

Whispering Valley Drive & West Cow Path Flood Mitigation Project

Town Hall Meeting Presentation

August 29, 2015



RPS

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Introduction

- * Public Meeting on March 31st, 2015
- * First Phase
 - * Drainage study to determine the required bridge opening size (60' / 90' / 110') and downstream impact mitigation
 - * Railroad bridge upgrade at Union Pacific Railroad (UPRR) creek crossing
- * Second Phase
 - * West Cow Path Storm Drain Improvement project
 - * First phase is needed for second phase

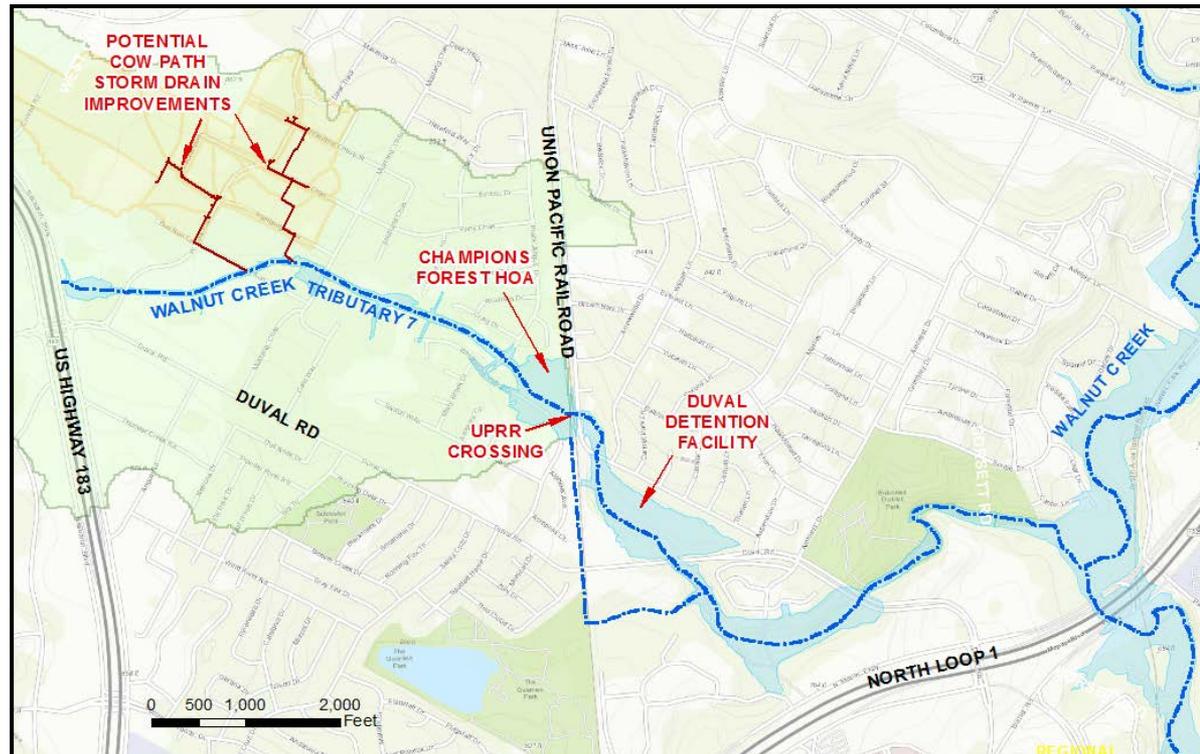
Project Team

- * COA Watershed Engineering Division Project Manager
Reem Zoun, PE, CFM
- * RPS Project Manager
Travis Wilson, PE, CFM
- * RPS Project Engineer
Colin Slagle, PE, CFM

