



Yolo Bypass Salmonid Habitat Restoration & Fish Passage



HDR

April 5, 2017

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01	Alternative Highlights
02	BA Species of Concern
03	Known Species Occurrences
04	Preliminary Impacts by Alternative
05	Avoid, Minimize, Mitigate
06	Biological Assessment Process

Range of Alternatives

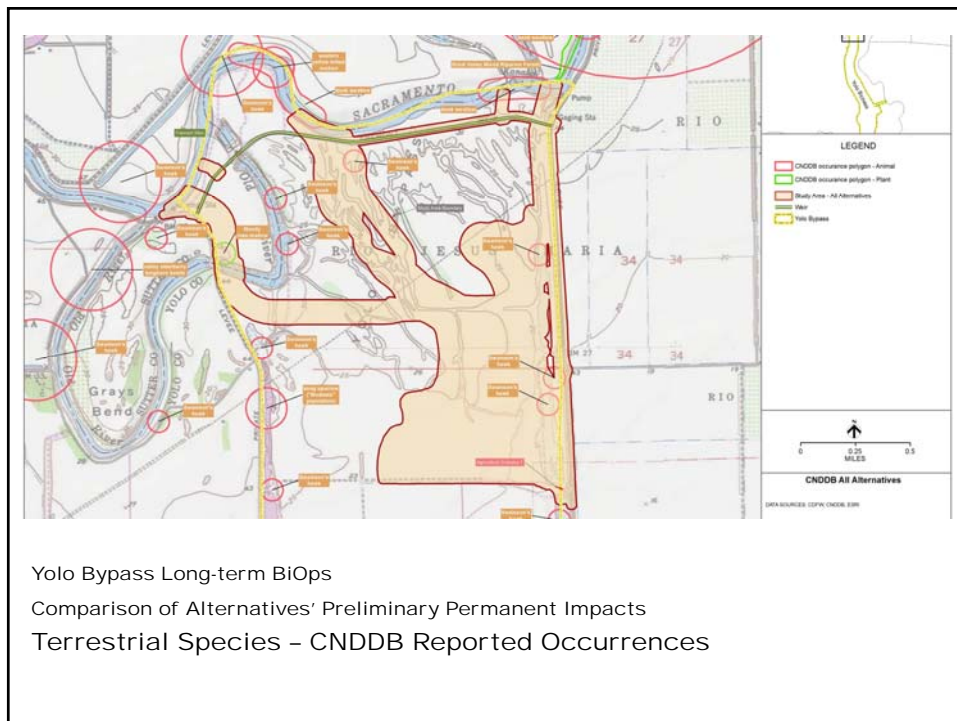
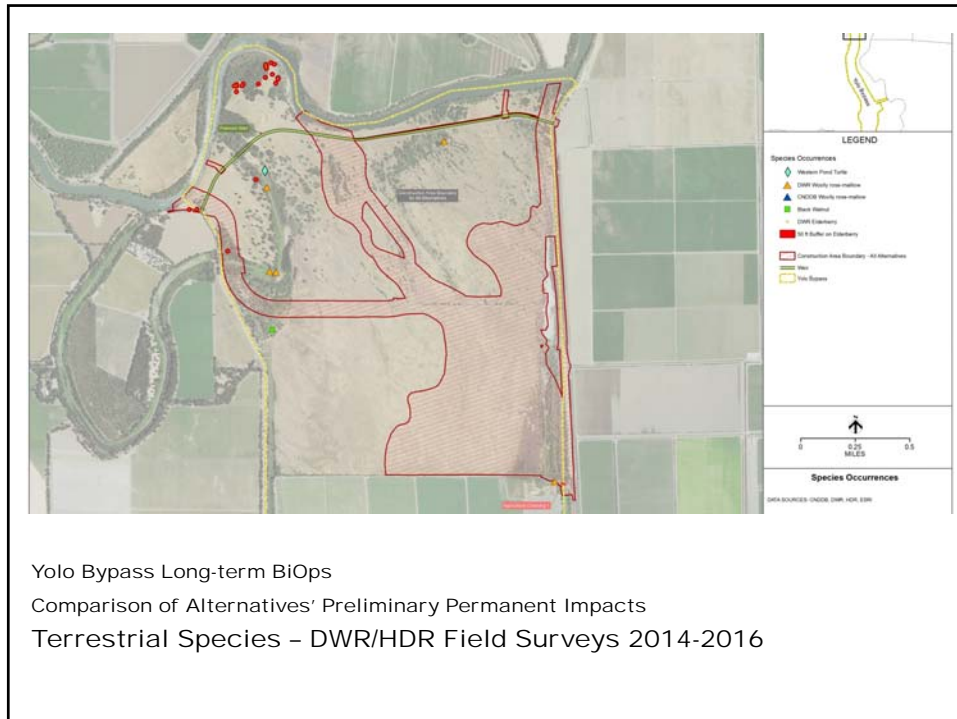
Feature	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
Notch Location on Fremont Weir	Eastern	Central	Western	Western	Central (Multiple gates)	Western
Maximum Notch Flow	6,000 cfs	6,000 cfs	6,000 cfs	3,000 cfs	3,400 cfs	12,000 cfs
Channel Dimensions	20' bottom width, 3:1 side slopes	20' bottom width, 3:1 side slopes	20' bottom width, 3:1 side slopes	20' bottom width, 3:1 side slopes	Multiple	200' bottom width, 3:1 side slopes
Tertiary Fish Passage	West	West	East	East	West	East
Other Features	Ag Cross 1, Tule channel improvements	Ag Cross 1, Tule channel improvements	Ag Cross 1, Tule channel improvements	Ag Cross 1, Tule channel improvements, downstream weirs/sturgeon channels (Cty Rd 22)	Ag Cross 1, Swanston area improvements	Ag Cross 1, Tule channel improvements

