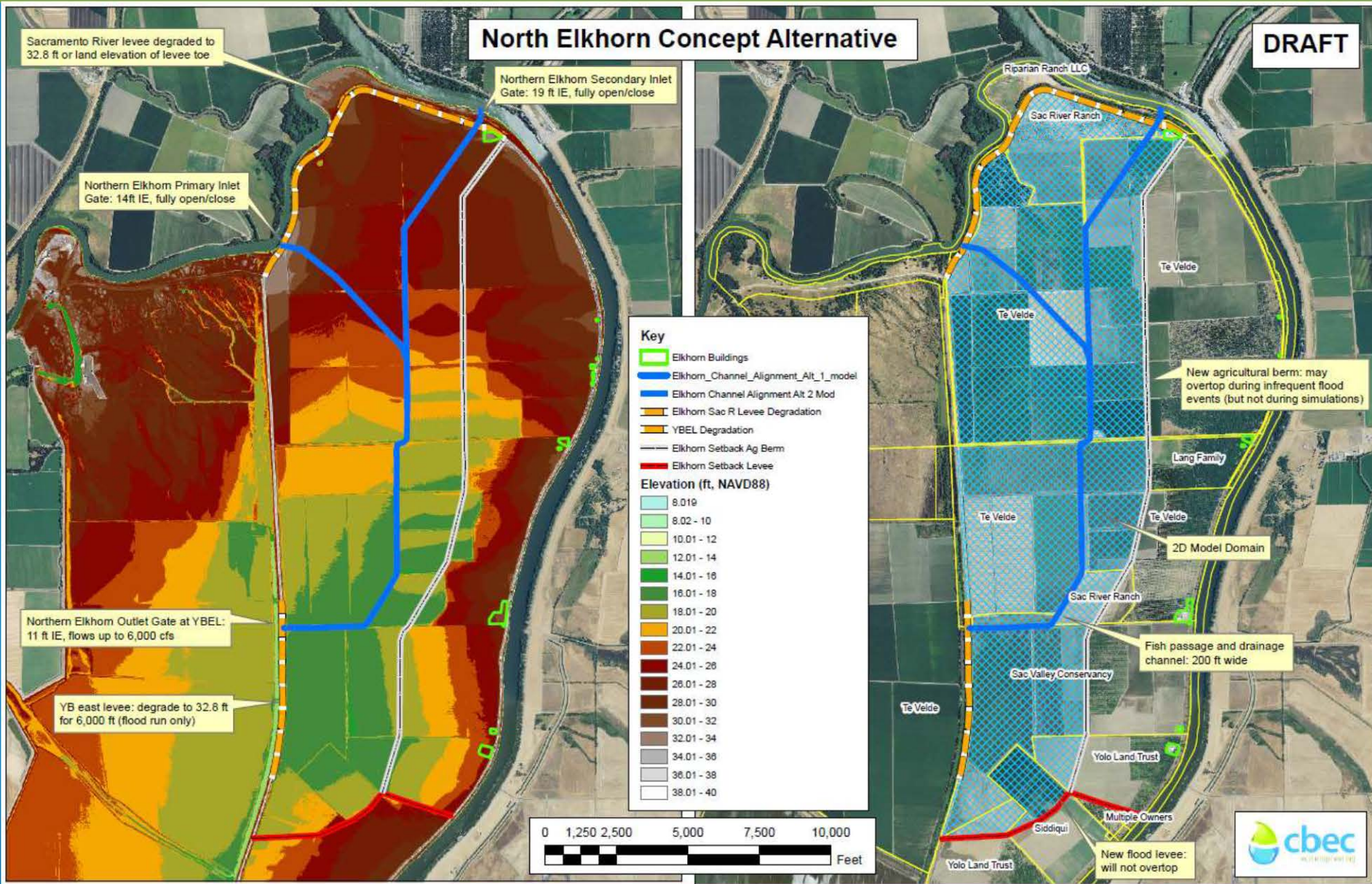


Elkhorn Concept Development

- Site visits
- Hydrologic and hydraulic analyses
- Concept-development charrette
- TAC meetings
- Meetings with landowners
- Hydrodynamic modeling