Background

Project Location

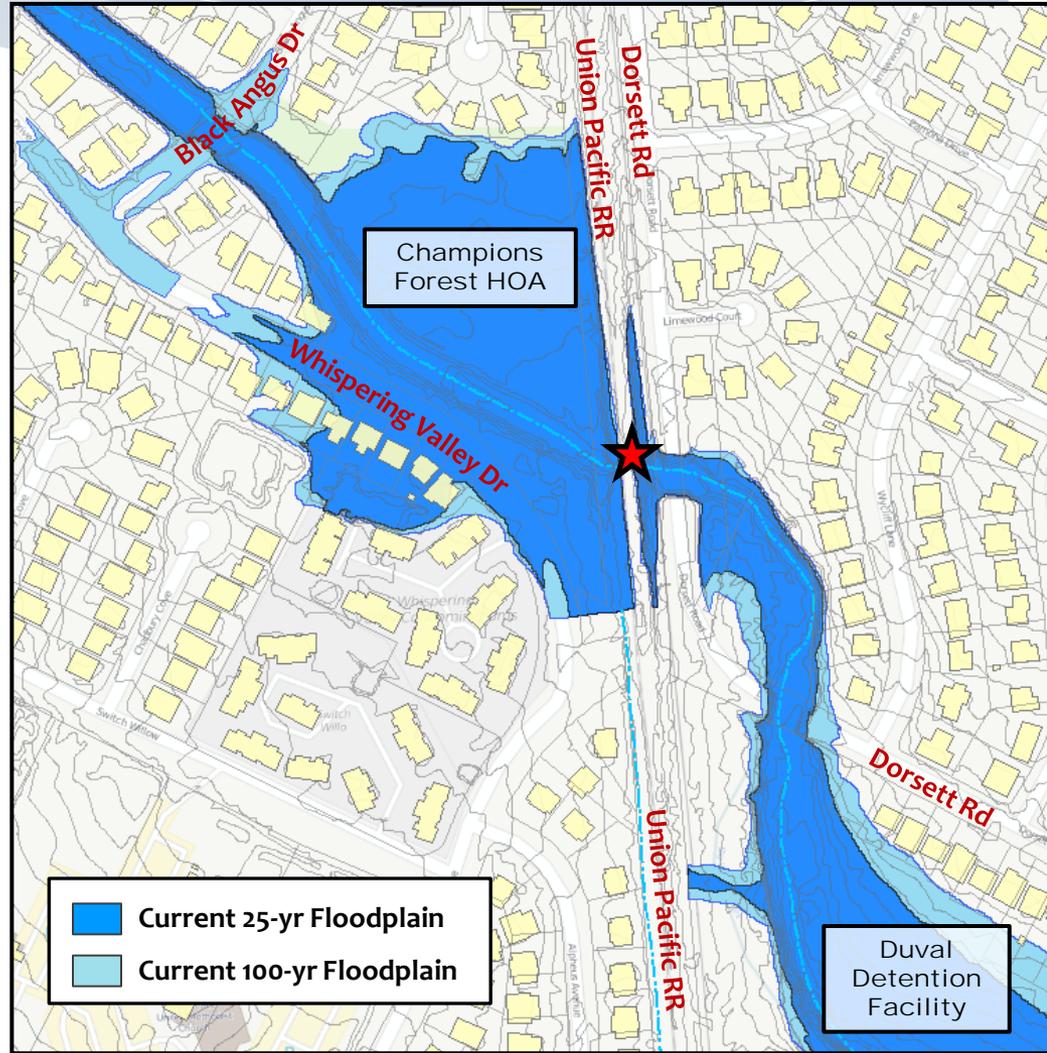
- * Union Pacific Railroad (UPRR) crossing at Walnut Creek Tributary 7
- * 1.7 sq mi drainage area, 100-yr fully developed flow \approx 3,400 cfs
- * Champions Forest HOA lot immediately upstream
- * Duval Detention Facility $\frac{1}{4}$ mile downstream
- * Planned storm drain improvements in West Cow Path Neighborhood



Background

Flooding Issues

- * Existing UPRR culvert has less than 2-year capacity
- * Frequent flooding of properties and homes along Whispering Valley Drive
- * 6 homes in 25-yr floodplain, 7 homes in 100-yr floodplain
- * Frequent overtopping and erosion of UPRR railroad
- * Localized flooding issues within West Cow Path neighborhood



Background



RPS Scope of Services

Develop cost effective conceptual solution to:

- * Remove upstream structures from 100-year floodplain
- * Minimize downstream impacts to 100-year floodplain

Provide final report with recommendations to UPRR

- * Bridge construction by UPRR
- * Potential cost-sharing of additional requirement drainage improvements

RPS Scope of Services

Conceptual design considerations:

- * Watershed conditions
 - * “Fully developed” – max impervious cover based on zoned land use
 - * “Future” – incorporate impacts of potential storm drain improvements
- * Water quality control integration
- * Bike & pedestrian trail integration
- * Evaluate other potential flooding sources
- * Downstream erosion potential

