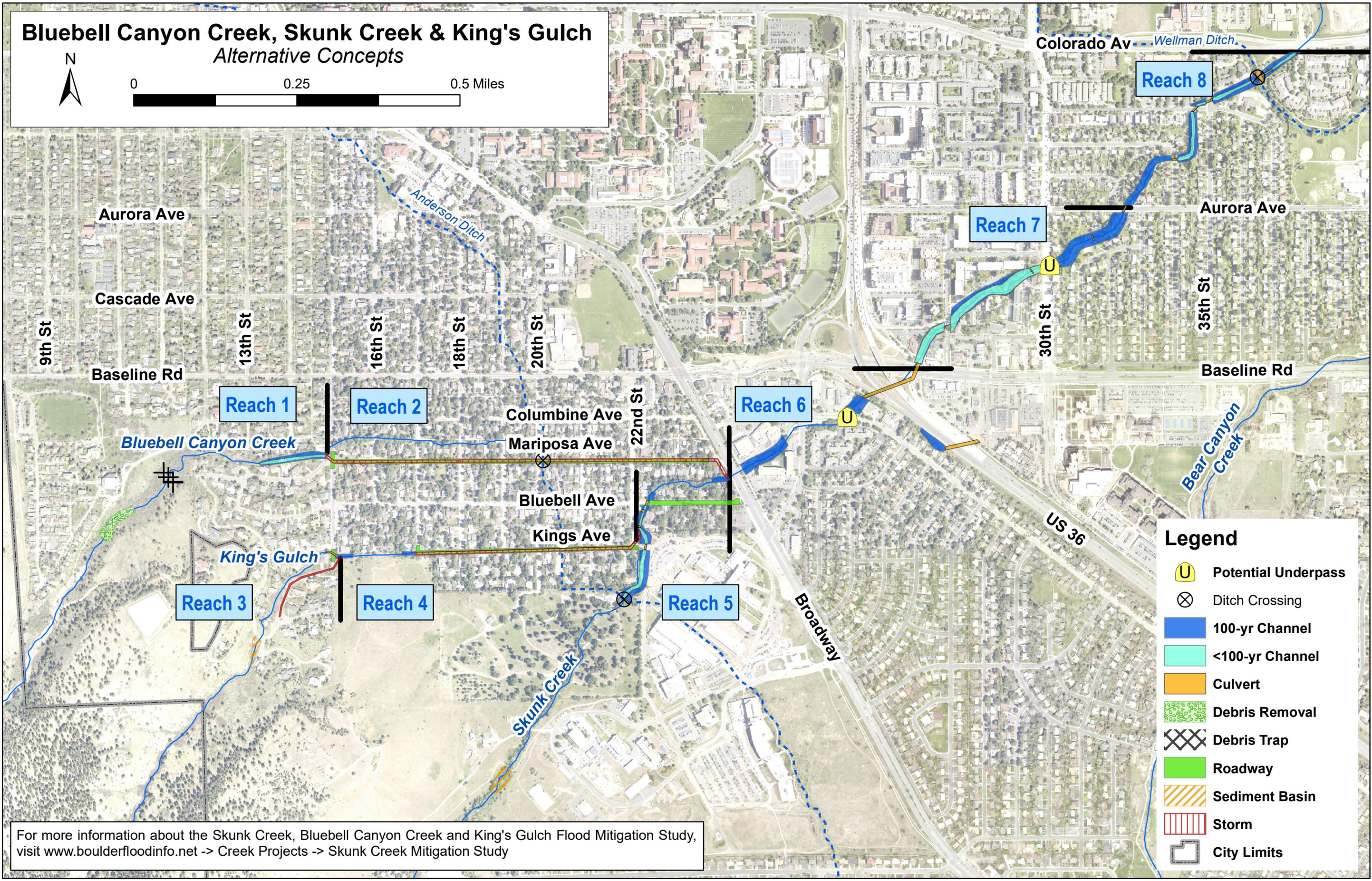
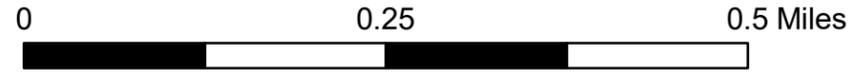


Bluebell Canyon Creek, Skunk Creek & King's Gulch Alternative Concepts



Legend

- Potential Underpass
- Ditch Crossing
- 100-yr Channel
- <100-yr Channel
- Culvert
- Debris Removal
- Debris Trap
- Roadway
- Sediment Basin
- Storm
- City Limits