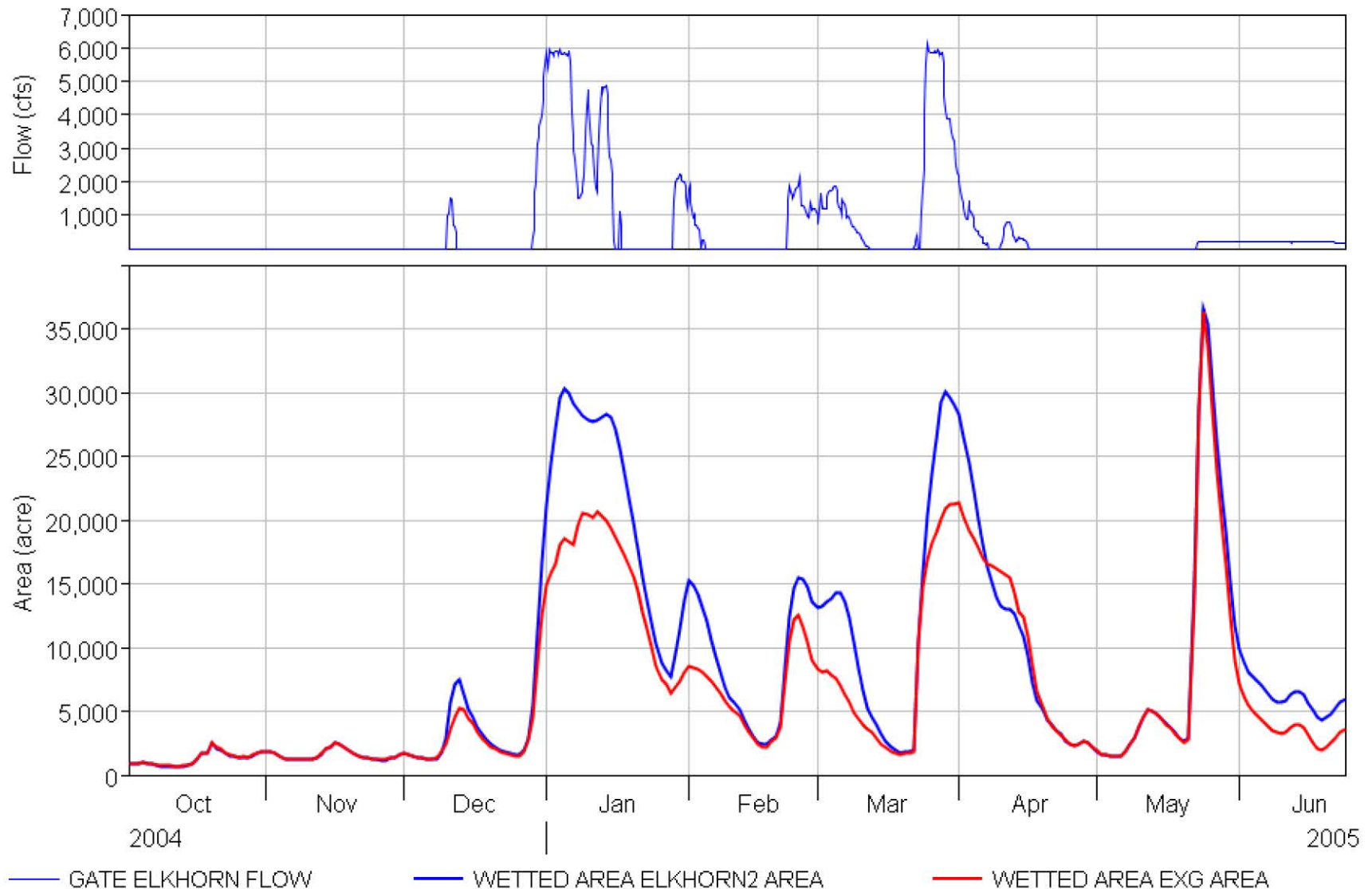
Initial Elkhorn Conceptual Design



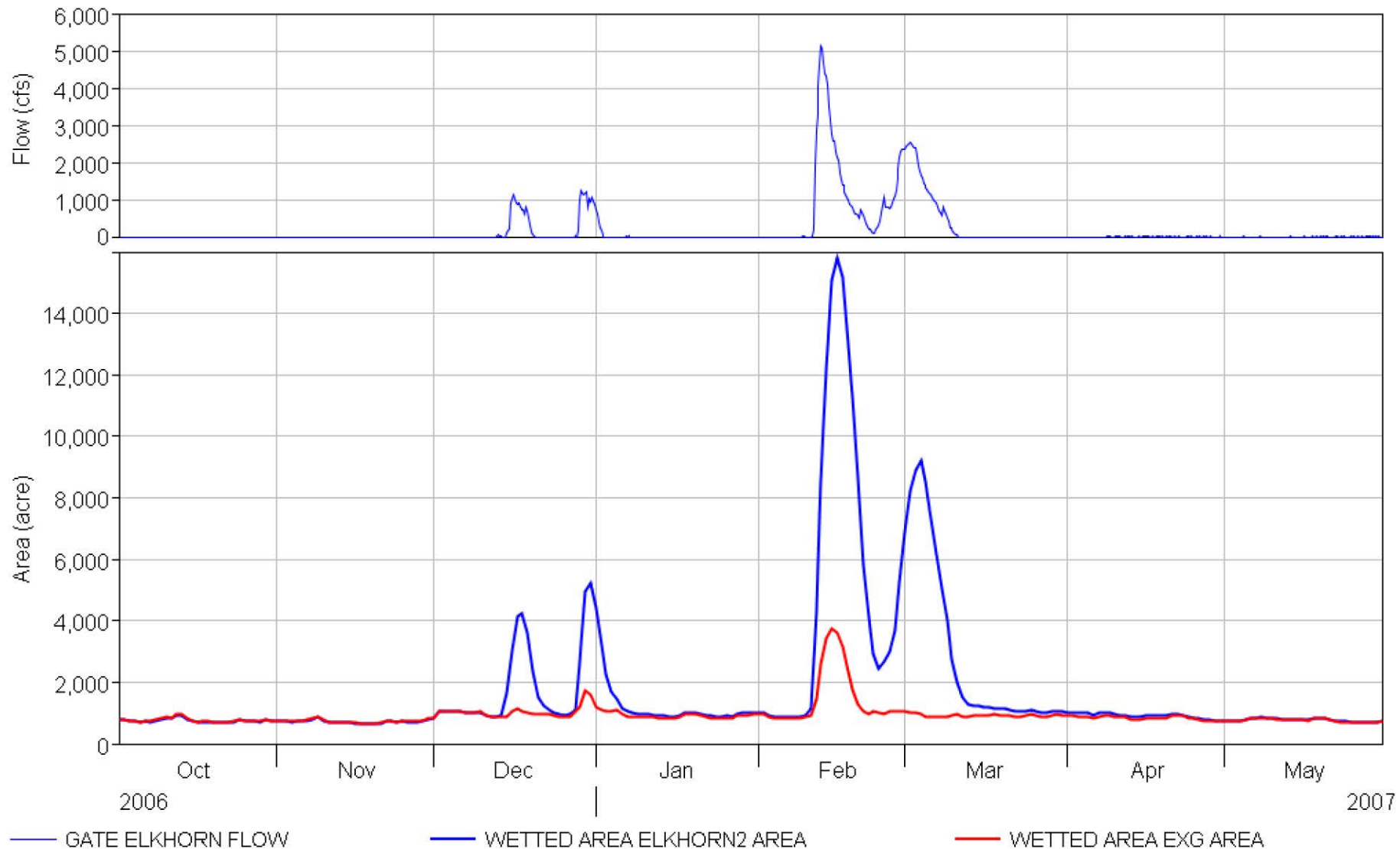
Model Animations

- Animations for WY 2005 (wet conditions) and WY 2007 (dry conditions)

Wetted Acres Comparison – 2005 (Wet Conditions)



Wetted Acres Comparison – 2007 (Dry Conditions)



Summary of Preliminary Results

- Floodplain habitat generation
 - Elkhorn offers a highly connected floodplain area
 - Site management can provide greater late season inundation
- Flood relief
 - WS elevations at Verona reduced by more than 2 ft during the 1997 flood
 - Greater reductions when coupled with other Bypass improvements
- Likelihood for phasing habitat improvements and flood relief improvements at Elkhorn

