

Pearl Parkway (30th Street to Foothills Parkway) Multi-Use Path Improvement Project

Community and Environmental Assessment Process Report



July 2012

Amended August 8, 2012

City of Boulder Project No. 781056
Federal Aid/CDOT Project No. AQC M110-079, SA 18396

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EXECUTIVE SUMMARY

The proposed Pearl Parkway (30th Street to Foothills Parkway) Multi-Use Path Improvement Project is a Federal Aid Project (30th Street to Foothills Parkway/SH 157), CDOT Project No. AQC M110-079 (SA 18396). The project includes a multi-way boulevard segment along the north side of Pearl Parkway from 30th Street to the existing Burlington Northern and Santa Fe (BNSF) Railroad and multi-use path improvements from the BNSF Railroad east to Foothills Parkway (SH 157) along the north side of Pearl Parkway. The city applied for and received federal Transportation Improvements Program (TIP) funding for both the multi-way boulevard and for the multi-use path on the north side of Pearl Parkway. The multi-way boulevard segment from 30th Street to the BNSF Railroad is split into two related but separately funded projects with the south side of Pearl Parkway funded entirely by the City of Boulder as part of the Capital Investment Bond passed in late 2011.

The Community and Environmental Assessment Process (CEAP) is a formal review process to consider the impacts of public development projects. The purpose of the CEAP is to assess potential impacts of conceptual project alternatives in order to inform the selection and refinement of a preferred alternative. The CEAP review process includes public outreach, a meeting with the interdepartmental staff team ('CEAPers') for review and discussion of the CEAP documentation, and consideration by the corresponding departmental city advisory board (in this case the Transportation Advisory Board) for a recommendation on the CEAP and the final preferred alternative. The CEAP and board recommendation are forwarded to City Council with an option to call-up the CEAP for further discussion. This CEAP Report focuses entirely on the multi-use path improvements from the BNSF Railroad to Foothills Parkway because the design of the multi-way boulevard from 30th Street to the BNSF Railroad was reviewed during a prior public process in late 2011 and was granted City Council approval in January of 2012. This CEAP provides an evaluation of five options along two specific sections within the project limits. Section 1 starts at the existing BNSF Railroad and extends to the east along the north side of Pearl Parkway to Frontier Avenue. Section 2 is from Frontier Avenue to the west side of the existing southbound Foothills Parkway off ramp.

The following is a list and description of each alternative evaluated with this report. Every option evaluated provides a 10-foot multi-use path along the north side of Pearl Parkway from the BNSF Railroad to Foothills Parkway, requires the narrowing of the westbound travel lanes of Pearl Parkway and accommodates a future traffic signal at Pearl Parkway and Frontier Avenue. Additional information on each option is included in Section 3.0 Description of Project Alternatives and Summary of Major Issues.

- Option A Attached Multi-Use Path (Base Project) – Stand alone option that cannot be combined with other options because it doesn't provide 100-year floodplain drainage improvements like all the other options evaluated. This option is considered a minimum baseline option.

- Option B Detached Multi-Use Path with Concrete Box Culvert – Both Section 1 and Section 2 of this option can be combined with other options. This option incorporates 100-year floodplain drainage improvements by constructing a concrete box culvert. This provides space for the majority of the proposed multi-use path to then be built over the top of the box culvert. Best provides for future 100-year floodplain drainage improvements, and also best provides for most path and future possible traffic safety improvements in

Section 2. This option also minimizes the width of new pavement, due to no railings (with required 2' setback) being required.

- Option C Detached Multi-Use Path with Retaining Wall/Open Channel – Both Section 1 and Section 2 can be combined with other options. This option incorporates 100-year floodplain drainage improvements through the use of retaining walls and graded channel slopes to maintain an open channel. These walls also help to provide the necessary space for construction of the multi-use path. Possible future flood mitigation will likely be required in Section 2 at 2540 Frontier Avenue with this option. Due to necessary retaining walls with this option, the proposed path width is 2' wider than minimally necessary to accommodate required railings and standard railing setbacks.
- Option D Combined Attached (Section 1) and Detached (Section 2) Multi-Use Path with Open Channel - Both Section 1 and Section 2 can be combined with other options. This option incorporates 100-year floodplain drainage improvements in Section 1 by grading a trapezoidal channel. This option in Section 1 reduces the amount of retaining wall used in Option C but requires narrowing of the existing Pearl Parkway median (allows for further shifting of WB Pearl lanes to the south) to provide added width for channel work. Section 2 of this option attempts to minimize impacts to the north bank of the Boulder Slough by benching in a combined path/retaining wall structure along the south bank of the Slough. Possible future flood mitigation will likely be required in Section 2 at 2540 Frontier Avenue with this option. Due to necessary retaining walls with this option, the proposed path width is 2' wider than minimally necessary to accommodate required railings and standard railing setbacks.
- Option E Detached Multi-Use Path North of Boulder Slough with Retaining Wall/Open Channel – This option is for Section 1 only and would need to be combined with Section 2 of Options B, C, or D. This option incorporates 100-year floodplain drainage improvements through the use of retaining walls and graded channel slopes to maintain an open channel. This option differs from Option C in that the multi-use path would be constructed on the north side of the Boulder Slough instead of the south side like all the other options.

Each option was designed to meet the intent of the Transit Village Area Plan (TVAP) Connections Plan, Urban Design and Streetscape Guidelines for Pearl Parkway and the 2012 amendments to the TVAP plan. The options were also guided by the Transportation Master Plan, Transportation Landscape Guidelines and City Flood Control criteria. Review of the project CEAP by the City's internal CEAPers group was completed in July. Feedback and comments received during this review has been incorporated into the revised CEAP. Concurrence was also obtained for the preferred option for this project.

Additionally, public feedback was obtained through public outreach and incorporated into the project CEAP recommendations. Meetings and field visits with Community Cycles have been conducted. Community Cycles supports the primary project recommendations, but also desires that on-street bike lanes be included in this section of Pearl Parkway.

The staff recommendation does not include on-street bike-lanes in this segment due to the bicycle system design objective of maintaining continuity in facility type and the impacts of the additional bike-lane width.

Planning and design of the city's bicycle system looks at many factors including facility-type continuity. The Pearl Street bicycle facility west of 30th Street is both on-street lanes and multi-use paths on both sides of Pearl. From 30th Street to the Burlington Northern/Santa Fe Railroad tracks the bike facility will be a multi-way boulevard/ multi-use paths on both sides of Pearl. From the project area east the bike facility are multi-use paths connecting with the Foothills Parkway Path and ultimately connecting with the Boulder Creek Path located on the south side of Pearl. On-street bike-lanes through this segment of the Pearl corridor would terminate at the railroad tracks and at Foothills Parkway. Based on a lack of continuity, the impacts and cost of the additional required width on-street lanes have not been recommended. This recommendation is consistent with the Transportation Master Plan.

Each option noted above has also been evaluated based on the following Pearl Parkway Multi-Use Path Options – CEAP Matrix. This matrix looked at several technical items/requirements to determine the best overall option based on the lowest total number. This information was then combined with the allowable budget information in the Cost Combination Matrix to further evaluate and help determine the preferred option. Based on this information, the preferred option is **Option E for Section 1** with a cost of \$1,524,000 and **Option B for Section 2** with a cost of \$863,000. The total cost for both Section 1 and Section 2 would be \$2,387,000, and is within the project budget limits. The combined option result in a best balance of key design factors including:

- Best future flood mitigation option for Section 2, without required flood mitigation for any affected properties.
- Most flexibility for future possible traffic safety improvements for the southbound Foothills Parkway off-ramp to westbound Pearl Parkway acceleration lane.
- Best overall path configuration resulting in maximum separation between roadway and path in Section 1, and most flexibility for path setback in Section 2.
- Minimizes the width of path to 10-foot wide City standard, with graded shoulder buffers. Other options (C-D) require walls/railings directly adjacent to path, resulting in 2 foot additional width for railing setback.
- Good sight lines for path crossings at Foothills Parkway and at Frontier Avenue.
- Least impact overall to existing mature street trees in Section 2.
- While eliminating a section of open channel in Section 2, primary impact area is blue-grass turf lawn, on steeply sloping (and difficult to maintain) open channel, that has minimal natural resource or wildlife habitat value (see photo below).



**PEARL PARKWAY MULTI-USE PATH CEAP
TECHNICAL OPTIONS MATRIX**

	Attached Multi-Use Path (Base Project)		Detached Multi-Use Path with Concrete Box Culvert		Detached Multi-Use Path with Retaining Wall/Open Channel		Combined Attached (Section 1) and Detached (section 2) Multi-Use Path with Open Channel		Detached Multi-Use Path North of Boulder Slough with Retaining Wall/Open Channel
	Option A	Option B	Option 1	Option 2	Option 1	Option 2	Option 1	Option 2	
Pedestrians & Bicyclists									
Provides a 10 foot-wide bike/pedestrian facility	1	1	1	1	1	1	1	1	1
Facilitates future TVAP path connection to east	4	2	NA	NA	3	NA	3	NA	1
Detached path - planter strip between road and path	5	1	1	1	1	1	5	1	1
Provides maximum separation from vehicular traffic	5	3	3	3	3	3	5	4	1
Trees & Landscaping									
Protects volunteer trees in Boulder Slough (20 total)	1	3	NA	NA	3	NA	3	NA	4
Protects mature trees along curb line in Section 2 (10 total)	5	NA	1	1	NA	1	NA	3	NA
Adds or preserves trees in planter strip between road and path	5	1	1	2	1	2	5	3	1
<i>number of trees</i>	5	20	21	21	21	21	6	6	21
Provides for trees in median (Option D narrows median)	1	1	1	1	1	1	3	3	1
<i>number of trees</i>	14	10	4	4	10	4	10	4	10
Drainage Channel, Hydraulics & Flood Plain									
Includes 100-yr frequency storm flow for Boulder Slough	5	1	1	1	1	1	1	1	1
Floodplain mitigation required at 2540 Frontier Avenue	5	NA	1	4	NA	4	NA	4	NA
Ease of routine maintenance	2	5	5	3	3	3	2	3	4
Property Impacts, Right-of-Way/Easements, Land Use									
Temporary parking lot impact during construction at 2525 Frontier Avenue	1	4	NA	NA	4	NA	4	NA	4
Permanent parking lot impact at 2525 Frontier Avenue	1	1	NA	NA	5	NA	5	NA	1
Makes use of existing bike & pedestrian greenway easements	1	1	3	3	1	3	1	3	5
Temporary construction easements required	1	1	2	3	1	3	1	1	1
Eliminates Boulder Slough "barrier" to urban property frontages	3	1	1	3	3	3	3	3	2
Roadway Impacts and Traffic Operations/Safety									
Narrows main drive lanes	3	3	3	3	3	3	3	3	3
Center median narrowed	1	1	1	1	1	1	4	4	1
Impacts to existing roadway drainage	2	2	2	2	2	2	2	3	2
Opportunity to improve Foothills Parkway off-ramp acceleration lane	5	NA	NA	2	NA	2	NA	3	NA
Bikeway Safety (site lines at Roadway crossings, railing obstructions)	3	2	2	3	3	3	4	4	2
Environmental, Wetlands & Wildlife									
Maintains open channel	2	5	3	3	3	3	2	2	3
Allows wetland mitigation/restoration onsite (or no impact)	1	4	4	1	1	1	1	1	1
Preserves wildlife habitat	2	3	2	3	3	2	3	2	3
Constructability									
Require center median narrowing (and corresponding roadway impacts)	1	1	1	1	1	1	4	4	1
Construction Duration	1	3	3	3	3	3	4	4	3
Complexity of Construction (channel improvements)	1	3	3	4	4	4	3	4	3
Structures									
Extent and complexity of Structure Required	1	3	3	3	3	3	1	4	4
<i>Retaining Wall Heights</i>	2 ft				7 to 11 ft	3 to 8 ft	2 to 4 ft	Z-wall	7 to 11 ft
RATING TOTAL (low # preferred)	69	56	51	54	58	112	73	68	54
Option Total	138	107	107	112	112	141	141	141	141

