



# Yolo Bypass “Big Notch” Concept Development and Evaluation

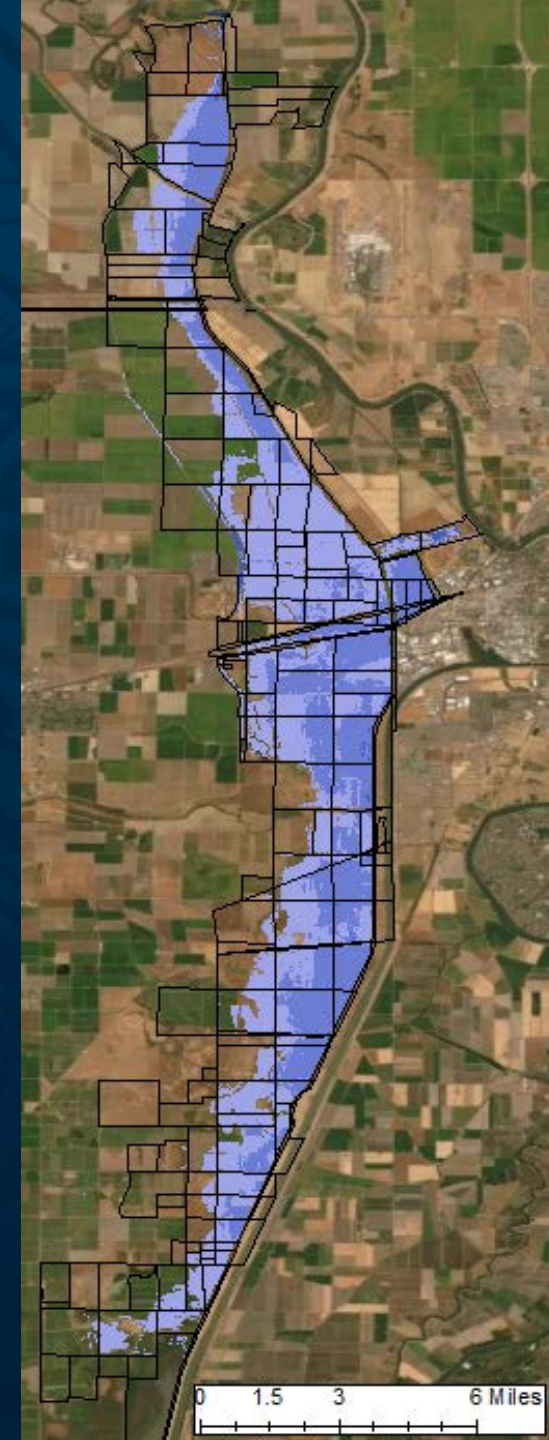