For more information about the Skunk Creek, Bluebell Canyon Creek and King's Gulch Flood Mitigation Study, visit www.boulderfloodinfo.net -> Creek Projects -> Skunk Creek Mitigation Study

Reach 1

Bluebell Canyon Creek: Upstream Limits to 15th Street



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Information About the Alternatives

Alt	Description	Cost	Benefits	Issues
A	Remove existing debris and dead trees along channel	\$0.5M	<ul style="list-style-type: none"> Reduces debris impact downstream Helps reduce fire danger Existing city ownership of property 	<ul style="list-style-type: none"> Disrupts natural habitat Impacts city Open Space land
B	Debris trap	\$0.5M	<ul style="list-style-type: none"> Reduces debris impact downstream Existing city ownership of property 	<ul style="list-style-type: none"> Disrupts wildlife corridor and natural habitat Impacts city Open Space land May require removal of mature trees Potential floodplain impacts
C	100-Year channel improvements	\$1.1M	<ul style="list-style-type: none"> Reduces spill flow out of Bluebell Canyon Creek Reduces flooding of 15th Street Reduces 100-year floodplain 	<ul style="list-style-type: none"> Impacts private property Requires reconstruction of private access Requires downstream improvements (see Reach 2 alternatives A & B)
c	<100-Year channel improvements	\$0.6M	<ul style="list-style-type: none"> Similar to Alt C, but with reduced cost and private property 	<ul style="list-style-type: none"> Similar to Alt C, but does not contain 100-year flood impacts



Reach 2

Bluebell Canyon Creek: 15th Street to Broadway



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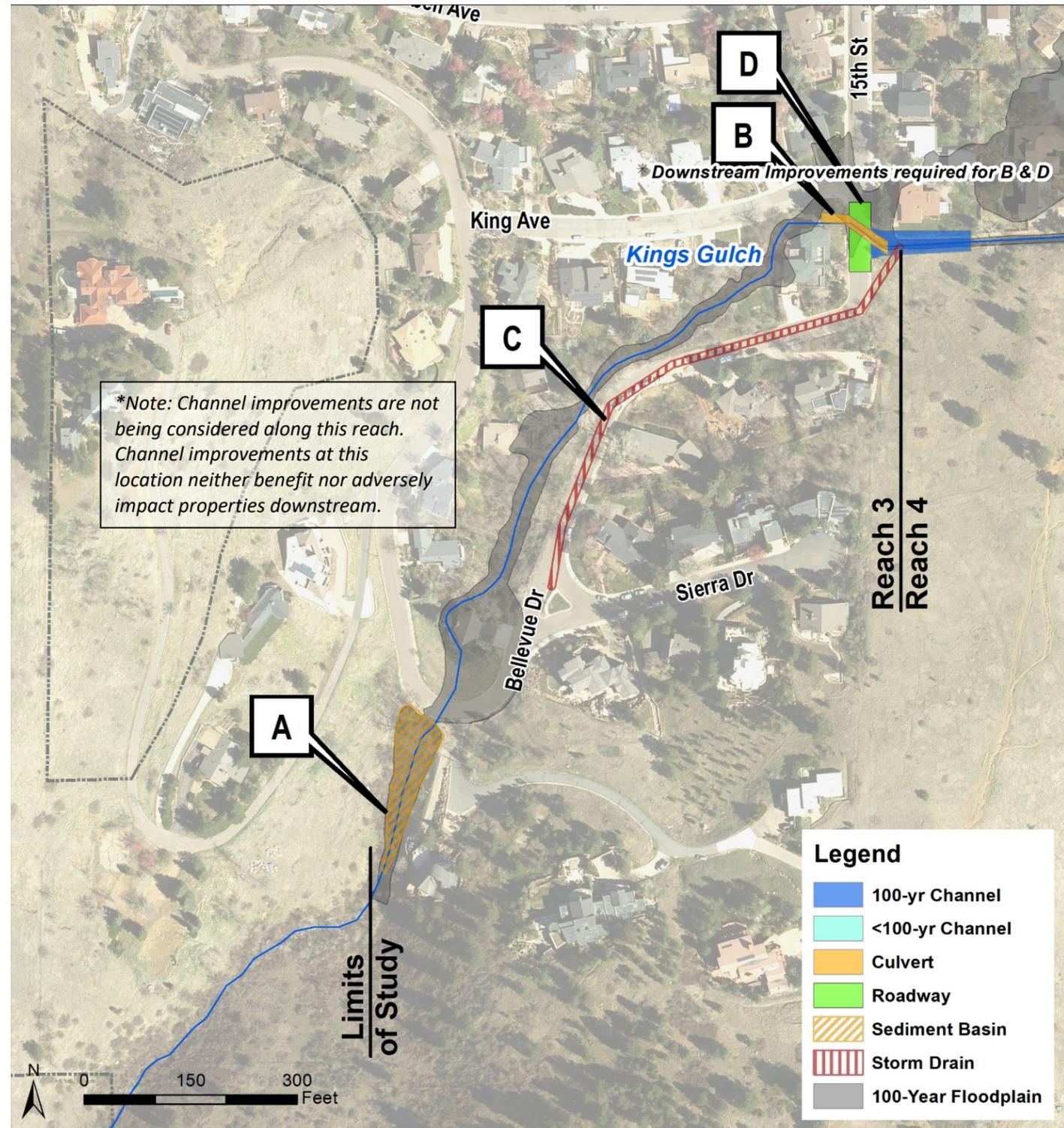
Information About the Alternatives