LEGEND

1 = Highly Preferred
2 = Preferred
3 = Acceptable
4 = Undesirable
5 = Unacceptable

OPTION/SECTION COST ANALYSIS

MULTI-USE PATH AVAILABLE FUNDING = \$2,658,000
 SECTION 1 (65%) = \$1,594,800
 SECTION 2 (35%) = \$1,063,200

OPTION A - ATTACHED MULTI-USE PATH (BASE PROJECT)	RATING	COST	FUNDING	OVER/UNDER BUDGET
	138	\$829,000	\$2,658,000	UNDER BUDGET

SECTION 1

Detached Multi-Use Path with Concrete Box Culvert - OPTION B	56	\$1,433,000	\$1,594,800	UNDER BUDGET **
Detached Multi-Use Path with Retaining Wall/Open Channel - OPTION C	58	\$1,370,000	\$1,594,800	UNDER BUDGET **
Attached Multi-Use Path with Open Channel - OPTION D	73	\$1,110,000	\$1,594,800	UNDER BUDGET **
Detached Multi-Use Path North of Boulder Slough with Retaining Wall/Open Channel - OPTION E	54	\$1,524,000	\$1,594,800	UNDER BUDGET **

SECTION 2

Detached Multi-Use Path with Concrete Box Culvert - OPTION B	51	\$863,000	\$1,063,200	UNDER BUDGET **
Detached Multi-Use Path with Retaining Wall/Open Channel - OPTION C	54	\$869,000	\$1,063,200	UNDER BUDGET **
Attached Multi-Use Path with Open Channel - OPTION D	68	\$750,000	\$1,063,200	UNDER BUDGET **

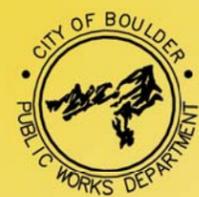
COST COMBINATION MATRIX FOR BNSF RR TO FOOTHILLS PARKWAY SEGMENT

Pearl Parkway Multi-use Path (30th Street to Foothills Parkway)
 CDOT AQC M110-079, SA 18396

Available Budget for Construction = \$2,658,000

Option	A		B		C		D		E
	1	2	1	2	1	2	1	2	
A	Section 1								
	1	\$ 830,000	-	-	-	-	-	-	-
B	1	-	-	\$ 2,296,000	-	-	-	-	-
	2	-	-	\$ 2,296,000	-	-	\$ 1,973,000	-	\$ 2,387,000
C	1	-	-	\$ 2,302,000	-	-	-	-	-
	2	-	-	\$ 2,302,000	-	-	\$ 1,979,000	-	\$ 2,393,000
D	1	-	-	\$ 1,973,000	-	-	-	-	-
	2	-	-	\$ 1,973,000	-	-	\$ 1,860,000	-	\$ 2,274,000
E	1	-	-	\$ 2,387,000	-	-	-	-	-
	2	-	-	\$ 2,387,000	-	-	\$ 2,274,000	-	\$ 2,274,000

Option	Segment 1	Segment 2	Total	Notes
A	\$ 520,000	\$ 310,000	\$ 830,000	
B	\$ 1,433,000	\$ 863,000	\$ 2,296,000	
C	\$ 1,370,000	\$ 869,000	\$ 2,239,000	
D	\$ 1,110,000	\$ 750,000	\$ 1,860,000	
E	\$ 1,524,000	\$ -	\$ 1,524,000	



Pearl Parkway (30th Street to Foothills Parkway) Multi-Use Path Improvement Project

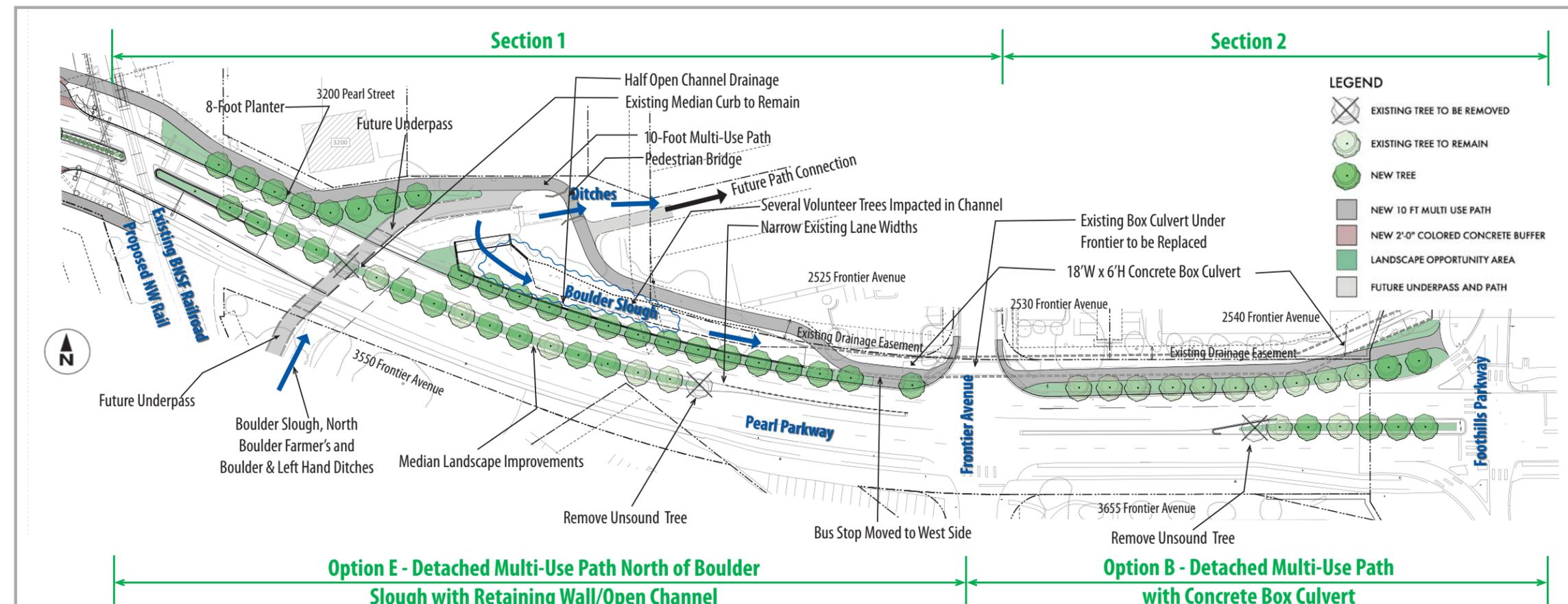
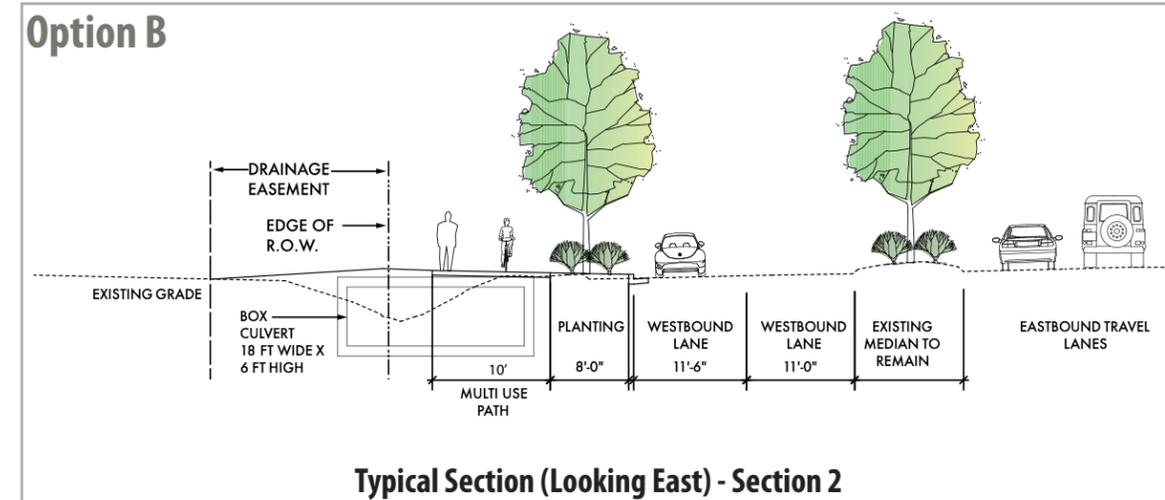
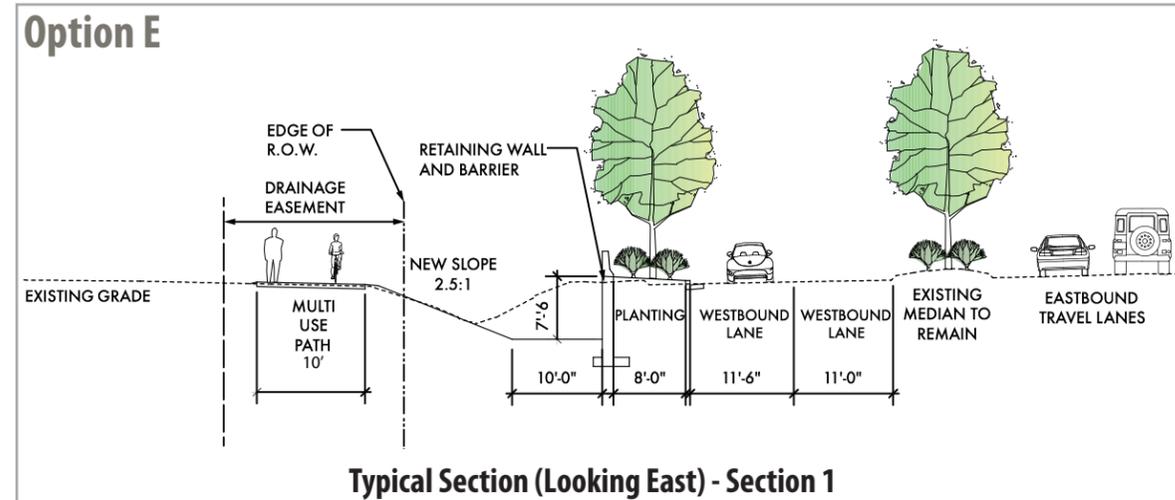
Preferred Alternative

For summary of Key Design Elements & Impacts, see individual Option graphics.