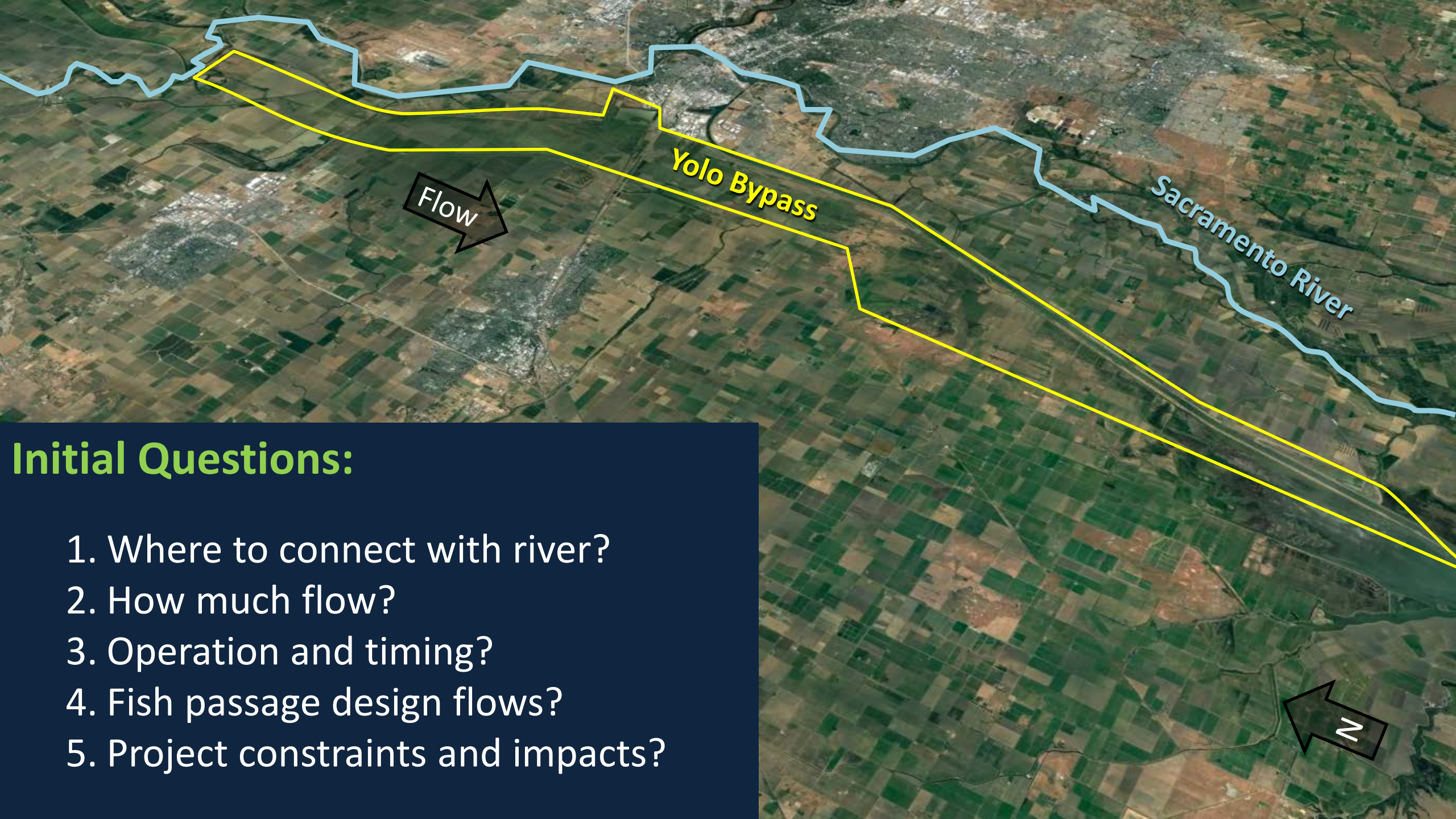
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# Project Background