Conceptual Design Alternatives

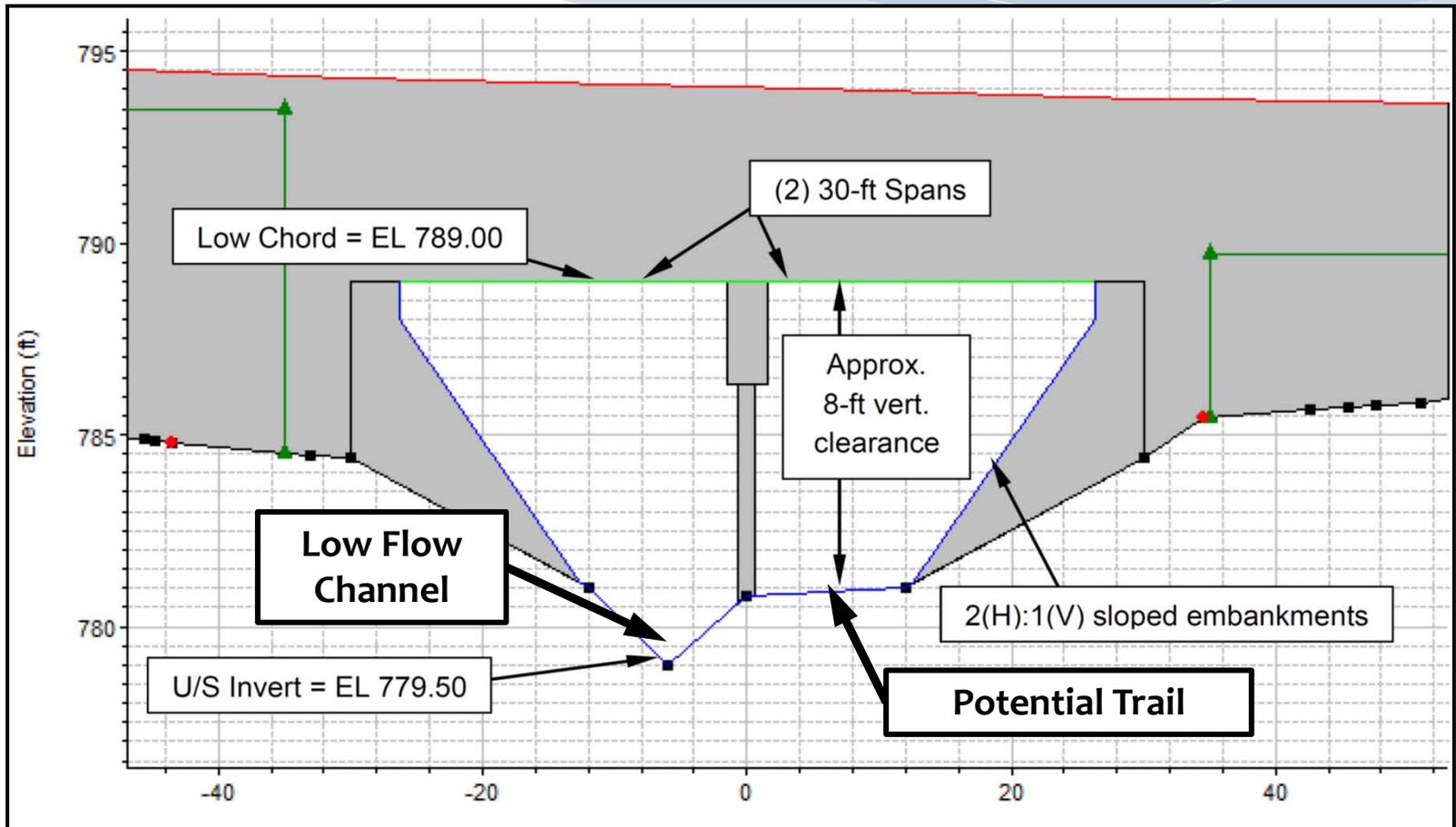
- * **Alternative 1:**
Bridge Only
- * **Alternative 2:**
Upstream Detention
(Champion's Forest)
- * **Alternative 3:**
Downstream Detention
(Duval Detention Facility)