Project Segment: BNSF Railroad to Foothills Parkway

Section 1 - BNSF Railroad to Frontier Avenue

Section 2 - Frontier Ave to Foothills Parkway



1.0 DESCRIPTION AND LOCATION OF THE PROJECT

The City of Boulder applied for and received federal Transportation Improvements Program (TIP) funding for the Pearl Parkway (30th Street – Foothills Parkway) Multi-Use Path Improvement Project. The project includes a portion of the Pearl Parkway multi-way boulevard and multi-use path along the westbound (north side) travel lanes starting just east of 30th Street and extending east to the BNSF Railroad as well as a continuation of this multi-use path on the north side of Pearl Parkway from the BNSF Railroad to Foothills Parkway. The overall budget for this project is approximately \$5.7M including design, right-of-way (ROW), railroad requirements and improvements, construction, construction management and 100 year floodplain improvements for both portions of the Multi-Way Boulevard and Multi-Use Path Improvement Projects along the north side of Pearl Parkway from 30th Street to Foothills Parkway. This budgeted amount includes Utility Flood Control funds, as well as estimated developer contributions for portions of the multi-way boulevard between 30th Street and the BNSF Railroad. Of the total overall project budget, approximately \$2.66M is anticipated to be available for construction costs for the Segment of this project that is the focus of this CEAP, from the BNSF Railroad to Foothills Parkway.

This Community and Environmental Assessment Process (CEAP) Report addresses the Multi-Use Path Improvement Project from the existing BNSF Railroad tracks east to Foothills Parkway as shown on the adopted Transit Village Area Plan (TVAP) Connections Plan map on the page following Section 2.0. This CEAP Report focuses entirely on the multi-use path improvements from the existing BNSF Railroad to Foothills Parkway because the design of the multi-way boulevard from 30th Street to the BNSF Railroad was reviewed during a prior public process in late 2011 and was granted City Council approval in January of 2012.

The segment of the Pearl Parkway Multi-Use Path Improvement Project that is the focus of this CEAP, consists of a proposed 10 foot wide concrete multi-use path on the north side of Pearl Parkway, from the BNSF Railroad to the existing multi-use path on the west side of Foothills Parkway (approximately 1,300 feet). The existing path connects directly to the Goose Creek Greenway Trail to the north. No sidewalk is currently provided along the north side of Pearl Parkway between 30th Street and the southbound off ramp of Foothills Parkway. Modification to existing structures on the North Boulder Farmer's and Boulder & Left Hand Ditches, and adjustments to the Boulder Slough, are anticipated to accommodate the proposed path.

2.0 BACKGROUND, PURPOSE AND NEED FOR THE PROJECT

Currently there is no sidewalk on the north side of Pearl Parkway, although a worn social trail exists. This project would construct a multi-use path along the north side of Pearl Parkway from 30th Street to Foothills Parkway (segment from 30th Street to railroad is part of multi-way boulevard). The proposed improvements will provide a pedestrian and bicycle facility along the north side of Pearl Parkway from 30th Street to Foothills Parkway providing improved access and connections to Boulder Junction and the future RTD transit facility.



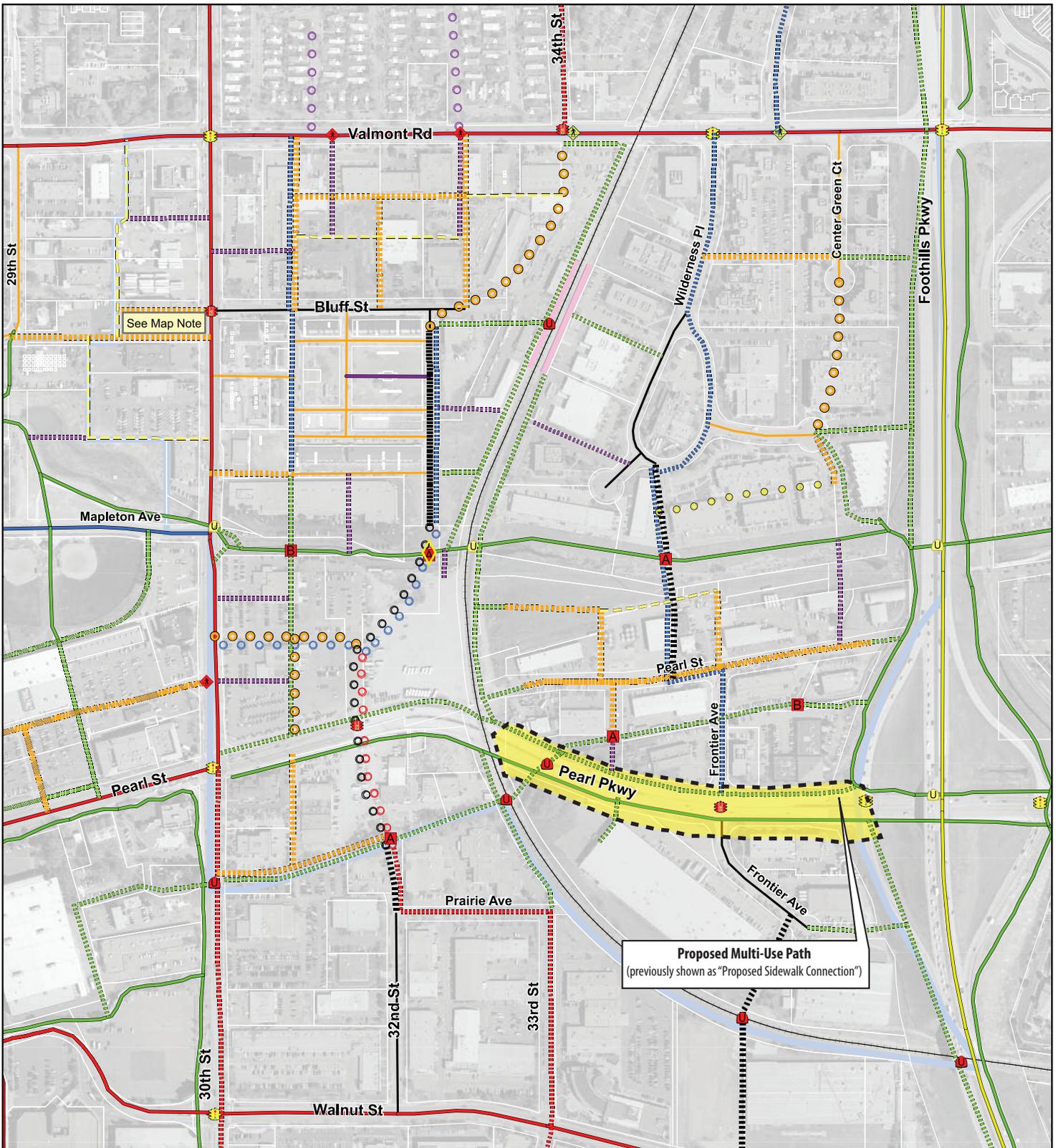
This project is identified in the Transportation Master Plan and the TVAP Connections Plan. TVAP streetscape and urban design guidelines support the creation of a pedestrian oriented environment with a fine grain network of transportation connections through and within the area. The TVAP Connections Plan shown on the following page was amended in early 2012 to revise the pedestrian facility designation to a multi-use path facility along the north side of Pearl Parkway in the section from the railroad tracks east to Foothills Parkway. The project conforms to applicable sections of the TVAP plan including Page 25 (Pearl Street Center District) ,Pages 33 (Pearl Parkway District) and Page 34 (Streetscape Guidelines and Pearl Parkway street section). As a point of clarification, this project is along the Boulder Slough, a regulated drainageway, and does not have significant affects to the N. Boulder Farmers or Boulder and Lefthand ditches.

Additionally, the TVAP Connections Plan includes a future traffic signal at the intersection of Pearl Parkway and Frontier Avenue. When Pearl Parkway was originally constructed in 1982 all traffic signal conduit infrastructure was installed at the intersection at that time to provide for future construction. All Multi-Use Path options maintain the flexibility to install this traffic signal in the future, when traffic conditions at the intersection warrant its construction.

The CEAP is a formal review process to consider the impacts of public development projects. The purpose of the CEAP is to assess potential impacts of conceptual alternatives in order to inform the selection and refinement of a preferred alternative. The CEAP provides the opportunity to balance multiple community goals in the design of a capital project by assessing a project against the policies outlined in the Boulder Valley Comprehensive Plan and various City of Boulder department Master Plans.

TVAP Transportation Connections Plan Amendment

Adopted 1/17/2012



Existing Street Connections	Proposed Street Connections	Existing Bike and Ped Connections	Proposed Bike and Ped Connections	Existing Bike/Ped Crossings	Proposed Bike/Ped Crossings
Collector Street	Collector Street	Multi Use Path	Multi Use Path	Enhanced Crossing	Traffic Signal
Local Street	Collector Street - Flexible Alignment*	On Street Bike Lane	Multi Use Path Existing Upgrade	Underpass	Roadway Bridge
Railroad	Collector Street - Upgrade Existing	Designated Bike Route	On Street Bike Lane	Traffic Signal	Enhanced Crossing
Plan Area Boundary	Local Street	Sidewalk Connection	On Street Bike Lane - Flexible Alignment*		Bridge
Proposed Rail Platform	Local Street - Flexible Alignment*	Paved Shoulder	Designated Bike Route		Underpass
	Local Street - Upgrade Existing		Designated Bike Route - Flexible Alignment*		Enhanced Access
	Alley		Sidewalk Connection		
	Alley - Flexible Alignment*		Sidewalk Connection - Flexible Alignment*		

* The start and end points of flexible alignments are fixed (with the exception of #24 in Appendix 3: Connections Explanation).