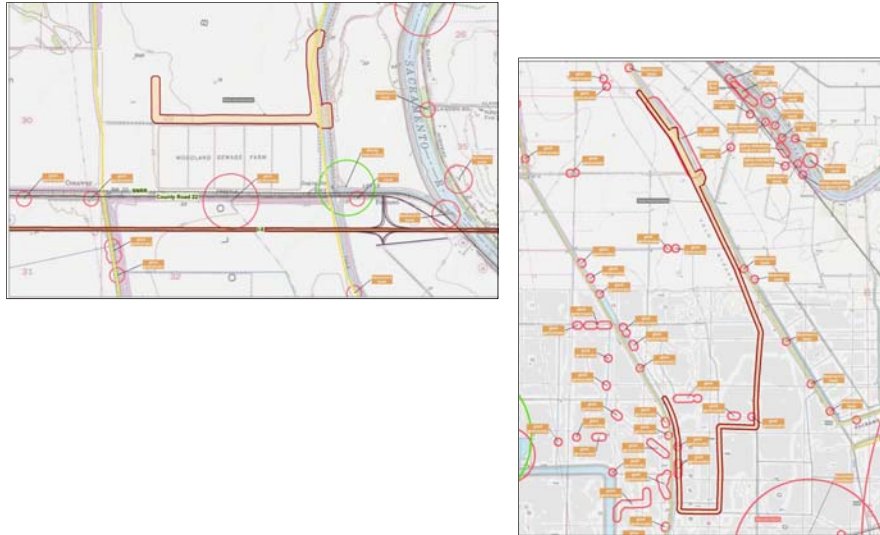
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Yolo Bypass Long-term BiOps Biological Assessment – Federal-listed Species

- **No Federal-listed Plants in Project Area**
- **Five Aquatic Species** (all known to occur in Sacramento River and known/assumed to occur in Tule Canal)
 - Sacramento River winter-run Chinook salmon ESU – FE/SE
 - Central Valley spring-run Chinook salmon ESU – FT/ST
 - Central Valley steelhead DPS – FT
 - Southern DPS of North American green sturgeon – FT/SSC
 - Delta smelt – FT/SE
- **Special-status Wildlife**
 - VELB – host species (elderberry shrub) known to occur in bypass – FT
 - Giant garter snake known to occur in bypass – FT/ST
 - Western yellow-billed cuckoo potential to occur – FT/SE
 - Least Bell's vireo potential to occur – FE/SE







Yolo Bypass Long-term BiOps
General Comparison of Alternatives' Permanent Impacts
Terrestrial Species – CNDDDB Reported Occurrences (Alternative 4)

Yolo Bypass Long-term BiOps Giant Garter Snake Preliminary Habitat Impacts

- **Aquatic Habitat – Permanent Impacts**
 - Alternative 5 impacts at least 3 times the acreage as Alternatives 1-3 and 6, followed closely by Alternative 4
 - Alternatives 1-3 and 6 are very close in acreages of estimated aquatic impacts, with Alternative 1 (East alignment) showing the least acreage impacted
- **Upland Habitat – Permanent Impacts**
 - Alternative 5 has impacts 3 to 4 times the acreage of Alternatives 1-3 and 6
 - Alternative 4 has impacts about 2 times the acreage of 1-3 and 6
 - Alternative 2 (Central alignment) has the lowest estimated acreage of impacts, followed (in ascending order) by 3, 6, and 1