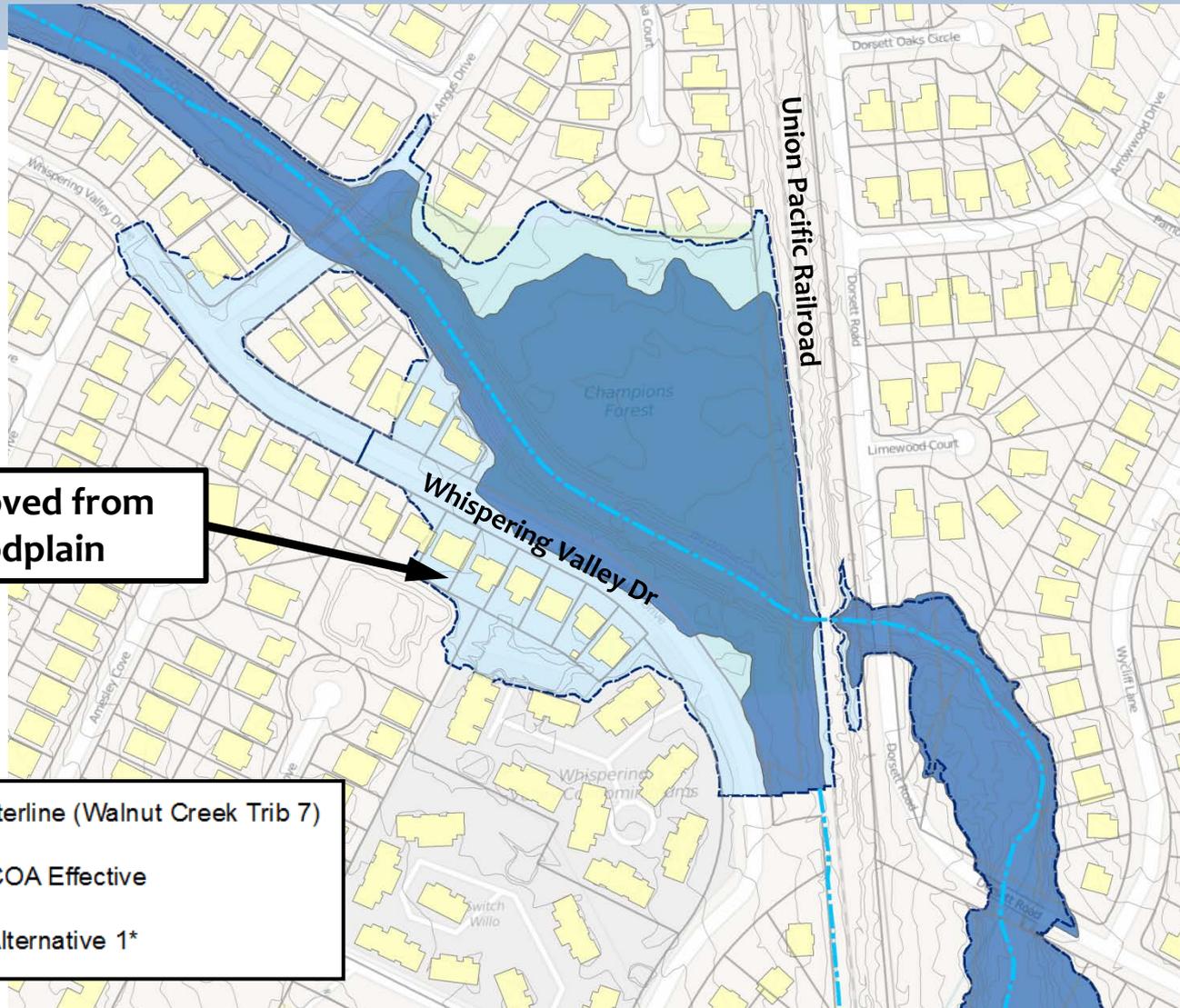
Alternative 1 – Bridge Only

- * Hydraulically optimized UPRR upgrade geometry
- * Contain downstream impacts within new or existing drainage easement