Alt	Description	Cost	Benefits	Issues
A	100-Year storm drain system	\$5.9M	<ul style="list-style-type: none"> Utilizes existing Right-of-Way Minimizes private property impacts Provides local drainage along Mariposa Ave. Reduces 100-year floodplain 	<ul style="list-style-type: none"> Susceptible to clogging Construction disruption to residential street
a	10-Year storm drain system	\$1.9M	<ul style="list-style-type: none"> Similar to Alt A, but with reduced cost and property impacts 	<ul style="list-style-type: none"> Does not contain 100-year flood Susceptible to clogging Construction disruption to residential street
B	Increase roadway conveyance between 15 th St. and Broadway, lower the Anderson Ditch in vicinity of 20 th St.	\$6.1M	<ul style="list-style-type: none"> Utilizes existing Right-of-Way Minimizes private property impacts 	<ul style="list-style-type: none"> Life safety and emergency access concerns with street flooding Construction disruption to residential street Increased ditch maintenance
b	Increase roadway conveyance by lowering the Anderson Ditch and the Mariposa roadway at 20 th St.	\$1.1M	<ul style="list-style-type: none"> Similar to Alt B but with reduced cost and property impacts 	<ul style="list-style-type: none"> Life safety and emergency access concerns with street flooding Construction disruption to residential street Increased ditch maintenance



Reach 3

King's Gulch: Upstream Limits to 15th Street



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Information About the Alternatives

Alt	Description	Cost	Benefits	Issues
A	Sediment capture facility	\$0.5M	<ul style="list-style-type: none"> Reduces sedimentation impact downstream Utilizes existing roadway embankment 	<ul style="list-style-type: none"> Change in natural sediment transport May require removal of mature trees Impacts private property
B	Improve 15th St. culvert	\$1.5M	<ul style="list-style-type: none"> Reduces spill flow out of King's Gulch Reduces flooding on 15th St. Follows existing channel and culvert alignment 	<ul style="list-style-type: none"> Impacts private property Requires downstream improvements (see Reach 4 alternatives A, B & C)
C	Bellevue Dr. storm drain (collect on Bellevue, deliver to channel downstream of 15th St.)	\$1.0M	<ul style="list-style-type: none"> Reduces spill flow out of King's Gulch Reduces flooding on 15th St. Utilizes existing Right-of-Way 	<ul style="list-style-type: none"> Susceptible to clogging Construction disruption to residential street
D	Roadway improvements on 15th St.	\$0.5M	<ul style="list-style-type: none"> Directs spill flows from 15th St. to King's Gulch channel Utilizes existing Right-of-Way 	<ul style="list-style-type: none"> Life safety and emergency access concerns with street flooding Construction disruption to residential street



Reach 4

King's Gulch: 15th Street to Broadway



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Information About the Alternatives