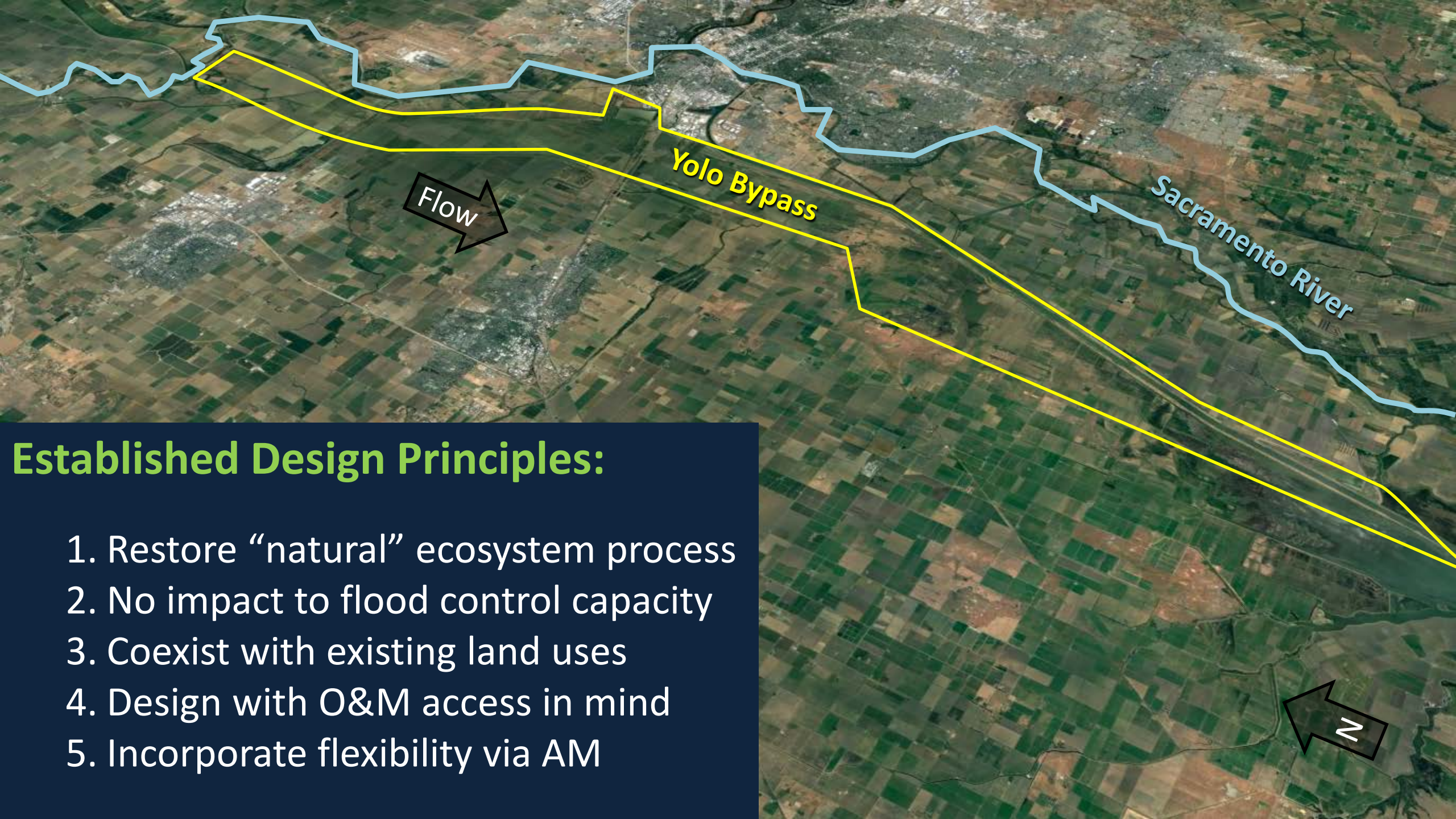
- Enhance floodplain rearing habitat
- Improve adult fish passage
- Comply with 2019 NMFS BO
- Work with existing land uses
- 2022 start of construction





## Initial Questions:

1. Where to connect with river?
2. How much flow?
3. Operation and timing?
4. Fish passage design flows?
5. Project constraints and impacts?