Map Note: Two alternative alignments are shown for Bluff Street west of 30th Street. The final alignment will be determined as part of a financial feasibility analysis for Bluff Street. For more information see Public Improvement Funding and Phasing Section 2 of the Implementation Plan.



3.0 DESCRIPTION OF PROJECT ALTERNATIVES AND SUMMARY OF MAJOR ISSUES

The scope of this CEAP focuses on alignment and structure options to construct a multi-use path on the north side of Pearl Parkway from the existing BNSF railroad tracks to Foothills Parkway. There are several alternatives that are under consideration which all try to balance the multiple community goals outlined in the BVCP, TVAP, and TMP. Assessments by the project design team also factor in City Design and Construction Standards, City Code, other applicable national design standards (such as AASHTO Bike Design Guide), and applicable maintenance and operations criteria. The various alternatives address the major issues of providing a bicycle/pedestrian facility while at the same time addressing design constraints that include: adding a detached landscaping strip in some options, the ability to incorporate the 100-year floodplain improvements along the Boulder Slough, analyzing roadway impacts, preserving potential for future transportation facility needs, determining impacts to adjacent properties and/or features such as the irrigation ditches/Boulder Slough, including trees and landscaping, evaluating wetlands/riparian zones, and taking into account public and property owner input. The various options are summarized below and described in detail on the following pages:

OPTION	DESCRIPTION	PRELIMINARY CONSTRUCTION COST ESTIMATE
Option A	Attached Multi-Use Path (Base Project)	\$520,000 + \$310,000 = \$830,000
Option B	Detached Multi-Use Path with Concrete Box Culvert	\$1,433,000 + \$863,000 = \$2,296,000
Option C	Detached Multi-Use Path with Retaining Wall/Open Channel	\$1,370,000 + \$869,000 = \$2,239,000
Option D	Combined Attached (Section 1) and Detached (Section 2) Multi-Use Path with Open Channel	\$1,110,000 + \$750,000 = \$1,860,000
Option E	Detached Multi-Use Path North of Boulder Slough with Retaining Wall/Open Channel (Section 1 only)	\$1,524,000

The cost data used for these preliminary cost estimates was derived from recent historical City of Boulder project bid tabs and from the Colorado Department of Transportation (CDOT) Cost Data Books. The design is currently at a 15-20% level, therefore a 10-15% contingency has been included in these costs to account for unforeseen conditions. Currently, all Options and combination of Sections, are anticipated to fit within the available funding for the project. As the project proceeds into final design with the preferred Option, the concept and details will be further refined and additional construction cost estimates will be completed to ensure the project stays within the allocated funding. The cost estimates shown here are preliminary; final project construction cost will vary from those shown.

As part of flood control improvements, Options B, C, D and E include the replacement and upsizing of the existing box culvert that carries the Boulder Slough under Frontier Avenue. Option E includes a possible extension of the replaced culvert much further west than would otherwise be necessary, as a possible configuration to eliminate permanent impacts to the

private parking lot at 2525 Frontier Avenue. The city has an existing drainage easement that covers a portion of this parking lot that would be utilized with Options B, C and D, and would be required to be amended to include “public access” easement rights to allow the multi-use path to be within portions of this easement as part of Option E. For the City to justify additional expenditure associated with the possible extension of this culvert, it would be equitable to consider some possible offsetting accommodation by this property owner which could include:

1. Effected property owner grants the City the necessary additional easement rights for implementing Option E.
2. The affected property owner pays for the culvert extension.
3. The affected property owner provides something else of value to offset the added City expenditure (such as an additional easement for the multi-use path along the ditches on the north side of this property), to provide the necessary easement right for this future path connection that is shown on the TVAP Connections Plan.
4. Other alternatives.

The City has held several meeting with the effected property owner. The owner has been cooperative and willing to consider various options as listed above in order to balance project cost with benefits in a mutually beneficial solution.

The portion of the overall project that is the subject of this CEAP is denoted as “Segment 2” which is the north side of Pearl Parkway from the BNSF Railroad to Foothills Parkway. Within this considered segment are two sections:

1. Section 1- N. Side of Pearl Parkway between the BNSF Railroad and Frontier Avenue;
and
2. Section 2- N. Side of Pearl Parkway between Frontier Avenue and Foothills Parkway.

Five separate conceptual options are presented in this CEAP, Options A-E. Option A is a standalone option and cannot be combined with other presented options. It is generally considered a minimum baseline option. Options B through E can be intermixed between Sections 1 and 2. In general, all options include a narrowing of the westbound lanes of Pearl Parkway from approximately 27 feet (face of curb to face of curb), to approximately 22 feet. This reduction of 5 feet of street width aids greatly in space utilization associated with all five options.

The existing acceleration lane for the southbound Foothills Parkway off-ramp, which is located in Section 2, currently has a substandard length for traffic merging into westbound Pearl Parkway. Traffic accident data shows a recurring number of rear end accidents at this location. The City may look to extend the existing acceleration lane in a future safety enhancement project. This would require widening of westbound Pearl Parkway and the removal of 10 existing trees along the north curb line. The proposed location of the multi-use path in Options B and C would provide the best opportunity for possible improvements to the acceleration lane in the future because the path would be at street grade and not require the installation of an additional structure.

As a part of current 100-year floodplain study updates for Boulder Creek, flooding analysis for tributary creeks is also underway. The Boulder Slough, a City regulated major drainageway,

crosses Pearl Parkway just east of the BNSF Railroad, and continues east along the north side of Pearl Parkway paralleling this multi-use path all the way to Foothills Parkway. There are identified existing flood control issues with this section of the Boulder Slough.

A primary difference between the five options is an option's ability to incorporate the desired 100-year floodplain improvements along the Boulder Slough, a major public safety concern. Option A provides no increase to the hydraulic capacity of the existing Boulder Slough channel. The capacity of the existing Slough channel is sufficient for the flows that are currently conveyed to it. However, future floodplain improvements are planned that would require an increase in the Slough channel capacity. Options B, C, D and E provide additional channel capacity in the Boulder Slough that would be sufficient to convey the future 100-year flood discharge, however the open channel configurations of Options C and D will likely require future flood mitigation at 2540 Frontier Avenue, due to future flood flows coming into direct contact with existing building structures. The options include a range of waterway cross section types including a closed culvert (Option B) and various configurations of open channel sections (Options C-E). Since, the conveyance capacity of Options B, C, D and E are similar, segments of the channel in Sections 1 and 2 can be interchanged to provide the best advantage. However, in Section 2, the closed box culvert Option B will best accommodate the necessary flood improvements without requiring mitigation of flood impacts to private property.

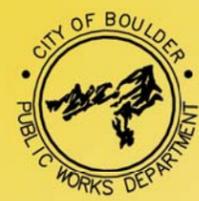
Another key difference in the options is in the actual width of the multi-use path. Option B minimizes the width of path to 10' City standard, with graded shoulder buffers. Other options (A, C-D) require walls/railings directly adjacent to path, resulting in a 2' additional width for railing setback. This adds additional impervious material to the corridor.

Option A - Attached Multi-Use Path (Base Project). Consists of an attached 10 foot-wide multi-use path along the north side of Pearl Parkway from the BNSF Railroad to Foothills Parkway. Due to wall/railing adjoining the path, an additional 2 foot wide concrete setback is provided along this railing, as well as along the curb of Pearl Parkway to provide a minimal buffer to traffic. Minor retaining walls are required when there is a 30-inch or greater drop from the multi-use path to the Boulder Slough ditch. Option A does not incorporate any 100-year floodplain drainage improvements and has minimal overall impacts to the Boulder Slough. Option A will accommodate a future traffic signal at Pearl Parkway and Frontier Avenue. See Plan View and Section View excerpts from public meeting boards on the following page.

Key Design Elements & Impacts for Option A include:

- Provides a 10 foot-wide bike/pedestrian facility
- Attached configuration - no separation or detached planter strip between road and path- only a 2 foot-wide hardscape buffer
- An additional 2 foot- wide concrete buffer is required along the wall/railing for path setback.
- Removes 10 existing mature street trees in Section 2
- Does not include drainage improvements to address possible future 100-year floodplain improvements along the Boulder Slough (public safety concern)
- Minimal impact to adjoining properties & Boulder Slough
- Center median curb and planting area remains unchanged; but new landscaping anticipated
- Least cost option compared to other options

Approximate Construction Cost for Option A: \$830,000 (*within budget*)



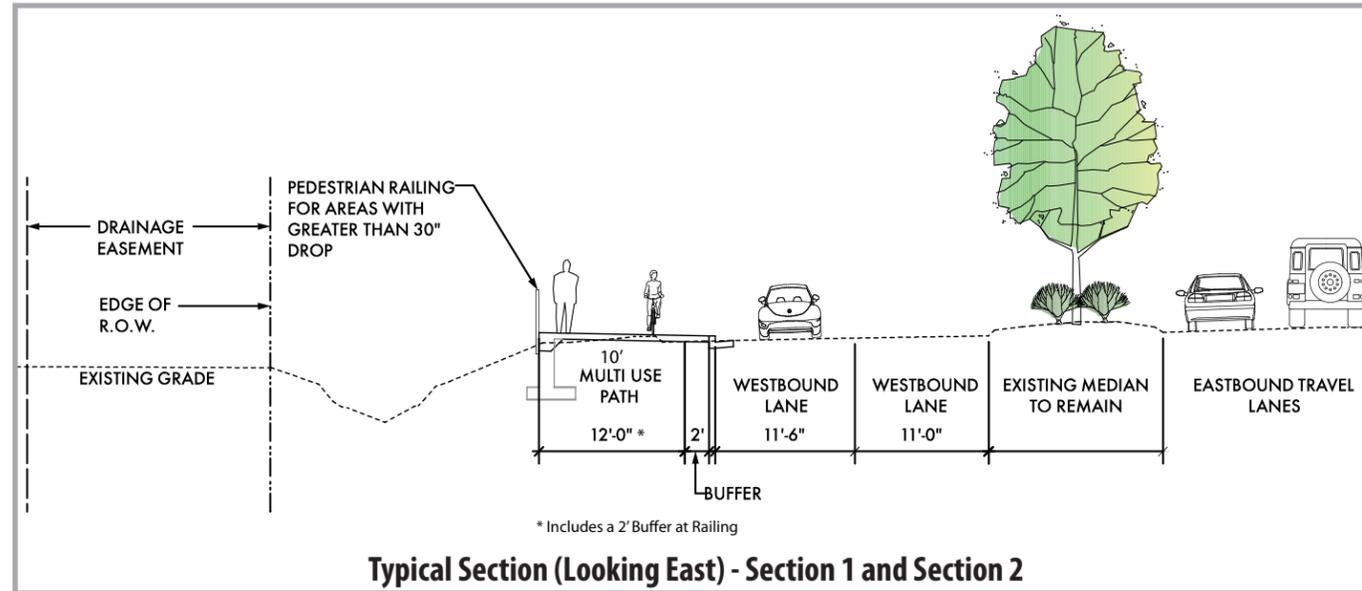
Pearl Parkway (30th Street to Foothills Parkway) Multi-Use Path Improvement Project