Alt	Description	Cost	Benefits	Issues
A	Improve channel entrance to 100-year capacity	\$0.5M	<ul style="list-style-type: none"> Reduces spill flow out of King's Gulch Reduces flooding of 15th St. and split flow path Utilizes existing channel alignment 	<ul style="list-style-type: none"> Construction in close proximity to structures
B	Improve channel and storm drain inlet	\$0.5M	<ul style="list-style-type: none"> Reduces spill flow out of King's Gulch Reduces flooding of 17th St. and King's Ave. Utilizes existing channel alignment and Right-of-Way 	<ul style="list-style-type: none"> Construction in close proximity to structures Requires downstream improvements (see Reach 5 alternative B)
C	100-Year storm drain improvements	\$2.3M	<ul style="list-style-type: none"> Utilizes existing Right-of-Way Minimizes private property impacts Provides local drainage along King's Ave. 	<ul style="list-style-type: none"> Construction disruption to residential street Requires downstream improvements (see Reach 5 alternative B)
D	Roadway improvements 17 th to 22 nd St.	\$3.5M	<ul style="list-style-type: none"> Directs spill flows from 15th St. to King's Ave. Utilizes existing Right-of-Way 	<ul style="list-style-type: none"> Life safety and emergency access concerns with street flooding Construction disruption to residential street



Reach 5

Skunk Creek: Upstream Limits to Broadway



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Information About the Alternatives

Alt	Description	Cost	Benefits	Issues
A	Sediment capture facility	\$0.5M	<ul style="list-style-type: none"> Reduces sedimentation impact downstream Existing public ownership of sediment capture facility footprint 	<ul style="list-style-type: none"> Change in natural sediment transport Requires removal of mature trees Disrupts natural habitat
B	100-Year channel improvements; new culverts at Anderson Ditch (siphon), King Ave, driveways, and Bluebell Ave	\$7.5M	<ul style="list-style-type: none"> Reduces spill flow out of Skunk Creek Reduces flooding of roadways Follows existing channel alignment Reduces 100-year floodplain 	<ul style="list-style-type: none"> Impacts private property Requires reconstruction of private driveways
b	10-Year channel improvements; new culverts at Anderson Ditch (siphon), and driveway	\$1.7M	<ul style="list-style-type: none"> Similar to Alt B but with reduced cost and property impacts 	<ul style="list-style-type: none"> Impacts private property Requires reconstruction of private driveways Does not provide 100-year capacity
C	Roadway improvements 22 nd to Broadway	\$1.1M	<ul style="list-style-type: none"> Directs spill flows from Bluebell Ave to Skunk channel Utilizes existing Right-of-Way 	<ul style="list-style-type: none"> Life safety and emergency access concerns with street flooding Construction disruption to residential street



Reach 6

Skunk Creek: Broadway to Baseline Road



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Information About the Alternatives