Yolo Bypass Long-term BiOps Giant Garter Snake

- **Wallace Weir mitigation ratio examples for GGS only** (NOTE: much smaller impact area)
 - Permanent impacts (excluding upland riprap) – 3:1
 - Permanent upland riprap impacts – 1:1
 - Temporary upland within 20 meters of water – 0.5:1
 - Temporary upland beyond 20 meters – 0.25:1
- Changes in understanding of habitat use during active season – new studies
- DWR and Bureau are engaging in GGS minimization and mitigation brainstorming meetings with internal/external GGS experts
- Anticipate working meetings with USFWS and others to identify mitigation opportunities for GGS permanent and temporary impacts, both for construction and operations



Yolo Bypass Long-term BiOps Avoid, Minimize and Mitigate

- As possible, *avoid* species habitat during design efforts – refinements continue
- *Minimize* impacts with BMP's, potentially including pre-construction surveys, construction buffers, biological monitors during construction and seasonal avoidance of habitats known to be used by species
- *Mitigate* for unavoidable impacts with:
 - Relocation of species (elderberry shrubs) – may be coupled with other actions
 - Purchase of offsite credits (mitigation banks) – limited by availability
 - Creation of new or enhancement of existing habitat – limited by species requirements & land availability

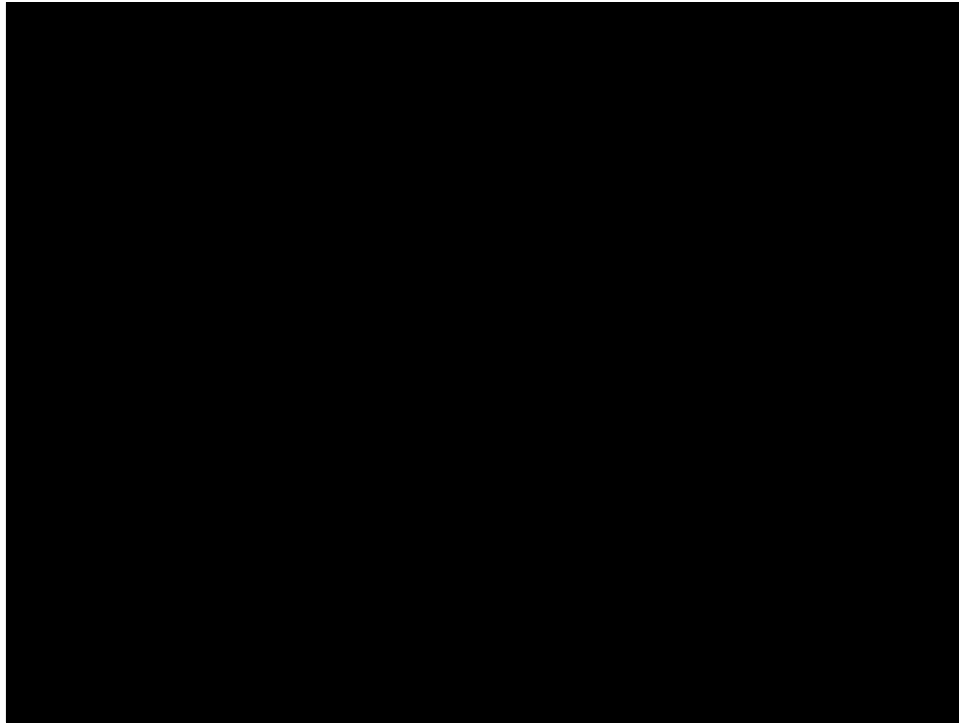


Yolo Bypass Long-term BiOps Biological Assessment Process

- EIS/R impact assessments in process, pending final modeling output
- BA draft background and introductory chapters effort in process now; will use EIS/R impact analyses to create framework for BA assessment
- Pre-consultation coordination meeting with USFWS, NMFS, CDFW scheduled for April 19th
- Anticipate working meeting(s) with resource agencies for most species during April to September 2017
- Draft Biological Assessment to be shared with resource agencies for review in October 2017



**QUESTIONS
or
OTHER FACTORS FOR CONSIDERATION?**



Yolo Bypass Long-term BiOps
EIS/EIR Project Species of Concern

- **Special-status Plants**
 - 35 species considered
 - 13 species with "Known" or "Potential to Occur"
 - All CRPR-listed species
- **Special-status Aquatic Species**
 - 16 species with "Known" or "Potential to Occur"
 - 6 species Federal- or State-listed
- **Special-status Wildlife**
 - 61 species considered
 - 48 species "Known" or "Potential to Occur"
 - 12 species Federal- or State-listed