OPTION A - Attached Multi-Use Path (Base Project)

Project Segment: BNSF Railroad to Foothills Parkway

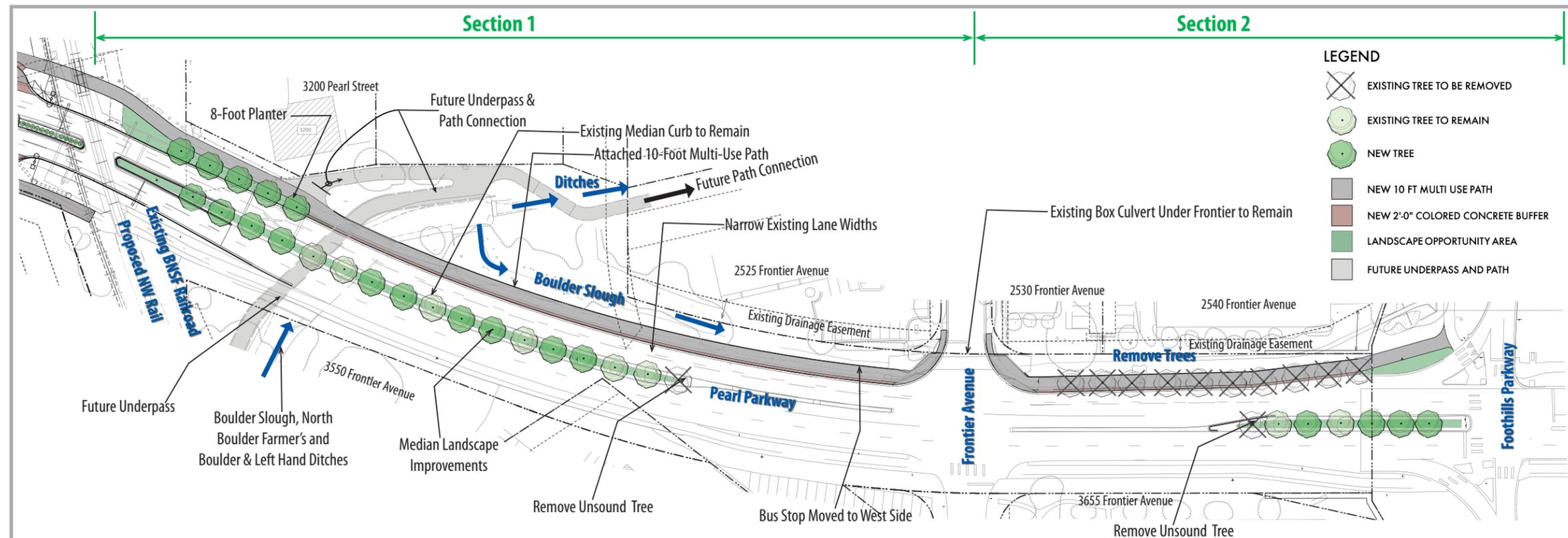
Section 1 - BNSF Railroad to Frontier Avenue

Section 2 - Frontier Ave to Foothills Parkway



Key Design Elements & Impacts:

- Provides a 10 foot-wide bike/pedestrian facility (2 foot buffer at railing)
- Attached configuration - no separation or detached planter strip between road and path, only 2 foot hardscape buffer
- Removes 10 existing mature street trees in Section 2
- Does not include drainage improvements to address possible future 100-year floodplain improvements along the Boulder Slough (public safety concern)
- Minimal impact to adjoining properties & Boulder Slough
- Center median curb and planting area remains unchanged; but new landscaping anticipated
- Least cost option compared to other options

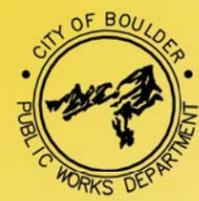


Option B - Detached Multi-Use Path with Concrete Box Culvert. Consists of a detached 10 foot-wide multi-use path along the north side of Pearl Parkway from the BNSF Railroad to Foothills Parkway. Option B incorporates 100-year floodplain drainage improvements by constructing a concrete box culvert to contain the Boulder Slough for the entire length of the project. Option B will accommodate a future traffic signal at Pearl Parkway and Frontier Avenue. See Plan View and Section View excerpts from public meeting boards on the following page.

Key Design Elements & Impacts for Option B:

- Provides 10 foot wide bike/pedestrian facility
- Continuous 8 foot detached planting strip (buffer) between road and path-except at ditch structure crossing at Pearl Parkway
- Removes several existing volunteer trees in Section 1 for box culvert
- Keeps existing mature street trees in Section 2
- Includes drainage improvements to address possible future 100-year floodplain improvements along the Boulder Slough (public safety concern)- best flood control option for Section 2
- Minimal permanent impact to adjoining properties
- Eliminates Boulder Slough “barrier” to property frontages, creating a more typical urban, pedestrian oriented frontage
- Temporary parking lot impacts during construction (2525 Frontier Avenue)
- Center median curb and planting area remains unchanged; but new landscaping anticipated
- Eliminates open channel; possible adverse permanent impacts to wetlands/vegetation
- Best provides for possible future traffic safety improvements at southbound Foothills Parkway off-ramp
- One of higher cost options

Approximate Construction Cost for Option B (Section 1):	\$1,433,000
Approximate Construction Cost for Option B (Section 2):	\$863,000
Approximate Construction Cost for Option B (Total):	\$2,296,000 (<i>within budget</i>)



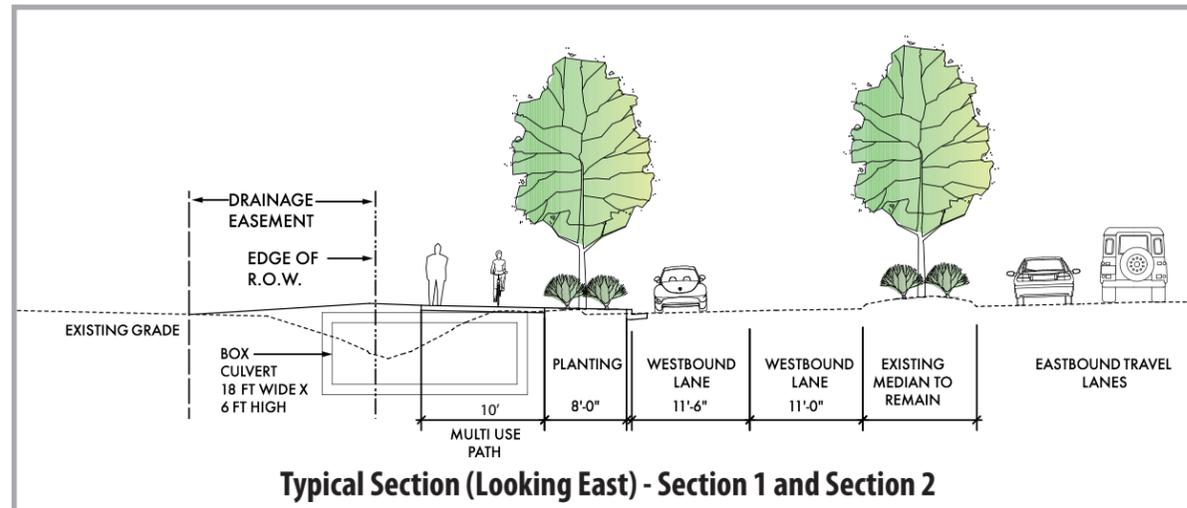
Pearl Parkway (30th Street to Foothills Parkway) Multi-Use Path Improvement Project

OPTION B - Detached Multi-Use Path with Concrete Box Culvert

Project Segment: BNSF Railroad to Foothills Parkway

Section 1 - BNSF Railroad to Frontier Avenue

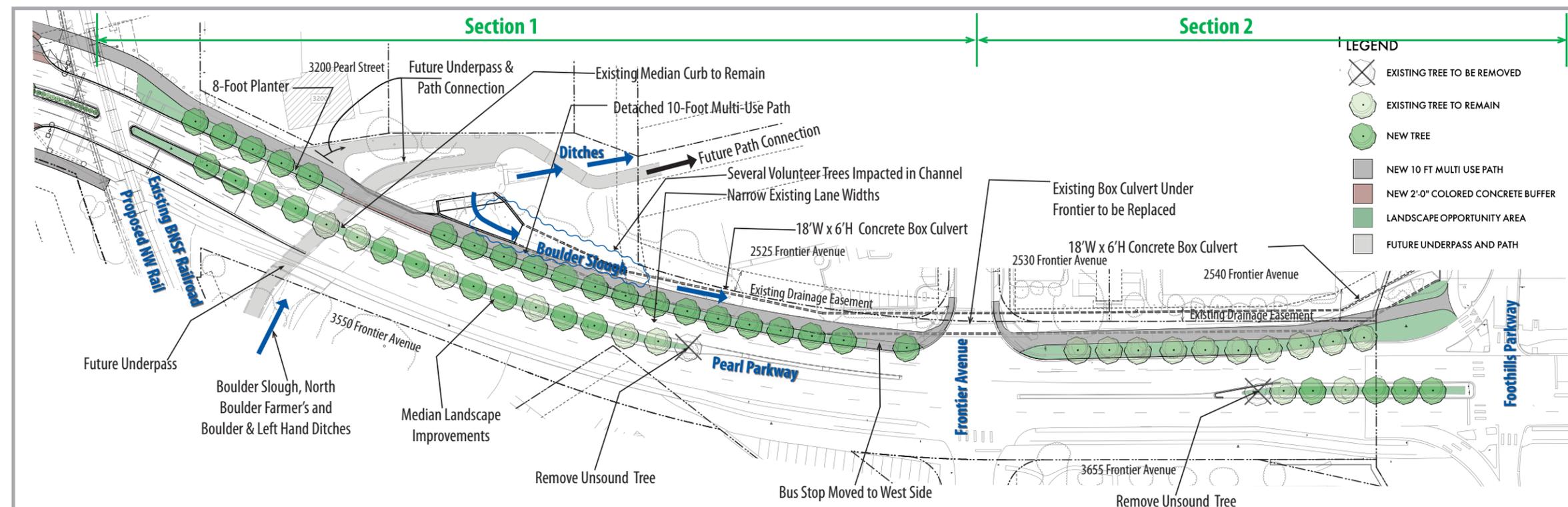
Section 2 - Frontier Ave to Foothills Parkway