Thank You

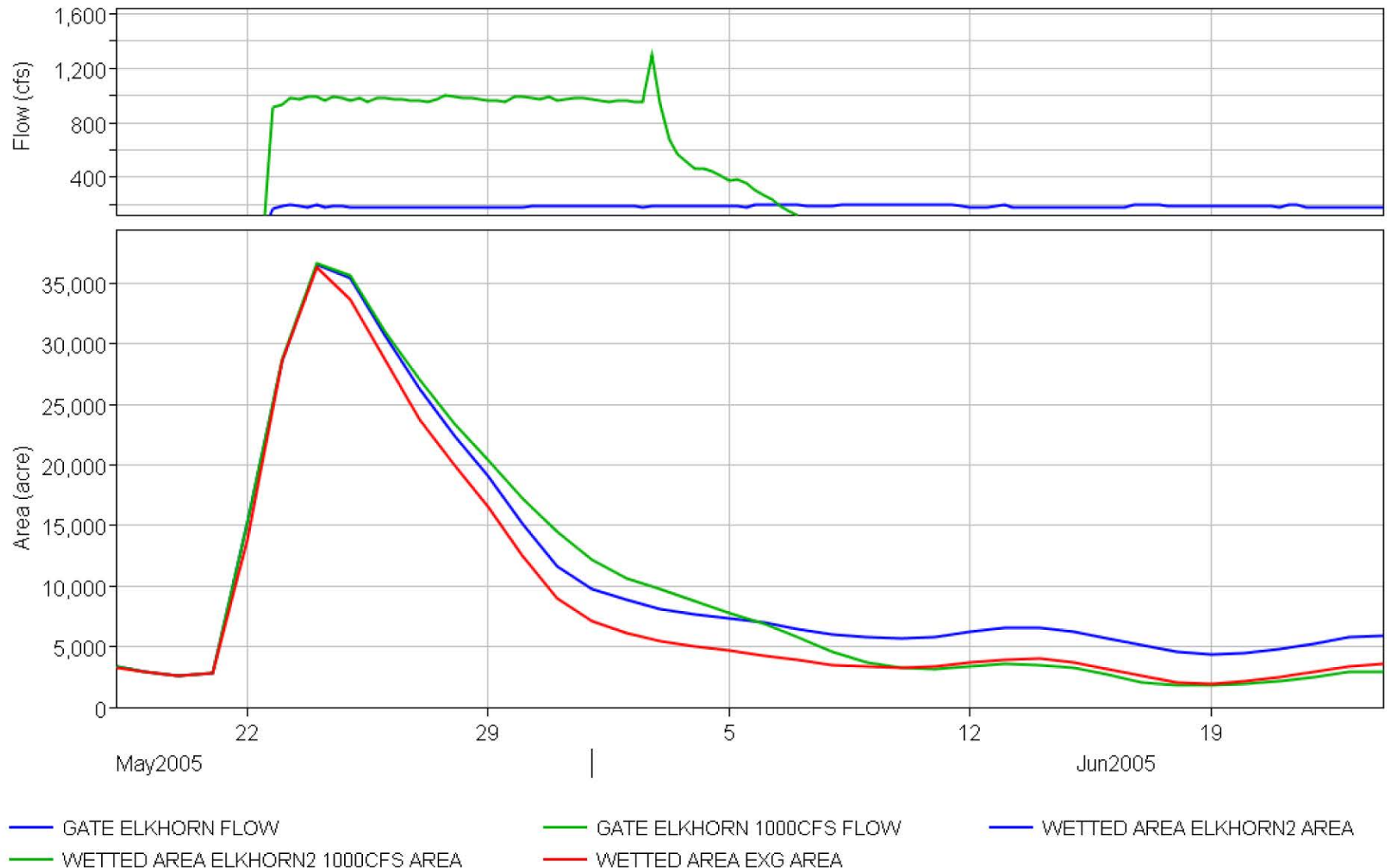


Questions?