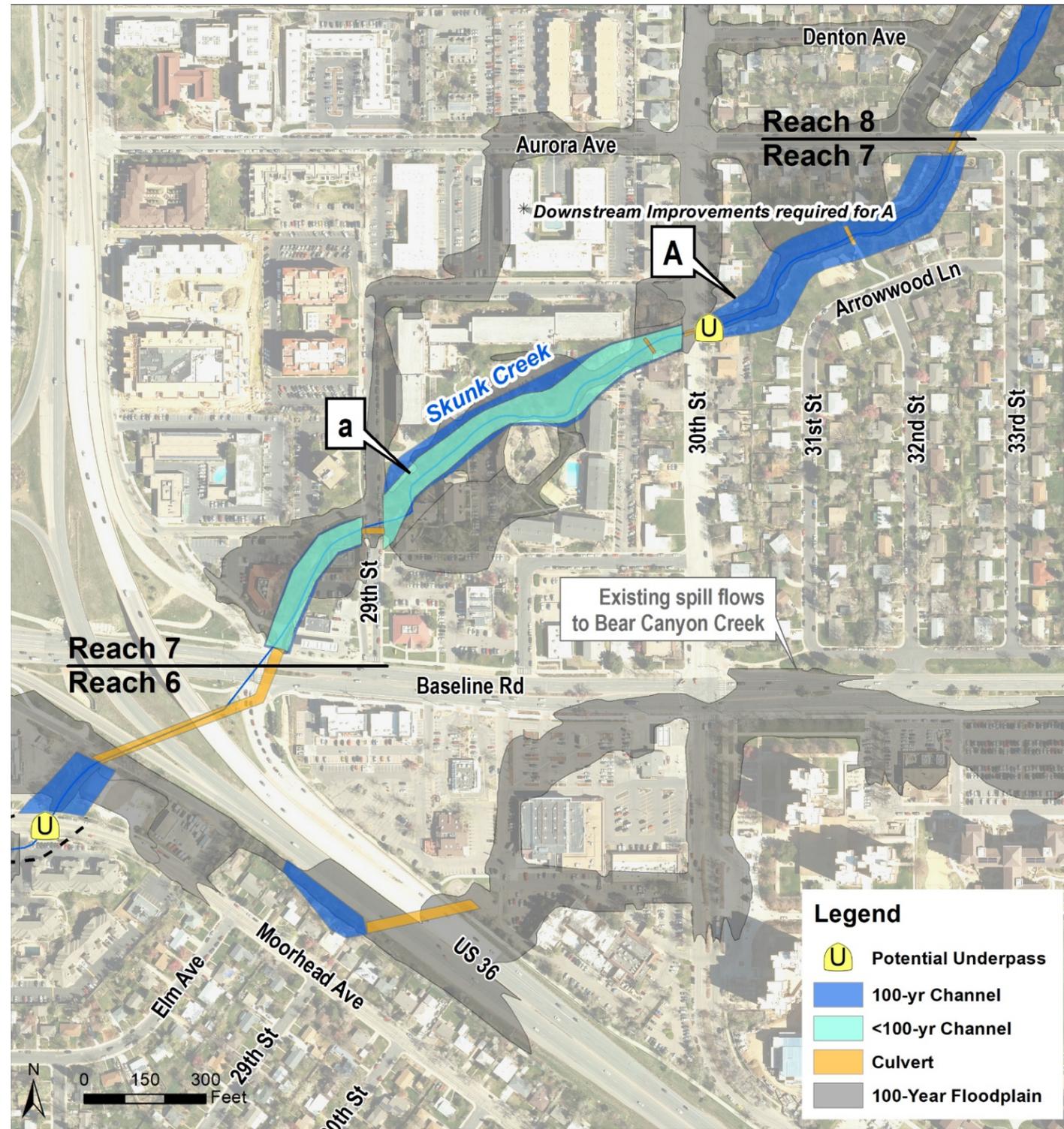
Alt	Description	Cost	Benefits	Issues
A	100-year channel improvements; pedestrian underpass opportunity at Moorhead Ave (not included in cost); new US Highway 36 culvert	\$7.1M	<ul style="list-style-type: none"> Reduces spill flow out of Skunk Creek Follows existing channel alignment Reduces flooding of US Highway 36 Provides missing link in multi-use trail system 	<ul style="list-style-type: none"> Impacts private property Complex culvert construction Requires downstream improvements (see Reach 7 alternative A)
B	New culvert at US Highway 36 and channel improvements for Bear Creek Split flow (Not required if A is implemented)	\$1.1M	<ul style="list-style-type: none"> Reduces flooding of US Highway 36 	<ul style="list-style-type: none"> Impacts private property Concentrates spill flow on downstream side of US Highway 36



Reach 7

Skunk Creek: Baseline Road to Aurora Avenue

Information About the Alternatives



Alt	Description	Cost	Benefits	Issues
A	100-Year channel improvements; new culverts at 29th St. and Aurora Ave; and new Arrowwood Park bridge; pedestrian underpass opportunity at 30th St.	\$10.1M	<ul style="list-style-type: none"> Reduces spill flow out of Skunk Creek Reduces flooding of roadways Follows existing channel alignment Reduces 100-year floodplain 	<ul style="list-style-type: none"> Impacts private property Requires downstream improvements (see Reach 8 alternative A)
a	10-Year channel improvements	\$3.8M	<ul style="list-style-type: none"> Similar to Alt A but with less cost and property impacts 	<ul style="list-style-type: none"> Impacts private property Does not provide 100-year capacity Requires downstream improvements (see Reach 8 alternative A)



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Reach 8

Skunk Creek: Aurora Avenue to Colorado Avenue



Information About the Alternatives

Alt	Description	Cost	Benefits	Issues
A	100-Year channel improvements; new culverts at 34th St, Madison Ave, 35th St, and Wellman Ditch	\$7.0M	<ul style="list-style-type: none"> Reduces spill flow out of Skunk Creek Reduces flooding of roadways and ditch Follows existing channel alignment Reduces 100-year floodplain 	<ul style="list-style-type: none"> Impacts private property
a	10-Year channel improvements; new culverts at 34th St, Madison Ave, 35th St, and Wellman Ditch	\$3.3M	<ul style="list-style-type: none"> Similar to Alt A but with reduced cost and property impacts 	<ul style="list-style-type: none"> Impacts private property Does not provide 100-year capacity
B	Wellman Ditch Siphon	\$0.5M	<ul style="list-style-type: none"> Removes ditch interruption 	<ul style="list-style-type: none"> Impacts private property Requires additional ditch maintenance



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