CROSS SECTION CAN BE COMBINED WITH OPTION C & D IN SECTION 1 & 2 AND OPTION E IN SECTION 2

Key Design Elements & Impacts:

- Provides 10 foot wide bike/pedestrian facility
- Continuous 8 ft detached planting strip (buffer) between road and path - except at ditch structure crossing at Pearl Parkway
- Removes several existing volunteer trees in Section 1 for box culvert
- Keeps existing mature street trees in Section 2
- Includes drainage improvements to address possible future 100-year floodplain improvements along the Boulder Slough (public safety concern) - best flood control option for Section 2
- Minimal permanent impact to adjoining properties
- Eliminates Boulder Slough "barrier" to property frontages, creating a more typical urban, pedestrian-oriented frontage
- Temporary parking lot impacts during construction (2525 Frontier Avenue)
- Center median curb and planting area remains unchanged; but new landscaping anticipated
- Eliminates open channel; possible adverse impacts to wetlands/vegetation
- Best option for possible future traffic safety improvements at southbound Foothills Parkway off-ramp
- One of the higher cost options



Option C - Detached Multi-Use Path with Retaining Wall/Open Channel. Consists of a detached 10 foot-wide multi-use path along the north side of Pearl Parkway from the BNSF Railroad to Foothills Parkway. Due to wall/railing adjoining the path, an additional 2 foot- wide concrete setback is provided along this railing. Option C incorporates 100-year floodplain drainage improvements through the use of retaining walls and graded channel slopes to widen the Boulder Slough while maintaining an open channel. Possible future flood mitigation may be required in Section 2 at 2540 Frontier with this option. Option C will accommodate a future traffic signal at Pearl Parkway and Frontier Avenue. See Plan View and Section View excerpts from public meeting boards on the following page.

Key Design Elements & Impacts for Option C:

- Provides 10 foot wide bike/pedestrian facility
- An additional 2 foot- wide concrete buffer is required along the wall/railing for path setback.
- Continuous 8 foot detached planting strip (buffer) between road and path- except at ditch structure crossing at Pearl Parkway
- Removes several existing volunteer trees in Section 1 (Channel)
- Keeps existing mature street trees in Section 2
- Includes drainage improvements to address possible future 100-year floodplain improvements along the Boulder Slough (public safety concern), however may require future flood mitigation at 2540 Frontier
- Permanent parking lot impact at 2525 Frontier Avenue; utilizes existing drainage easement for channel grading
- Center median curb and planting area remains unchanged; but new landscaping anticipated
- Maintains open channel; wetlands/vegetation restored
- Provides for possible future traffic safety improvements at southbound Foothills Parkway off-ramp
- Moderate cost option compared to Options B and E

Approximate Construction Cost for Option C (Section 1):	\$1,370,000
Approximate Construction Cost for Option C (Section 2):	\$869,000
Approximate Construction Cost for Option C (Total):	\$2,239,000 (<i>within budget</i>)

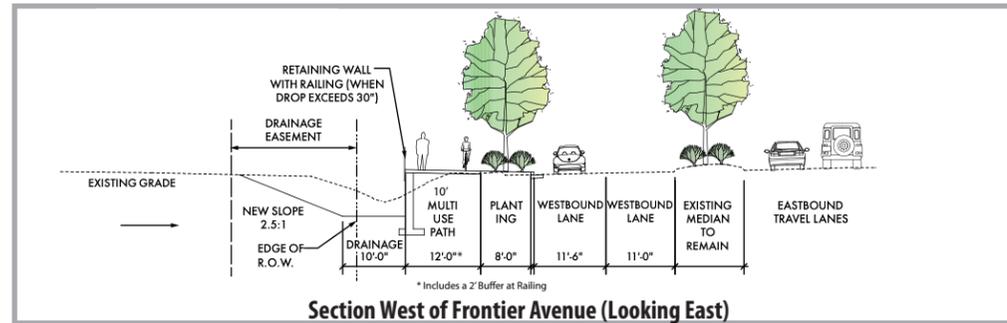
Pearl Parkway (30th Street to Foothills Parkway) Multi-Use Path Improvement Project

OPTION C - Detached Multi-Use Path with Retaining Wall/ Open Channel

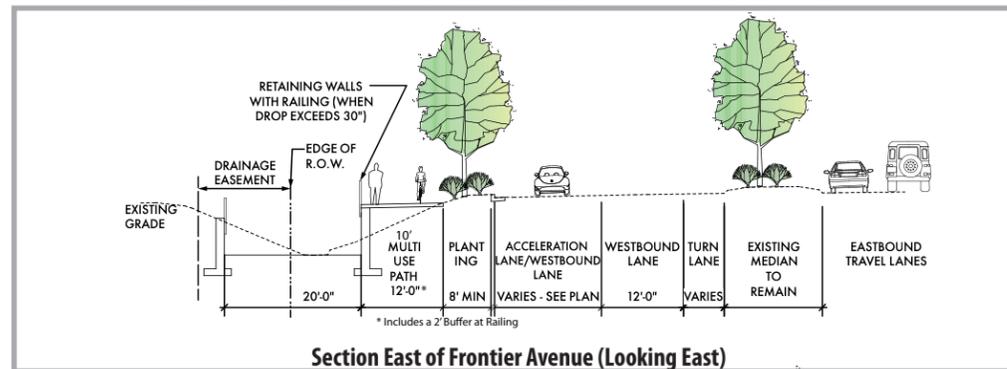
Project Segment: BNSF Railroad to Foothills Parkway

Section 1 - BNSF Railroad to Frontier Avenue

Section 2 - Frontier Ave to Foothills Parkway



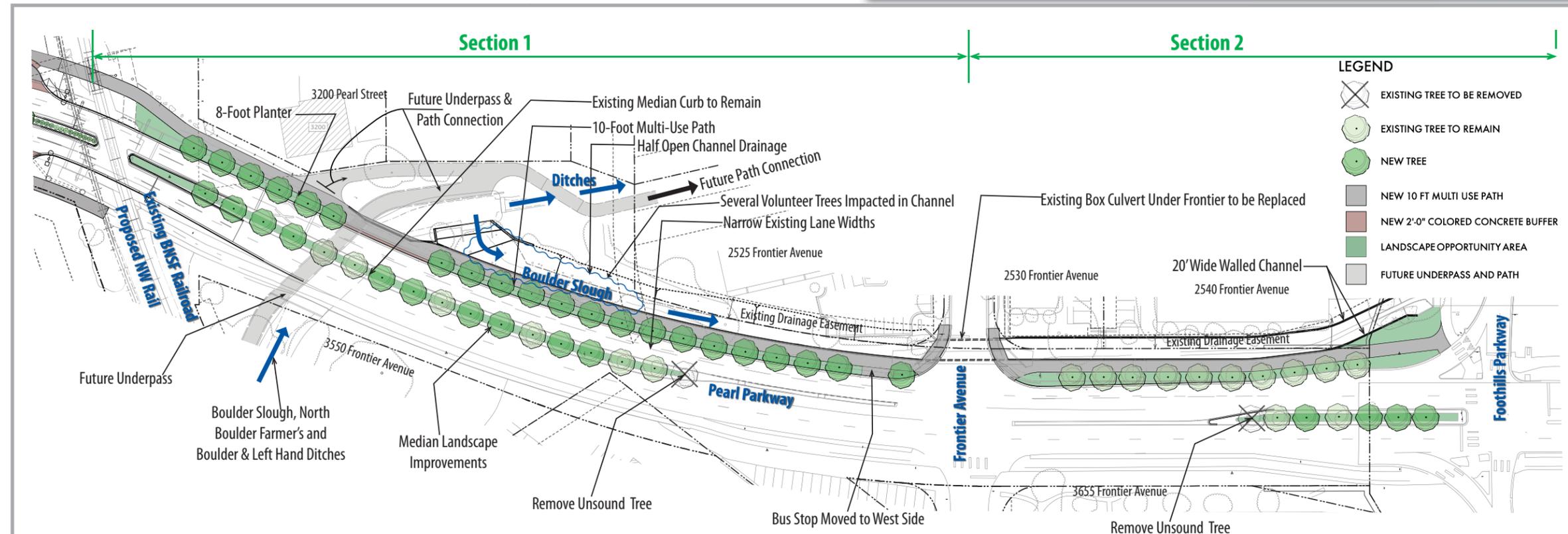
SECTION 1 CROSS SECTION - CAN BE COMBINED WITH OPTION B & D/SECTION 2



SECTION 2 CROSS SECTION - CAN BE COMBINED WITH OPTIONS B, D & E/SECTION 1

Key Design Elements & Impacts:

- Provides 10 foot wide bike/pedestrian facility
- Continuous 8-foot detached planting strip (buffer) between road and path - except at ditch structure crossing at Pearl Parkway
- Removes several existing volunteer trees in Section 1 (Channel)
- Keeps existing mature street trees in Section 2
- Includes drainage improvements to address possible future 100-year floodplain improvements along the Boulder Slough (public safety concern), however may require future flood mitigation at 2540 Frontier Avenue
- Permanent parking lot impact at 2525 Frontier Avenue; utilizes existing drainage easement
- Center median curb and planting area remains unchanged; but new landscaping anticipated
- Maintains open channel; wetlands/vegetation restored
- Provides for possible future traffic safety improvements at southbound Foothills Parkway off-ramp
- Moderate cost option compared to Options B & E



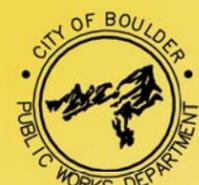
Option D - Combined Attached (Section 1) and Detached (Section 2) Multi-Use Path with Open Channel. Consists of an attached 10 foot-wide multi-use path along Section 1 (BNSF Railroad-Frontier Avenue) and detached 10 foot wide multi-use path along Section 2 (Frontier Avenue-Foothills Parkway) on the north side of Pearl Parkway. Due to wall/railing adjoining the path, an additional 2 foot- wide concrete setback is provided along this railing in both sections, as well as along the curb of Pearl Parkway in Section 1 (attached) to provide a minimal buffer to traffic. Option D also incorporates 100-year floodplain drainage improvements similar to Option C, by maintaining the Boulder Slough in an improved open channel section. Possible future flood mitigation may be required in Section 2 at 2540 Frontier with this option. In addition to narrowing of the westbound lanes of Pearl Parkway, common to all of the other options, this option impacts the existing Pearl Parkway median, through narrowing it by approximately 3 feet to allow further shifting of westbound Pearl lanes to provide added width for the channel work. These adjustments allow for a reduction in retaining walls in Section 1 when compared to Option C, and result in a more open trapezoidal-shaped channel. Option D will accommodate a future traffic signal at Pearl Parkway and Frontier Avenue.