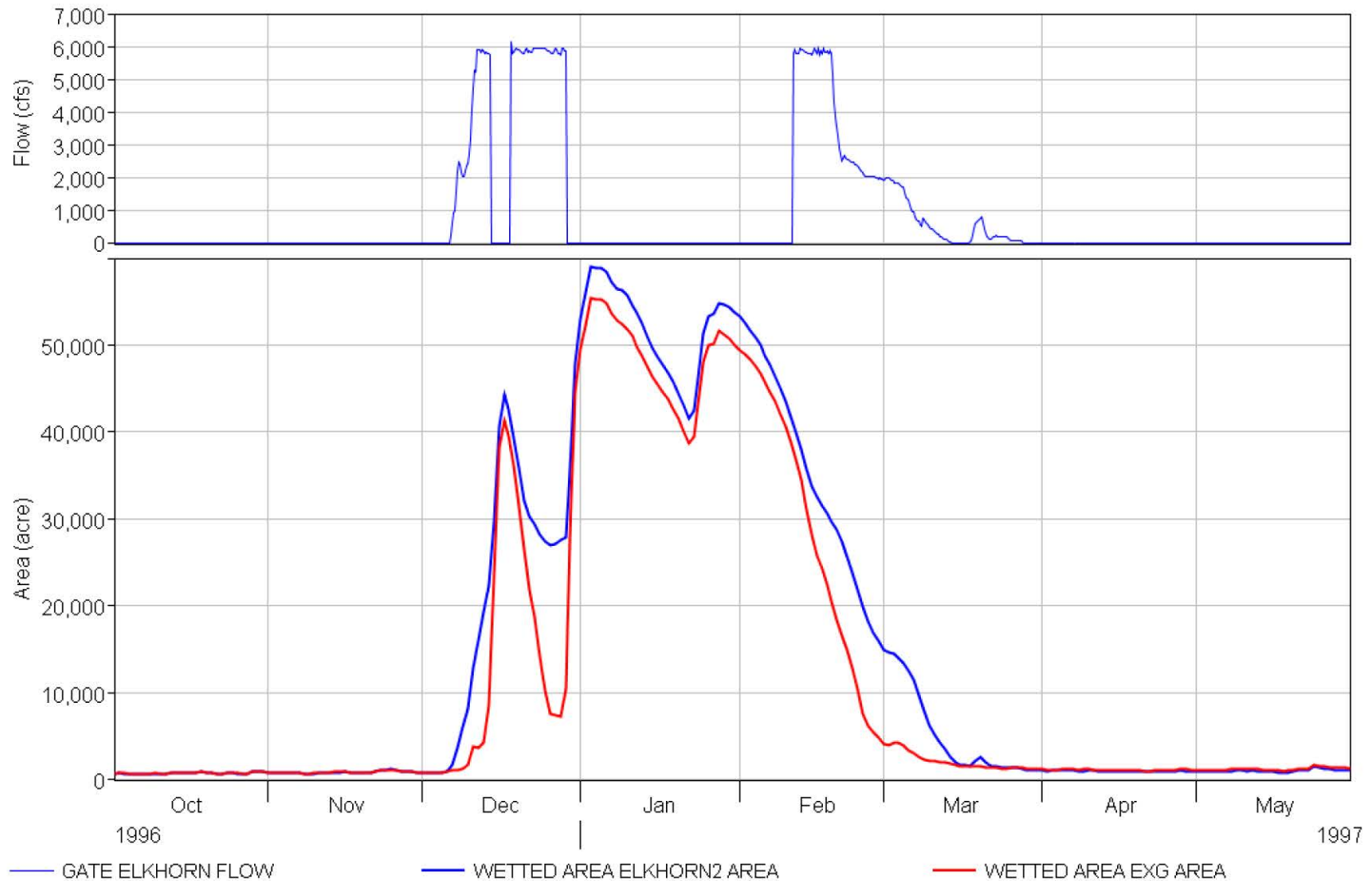
Jai Singh: j.singh@cbecoeng.com

Chris Bowles: c.bowles@cbecoeng.com

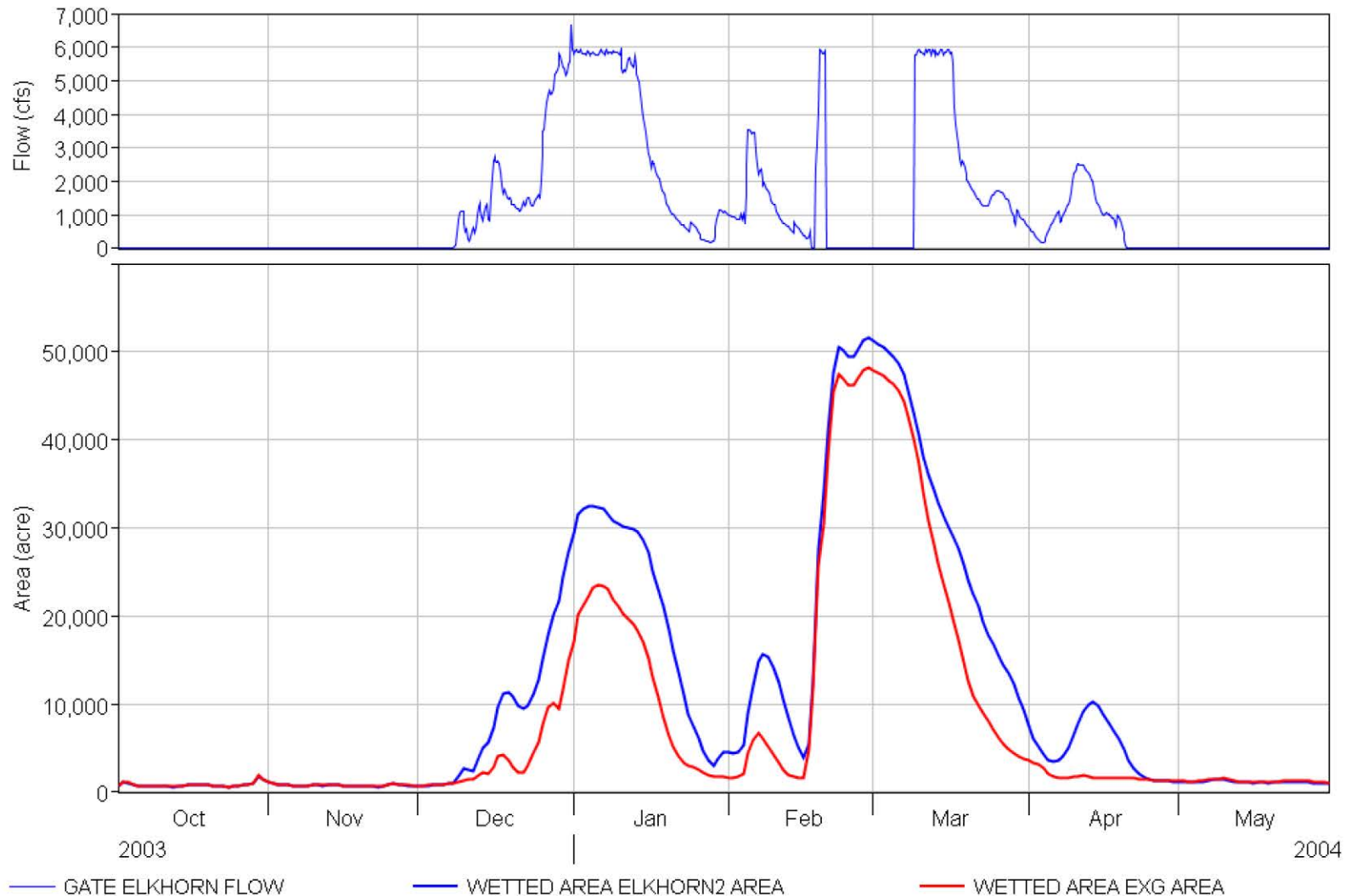
Impact of Different Post-Gate Closure Flow Rates



Wetted Acres Comparison – 1997 (Wet Conditions)



Wetted Acres Comparison – 2004 (Moderate)



Floodplain Habitat Extents and Duration

**Inundation Mapping for EFM
Analysis of Modeled Stage
2 of 3 Years from 12/1 to 5/15**



**Continuous Inundation
Exceedance Every 2 of 3
Years from 12/1 to 5/15**

Inundation Duration



**Elkhorn "Bathtub" Mapping
Based on Observed
Sacramento River Stage**

Integrating Elkhorn Expansion with Other Bypass Improvements

- DWR/Bureau improvements for YB BiOp
- Yolo Bypass east levee setbacks further south
- Enhanced Tule Corridor