Yolo Bypass

Sacramento River

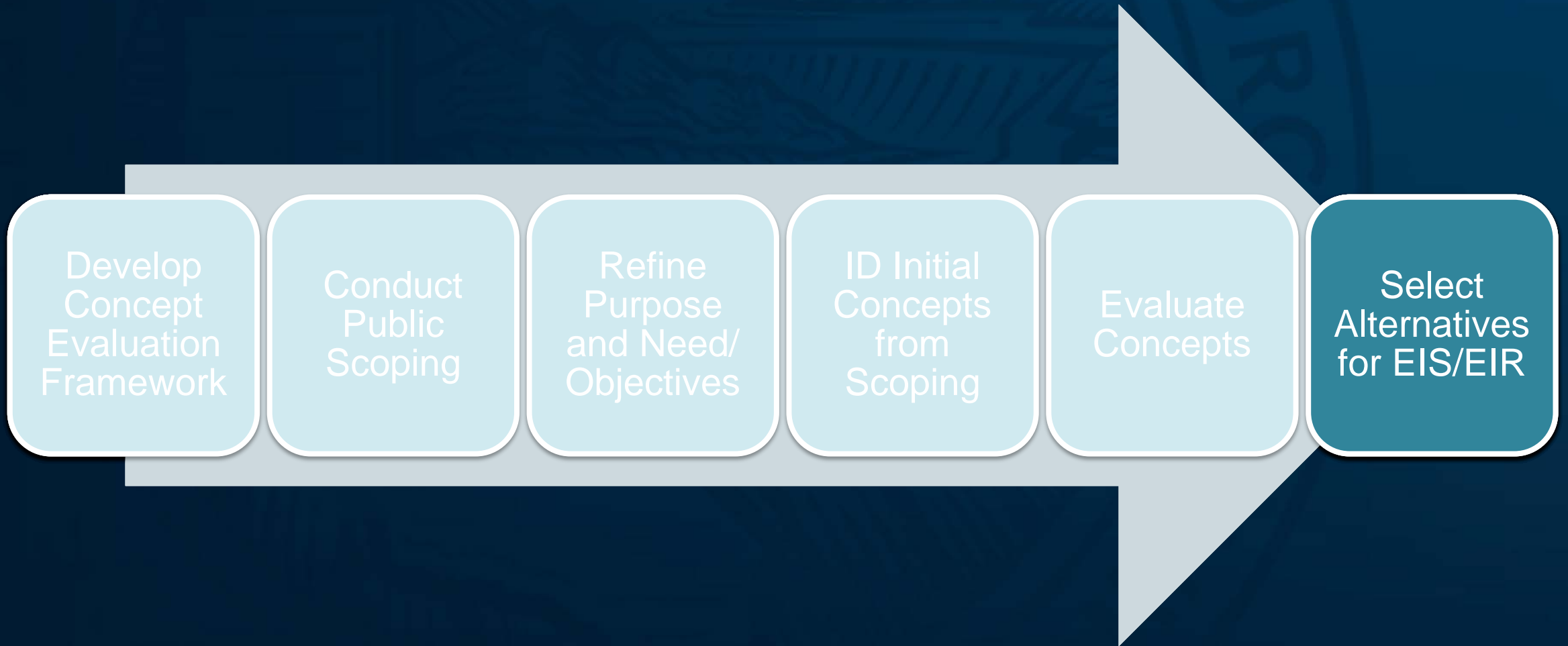
Flow

N

**Established Design Principles:**

1. Restore “natural” ecosystem process
2. No impact to flood control capacity
3. Coexist with existing land uses
4. Design with O&M access in mind
5. Incorporate flexibility via AM