Alternative 1 – Bridge Only



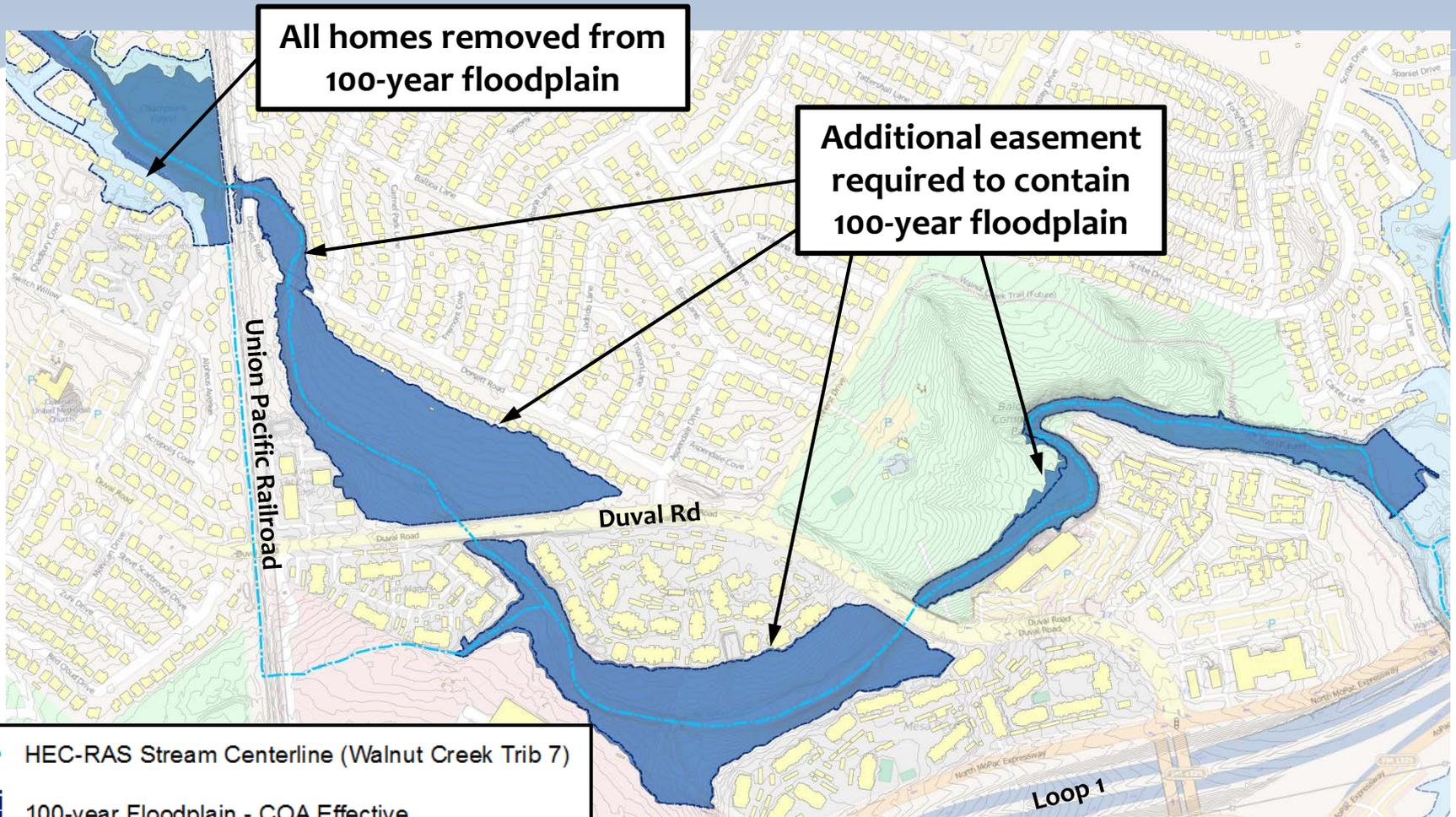
Alternative 1 – Bridge Only



All homes removed from
100-year floodplain

- HEC-RAS Stream Centerline (Walnut Creek Trib 7)
- 100-year Floodplain - COA Effective
- 100-year Floodplain - Alternative 1*

Alternative 1 – Bridge Only



All homes removed from 100-year floodplain

Additional easement required to contain 100-year floodplain

- HEC-RAS Stream Centerline (Walnut Creek Trib 7)
- 100-year Floodplain - COA Effective
- 100-year Floodplain - Alternative 1*