Section 2 of this Option is an attempt to minimize significant modifications to the north slope of the channel, by benching in a combined path/retaining wall to provide a path near the lower portion of the channel. See Plan View and Section View excerpts from public meeting boards on the following page.

Key Design Elements & Impacts for Option D:

- Provides 10 foot-wide bike/pedestrian facility
- An additional 2 foot- wide concrete buffer is required along the wall/railing for path setback.
- Attached configuration - no separation or detached planter strip between road and path in Section 1 (except between railroad and ditch structure crossing at Pearl Parkway), continuous detached planting strip (buffer) configuration in Section 2
- Removes several existing volunteer trees in Section 1 (Channel)
- Keeps existing mature street trees in Section 2, however this option has greater impact to these trees over Options B and C
- Includes drainage improvements to address possible future 100-year floodplain improvements along the Boulder Slough (public safety concern), however may require future flood mitigation at 2540 Frontier Avenue
- Permanent parking lot impacts at 2525 Frontier Avenue; utilizes existing drainage easement for channel grading
- Center median narrowed by approximately three feet to shift westbound lanes further south in Section 1; West portion of Section 2- reduces median tree planting width, added roadway pavement work
- Possible traffic safety issue without median separating traffic near Frontier Avenue (only yellow stripe)
- Path sightline issues due to depression of path on approach to east side Frontier Avenue and west side Foothills Parkway
- Maintains open channel; wetlands/vegetation restored
- Moderate cost option compared to Option B and E

Approximate Construction Cost for Option D (Section 1):	\$1,110,000
Approximate Construction Cost for Option D (Section 2):	\$ 750,000
Approximate Construction Cost for Option D (Total):	\$1,860,000 (<i>within budget</i>)



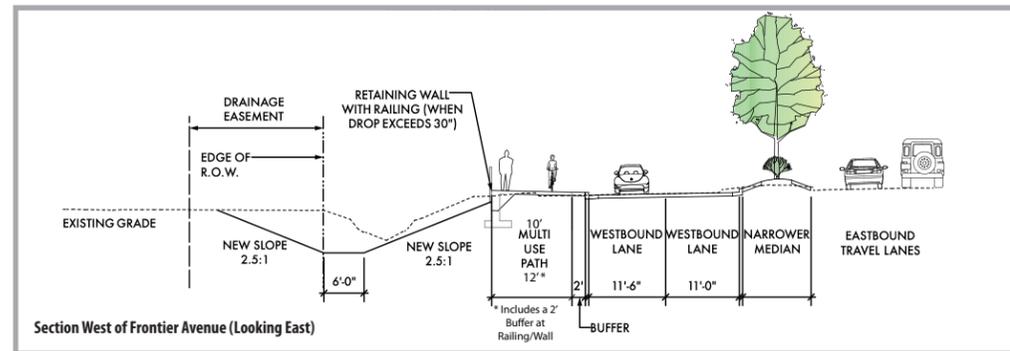
Pearl Parkway (30th Street to Foothills Parkway) Multi-Use Path Improvement Project

OPTION D - Combined Attached (Section 1) and Detached (Section 2) Multi-Use Path with Open Channel

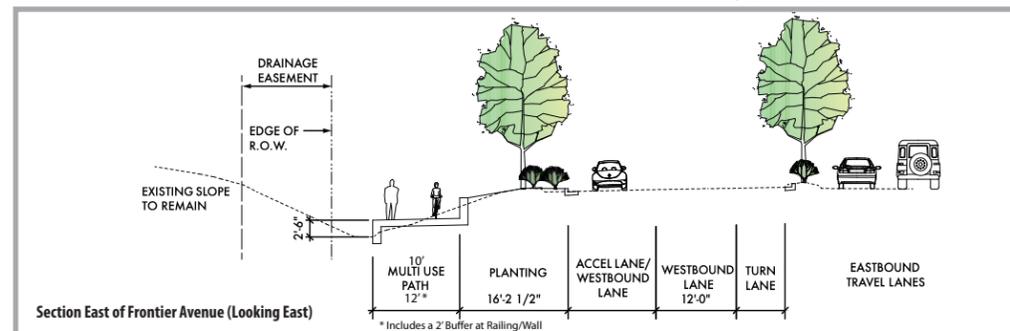
Project Segment: BNSF Railroad to Foothills Parkway

Section 1 - BNSF Railroad to Frontier Avenue

Section 2 - Frontier Ave to Foothills Parkway



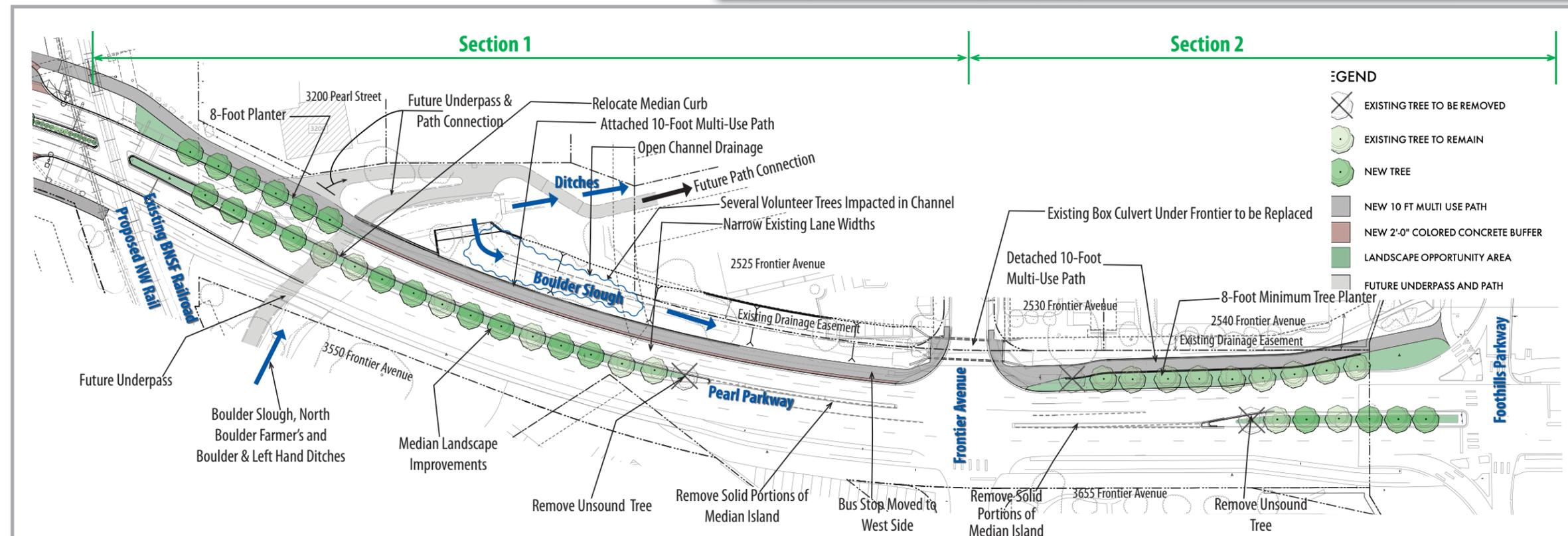
SECTION 1 CROSS SECTION - CAN BE COMBINED WITH OPTION B & C/SECTION 2



SECTION 2 CROSS SECTION - CAN BE COMBINED WITH OPTIONS B, C & E/SECTION 1

Key Design Elements:

- Provides 10 foot wide bike/pedestrian facility
- Attached configuration - no detached planter strip between road and path in Section 1 (except between railroad and ditch structure crossing at Pearl Parkway), continuous detached planting strip (buffer) configuration in Section 2
- Removes several existing volunteer trees in Section 1 (Channel)
- Keeps existing mature street trees in Section 2; however this option has greater impact to these trees over Options B & C
- Includes drainage improvements to address possible future 100-year floodplain improvements along the Boulder Slough (public safety concern), however may require future flood mitigation at 2540 Frontier Avenue
- Permanent parking lot impacts at 2525 Frontier Avenue; utilizes existing drainage easement
- Center median narrowed by approximately 3 feet to shift westbound lanes further south in Section 1, west portion of Section 2 - reduces median tree planter width, added roadway pavement work
- Possible traffic safety issue without median separating traffic near Frontier Avenue (only yellow stripe)
- Path sight line issues due to depression of path on approach to east side Frontier Avenue and west side Foothills Parkway
- Maintains open channel; wetlands/vegetation restored
- Moderate cost option compared to Options B & E



Option E – Detached Multi-Use Path North of Boulder Slough with Retaining Wall/Open Channel (Section 1 Only). Consists of a detached 10 foot-wide multi-use path along the north side of Pearl Parkway from the BNSF Railroad to Frontier Avenue (Section 1). Option E provides the maximum separation between vehicles and multi-use path users. Option E incorporates 100-year floodplain drainage improvements through the use of retaining walls and graded channel slopes, maintaining the Boulder Slough in an open channel. For a complete project, Section E must be combined with a Section 2 option from Options B through D. Option E will accommodate a future traffic signal at Pearl Parkway and Frontier Avenue. See Plan View and Section View excerpts from public meeting boards on the following page.