# Alternative Formulation Process



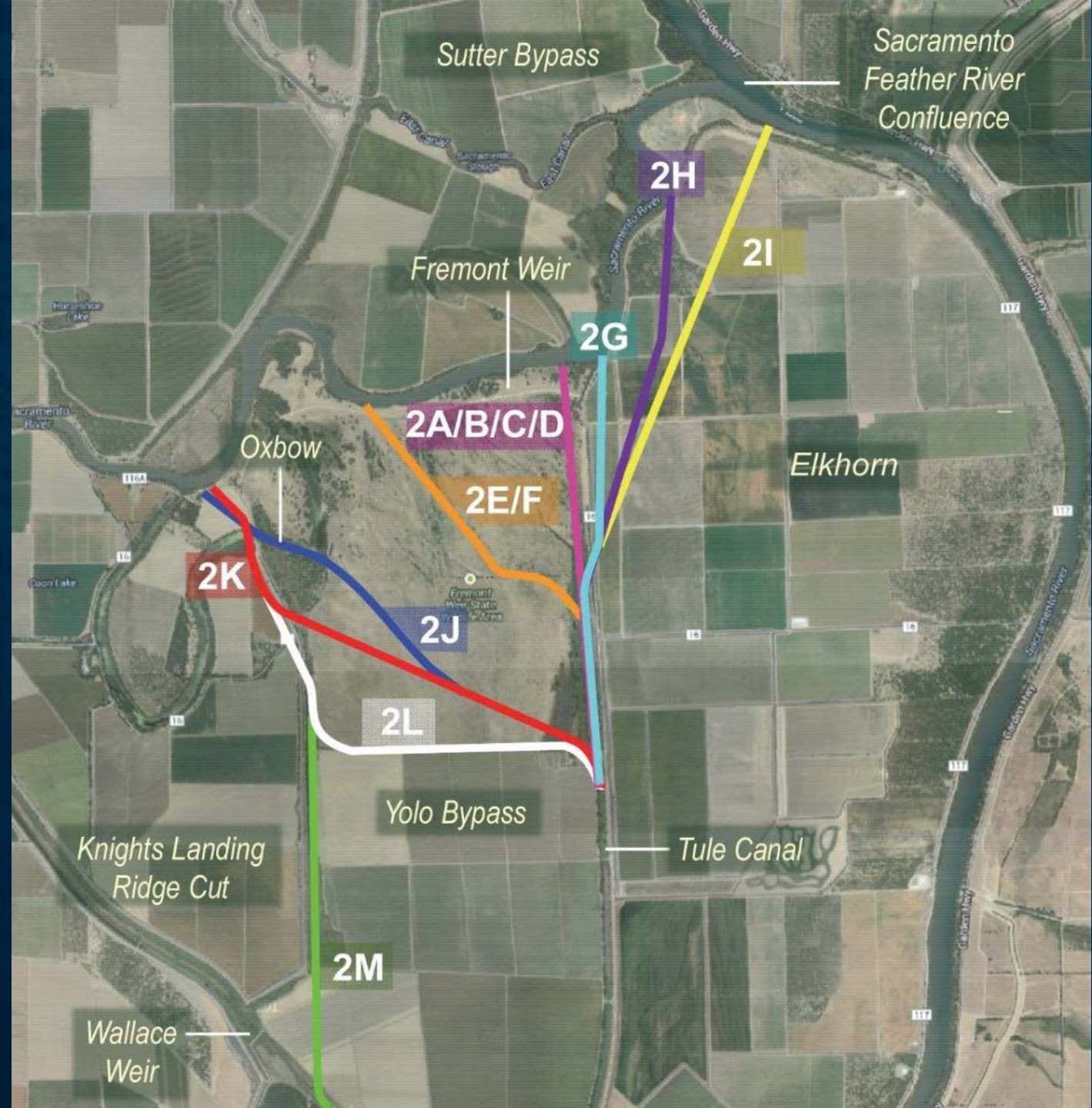
# Develop Initial Concepts: *Establish Design Criteria*

Structure	Feature Length	Depth Criterion	Velocity Criterion	Width Criterion
Intake structure/ short channel transitions	<60 ft	>3 ft	<6 ft/sec	>10 ft
Downstream channel	>60 ft	>5 ft	<4 ft/sec	>10 ft



# Example: *Initial Gated Concepts*

- Various sizes, locations, & configurations
- 3,000 - 6,000 cfs max



# Federal Planning Criteria & Evaluation Factors

- 1. *Effectiveness:*** Does alternative meet Project goals?
- 2. *Completeness:*** Does alternative account for all species?
- 3. *Acceptability:*** Is alternative compatible with other regional efforts, land uses, and laws?
- 4. *Efficiency:*** How well does alternative deliver benefits relative to Project cost?





# Example: *Effectiveness*

Category	Evaluation Factors
<b>Increase access to floodplain habitat</b>	<b>Measure connectivity and potential to entrain winter-run Chinook onto floodplain</b>
	<b>Measure connectivity and potential to entrain spring-run Chinook onto floodplain</b>
Increase area of floodplain habitat	Inundation area (area inundated at least 14 days in 50% of years)
Increase food production as part of ecosystem approach	Increase in food production
Adult fish passage	% of season that meets adult fish passage criteria
Juvenile fish passage	Potential for juvenile stranding or predation risk



# Alternative Evaluation Phase: *Peer-Review*

- Adult Fish Passage
  - YBPASS
- Hydro Modeling
  - SRH2D
- Juvenile Entrainment
  - CSA
  - ELAM
- Salmon Benefits Model