Alternative 1 – Bridge Only

100-yr Results

Upstream

- * 2 ft floodplain elevation reduction up to Black Angus Dr
- * **All homes removed from floodplain**
 - * 7 removed from 100-yr / 6 removed from 25-yr

Downstream

- * 0.1 - 0.9 ft floodplain elevation increases
- * Minor flooding increases at Dorsett & Duval bridges
- * **No homes impacted**
- * **Impacts contained within new or existing easement**
 - * 42 new easements required, 23 acres total

Conceptual Cost: \$1.7M (excludes UPRR bridge upgrade cost)

Alternative 2 – Upstream Detention

- * Hydraulically optimized UPRR upgrade geometry
- * Maximum detention within Champions Forest HOA lot
 - * 3.5-acre excavation, avg 4-ft depth, 14 acre-feet storage
- * Contain reduced downstream impacts within new or existing drainage easement

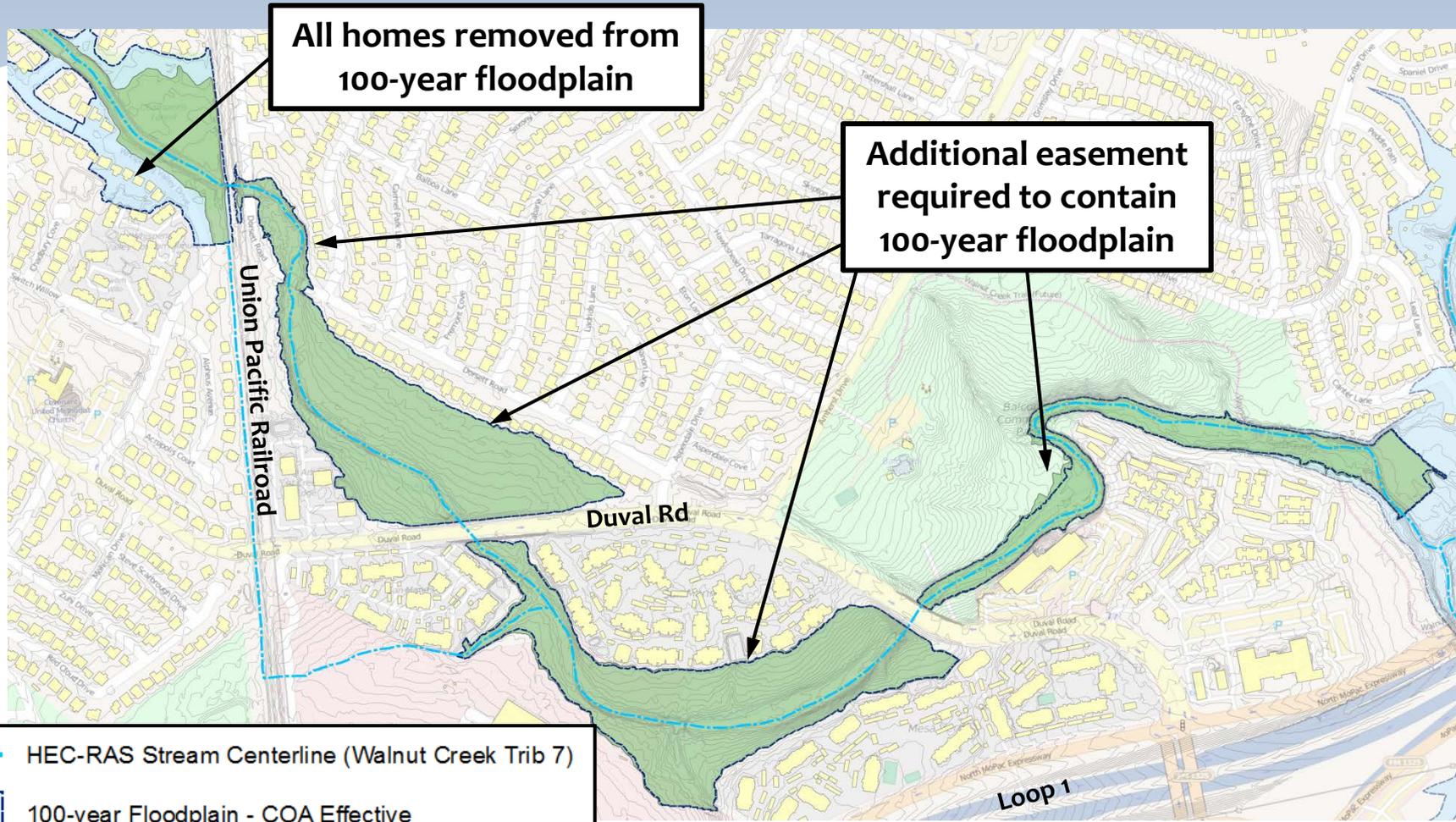
Alternative 2 – Upstream Detention



Alternative 2 – Upstream Detention



Alternative 2 – Upstream Detention



All homes removed from 100-year floodplain

Additional easement required to contain 100-year floodplain

- HEC-RAS Stream Centerline (Walnut Creek Trib 7)
- - - 100-year Floodplain - COA Effective
- 100-year Floodplain - Alternative 1*

Alternative 2 – Upstream Detention

100-yr Results

Upstream

- * 2 ft floodplain elevation reduction up to Black Angus Dr
- * **All homes removed from floodplain**
 - * 7 removed from 100-yr / 6 removed from 25-yr

Downstream

- * 0 - 0.7 ft floodplain elevation increases
- * Minor flooding increases at Dorsett & Duval bridges
- * **No homes impacted**
- * **Reduced impacts contained within new or existing easement**
 - * 41 new easements required, 23.5 acres total (incl. HOA lot)

Conceptual Cost: \$3.2M (excludes UPRR bridge upgrade cost)

Alternative 3 – Downstream Detention

- * Hydraulically optimized UPRR upgrade geometry
- * Added detention within existing Duval Detention Facility
 - * 3-acre excavation, avg 6-ft depth, 18 acre-feet storage
 - * Eliminate impacts downstream of detention
- * Contain impacts between upgraded UPRR crossing and Duval Facility within new or existing drainage easement

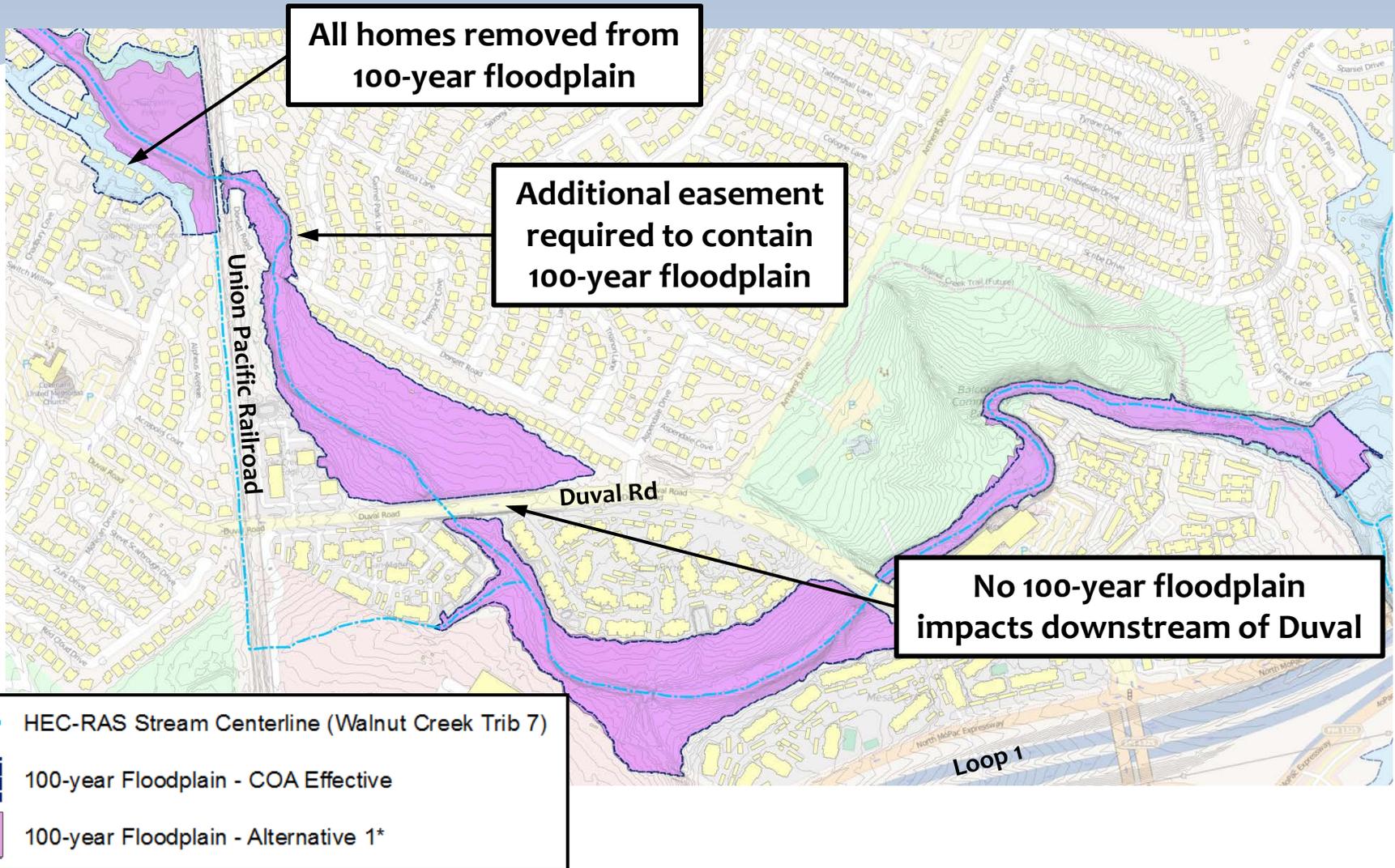
Alternative 3 – Downstream Detention



Alternative 3 – Downstream Detention



Alternative 3 – Downstream Detention



Alternative 3 – Downstream Detention

100-yr Results

Upstream

- * 2 ft floodplain elevation reduction up to Black Angus Dr
- * **All homes removed from floodplain**
 - * 7 removed from 100-yr / 6 removed from 25-yr

Downstream

- * 0 - 0.5 ft floodplain elevation increases (Dorsett Reach only)
- * Minor flooding increases at Dorsett bridge (mitigation to be determined)
- * **No homes impacted**
- * **Impacts contained within new or existing easement**
 - * 5 new easements required, 0.12 acres total

Conceptual Cost: \$2.0M (excludes UPRR bridge upgrade cost)

Conceptual Design Alternatives Comparison Matrix

Consideration	Alternative 1 Bridge Only	Alternative 2 Upstream Detention	Alternative 3 Downstream Detention
UPRR Bridge Upgrade	included	included	included
Detention Location	none	Champions Forest HOA Lot	Duval Detention Facility
Detention Area Required	0	3.5 acres	3 acres
Tree Mitigation Required	No	Yes	Yes
Total Drainage Easement Required	42 parcels; 23 acres	41 parcels; 23.5 acres	5 parcels; 0.12 acres
Total Conceptual Cost (COA)	\$1.7M	\$3.2M	\$2.0M
Upstream 100-yr Floodplain Impacts	2 ft reduction; all homes removed	2 ft reduction; all homes removed	2 ft reduction; all homes removed