## Yolo Bypass Salmon Habitat Restoration and Fish Passage Analytical Tool Review

A report to the  
Delta Science Program

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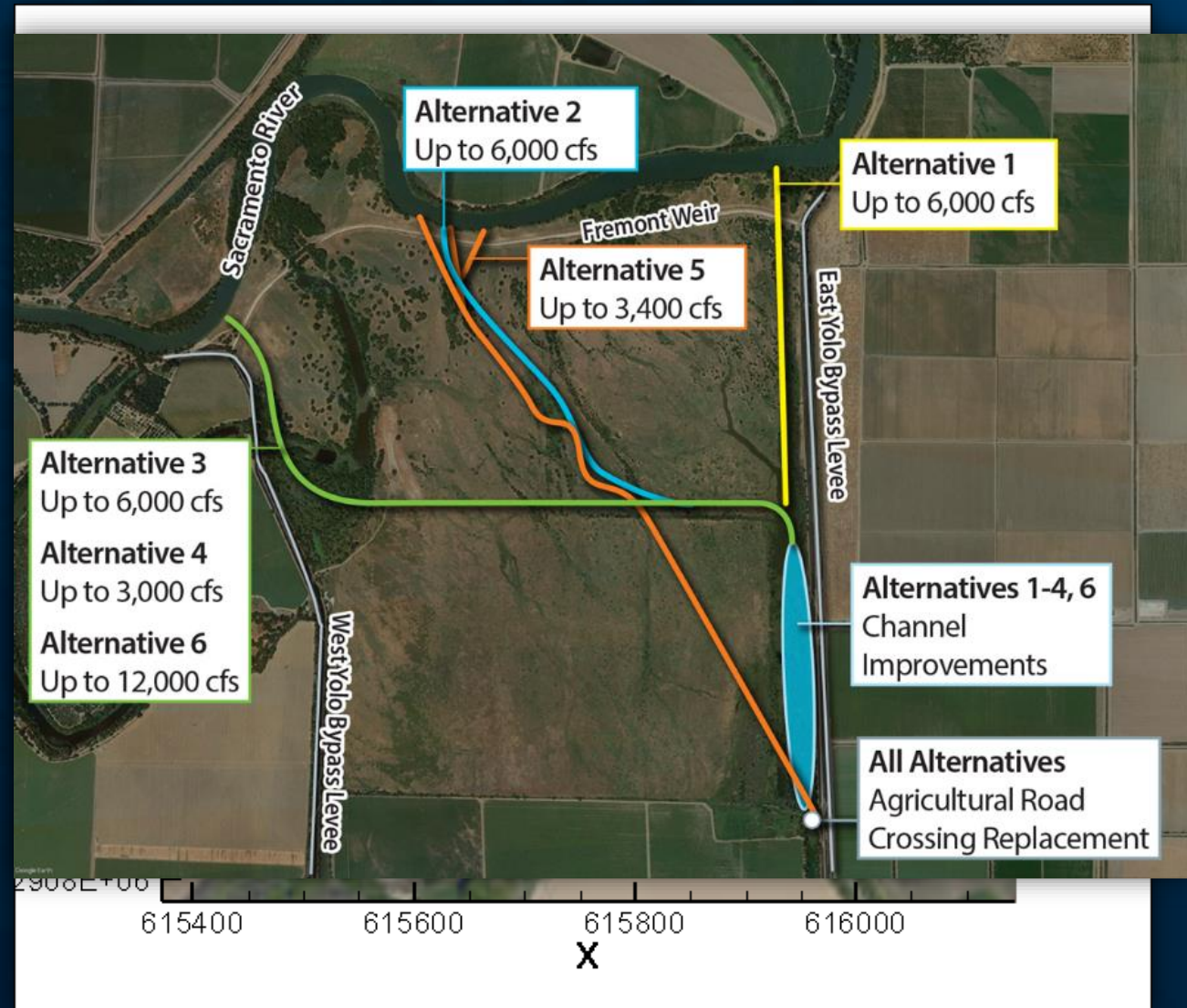


Delta Stewardship Council  
Delta Science Program



# Alternative Evaluation: *Lessons Learned*

- Volume diverted = Primary influence of entrainment
- Connection point should maximize adult fish passage
- Consider adult passage early in design
- Mimic ecosystem processes
- Incorporate design flexibility
- Consider maintenance access



A photograph of a concrete weir structure with a control tower on the left. The weir has a central opening and side slopes with vertical grooves. A dark pool of water is in the foreground. The sky is clear blue. The text 'Questions?' is overlaid in green at the top right.

# Questions?

Fremont Weir Adult Fish Passage Project  
Constructed Fall 2018