Downstream 100-yr Floodplain Impacts	up to 0.9 ft increase; no homes impacted	up to 0.7 ft increase; no homes impacted	up to 0.5 ft increase; no homes impacted
Downstream 25- & 100-yr Bridge Impacts	minimal increases at Dorsett and Duval	minimal increases at Dorsett and Duval	minimal increases at Dorsett only

Additional Considerations

- * **Additional Considerations**
 - * UPRR coordination and construction
 - * Trail integration challenges
 - * Water quality integration challenges
 - * Downstream erosion potential / channel maintenance
 - * Potential localized flooding sources

Update on Coordination with UPRR

- * Met with UPRR at CM Zimmerman's office on October 14, 2015
- * Recommendation moving forward is to not enter into a cost-share agreement
 - UPRR responsible for the costs of the bridge construction (removes 8 homes from the floodplain in District 6) and
 - The City of Austin responsible for the mitigation action of purchasing easements for the expanded floodplain downstream of the bridge (42 properties in District 7)
- * The UPRR will review their costs and scheduling and give the City an update by October 1, 2015
- * COA staff emailed draft drainage report to UPRR on October 17, 2015

Communication

- * Project website
 - * <http://www.austintexas.gov/whisperingvalley>
- * Public meetings at key stages of project



Questions / Discussion

Contact



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