Key Design Elements & Impacts for Option E:

- Provides 10 foot wide bike/pedestrian facility
- Continuous 8 foot minimum detached planting strip (buffer) along Section 1
- Provides maximum separation from vehicular traffic. This could enhance user experience
- More easily facilitates future TVAP path connection to east along ditches
- More easily facilitates future TVAP underpass under Pearl Parkway
- Removes several existing volunteer trees in Section 1 (Path & Channel)
- Includes drainage improvements to address possible future 100-year floodplain improvements along the Boulder Slough (public safety concern)
- Utilizes existing drainage easement but may require overlapping bike and pedestrian greenway easement
- Reduced permanent impact to adjoining properties as compared to Options C & D
- Temporary parking lot impacts during construction (2525 Frontier Avenue)
- Center median curb and planting area remains unchanged; but new landscaping anticipated
- Maintains open channel; wetlands/vegetation restored
- Most costly option for Section 1 primarily due to added pedestrian bridge

Approximate Construction Cost for Option E (section 1): \$1,524,000

Approx. Const. Cost for Option E (section 1) and Option B (section 2): \$2,387,000 (within budget)

Approx. Const. Cost for Option E (section 1) and Option C (section 2): \$2,393,000 (within budget)

Approx. Const. Cost for Option E (section 1) and Option D (section 2): \$2,274,000 (within budget)

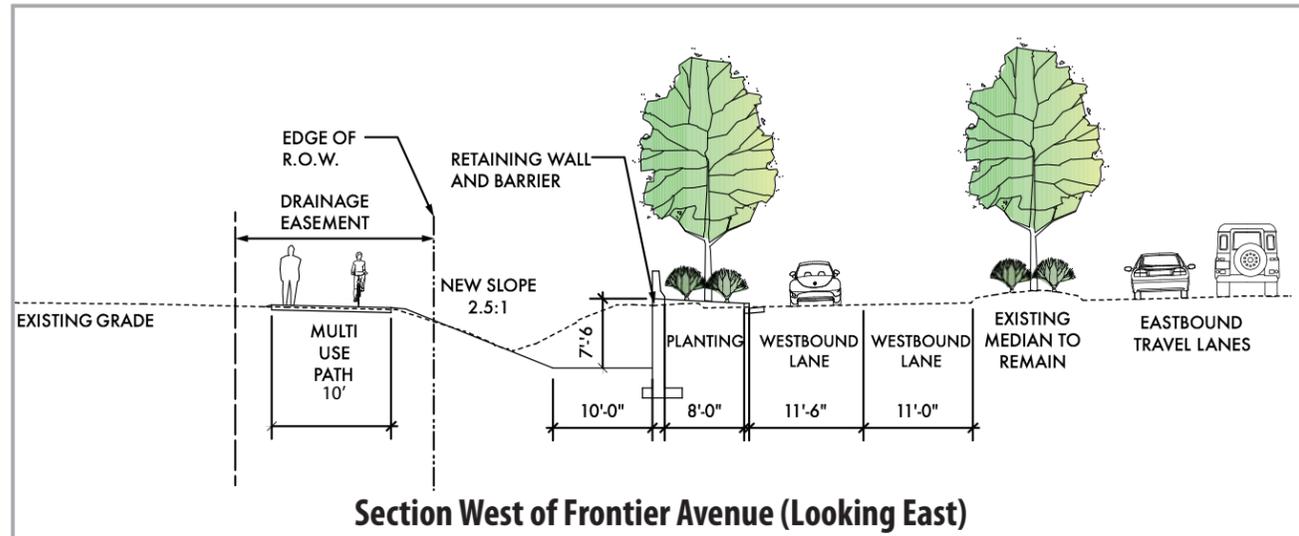


Pearl Parkway (30th Street to Foothills Parkway) Multi-Use Path Improvement Project

OPTION E - Detached Multi-Use Path North of Boulder Slough with Retaining Wall/Open Channel (Section 1 Only)

Project Segment: BNSF Railroad to Foothills Parkway

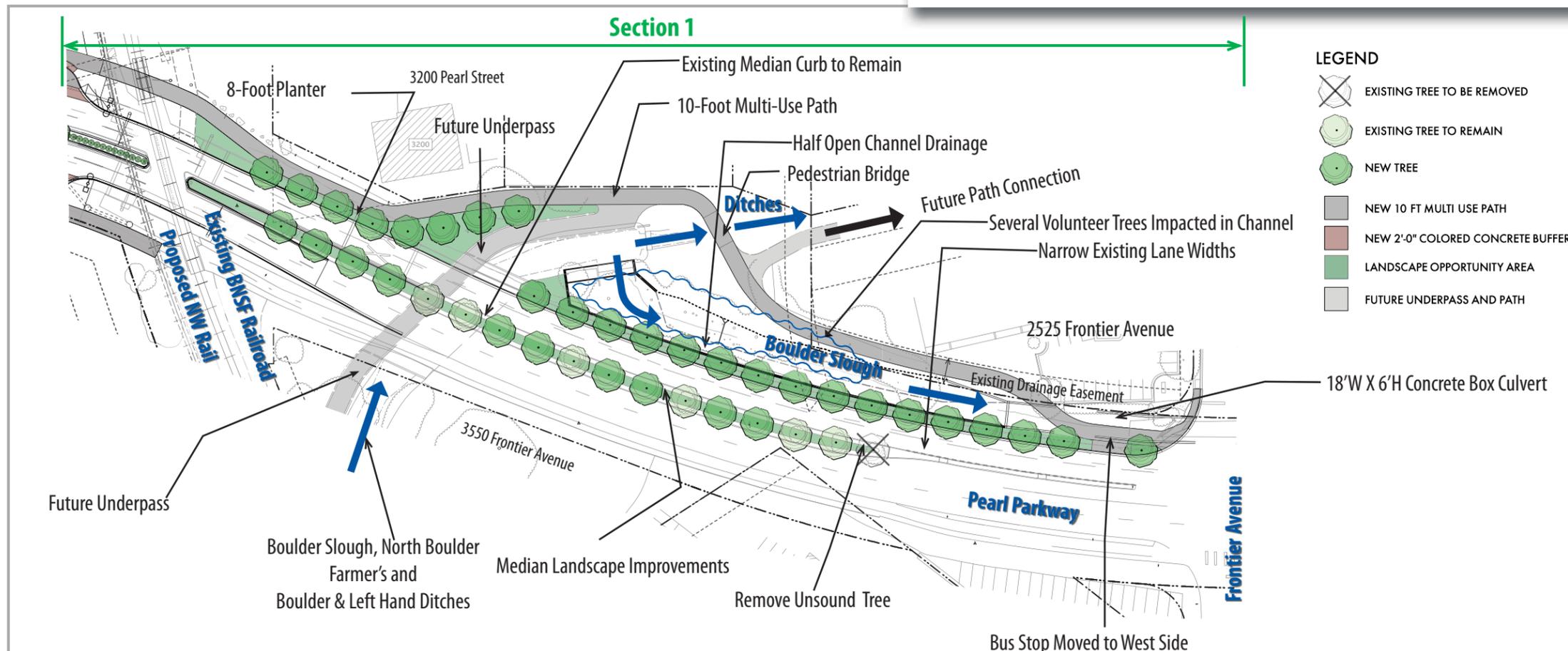
Section 1 - BNSF Railroad to Frontier Avenue



SECTION 1 CROSS SECTION - CAN BE COMBINED WITH OPTIONS B, C & D/SECTION 2

Key Design Elements & Impacts:

- Provides 10 foot wide bike/pedestrian facility
- Continuous 8 foot minimum detached planting strip (buffer) between road and path along Section 1
- Provides maximum separation from vehicular traffic for improved user experience
- More easily facilitates future TVAP path connection to east along ditches
- More easily facilitates future TVAP underpass under Pearl Parkway
- Removes several existing volunteer trees in Section 1 (Path & Channel)
- Includes drainage improvements to address possible future 100-year floodplain improvements along the Boulder Slough (public safety concern)
- Utilizes existing drainage easement but may require overlapping bike and pedestrian greenway easement
- Reduced permanent impact to adjoining properties as compared to Options C & D
- Temporary parking lot impacts during construction (2525 Frontier Avenue)
- Center median curb and planting area remains unchanged; but new landscaping anticipated
- Maintains open channel; wetlands/vegetation restored
- Most costly option for Section 1 primarily due to added pedestrian bridge



4.0 PERMITS, WETLANDS PROTECTION AND HABITAT ASSESSMENT

The size and location of the project and the presence of the Boulder Slough will trigger the need for local, state, and federal permits. First, construction of the project will disturb more than one acre of land, which prompts stormwater management regulations. Second, components of the project are located within the existing floodplain and within the Boulder Slough channel, which prompt floodplain, dewatering, and wetland (non-City regulated) impact regulations.

As a result, the project will likely require the following permits:

- Colorado Department of Public Health and Environment Colorado Stormwater Discharge Permit (Construction Activity General Permit and Stormwater Management Plan)
- City of Boulder Floodplain Development Permit
- United States Army Corps of Engineers 404 Wetlands Permit
- Colorado Department of Public Health and Environment Colorado Construction Dewatering Permit
- City of Boulder construction dewatering discharge permit

Due to the federal funding for the project, a CDOT Categorical Exclusion Determination is also required which includes clearances for: air quality, noise, hazardous materials, farmland protection, threatened or endangered species, wetland determination, archaeology, paleontology, history, historic bridge, and Section 4(f) and 6(f) resources.

Because the project occurs entirely within the City of Boulder limits, there will be no need for a County Areas and Activities of State Interest 1041 Review Application. There will also be no need for a City of Boulder Wetlands Permit because neither the Boulder Slough, the North Boulder Farmers Ditch, or the Boulder & Left Hand Ditch are mapped as City Regulatory Wetlands Areas. However, impacts to these areas would be assessed for opportunities for either restoration, or enhancement.

Appendix A provides a summary of findings from a site visit conducted by ERO Resources, Corp. on April 18, 2012. The project area is located in a densely developed area in the City of Boulder. The BNSF Railroad and the combined North Boulder Farmer's and Boulder & Left Hand irrigation ditches and the Boulder Slough cut across the project area. East of the railroad, the Boulder Slough parallels the north side of Pearl Parkway from the combined ditches to the Foothills Parkway exit ramp. The Boulder Slough conveys stormwater over flow from the combined channel east to Goose Creek, which flows to Boulder Creek. The Slough typically flows only following storm events, although some standing water is present when the Slough is not conveying storm water. There are limited patches of wetland vegetation in the Boulder Slough, however the majority of the channel between Frontier Avenue and Foothills Parkway is blue-grass turf, with a concrete low-flow channel, that has minimal natural resource or wildlife habitat value. The vegetation in the remainder of the project area consists of narrow strips of weedy species and introduced upland grasses and irrigated turf. There is a patch of riparian trees and shrubs where the Boulder Slough is diverted from the North Boulder Farmer's and Boulder & Left Hand ditches, but it provides limited habitat because of its small size and lack of connectivity to other riparian habitat. The vegetation communities and species in the project area are not uncommon or sensitive for their type.

Based on a review of background information, the site visit, and professional experience, ERO determined that significant natural resources that would make the project infeasible are not likely to be present in the study area. There is no suitable habitat for federally listed threatened or endangered species. Although there is suitable nesting substrate, no nests were observed in the study area. It is likely that one or more nests were present but obscured from view by leaves. Wetlands associated with the Boulder Slough are small, low quality wetlands supported by limited stormwater runoff and the lateral extent of riparian trees and shrubs is limited due to encroachment. The City's proposed project would not affect any unique or significant natural resources, but there would be limited impacts to regulated resources including the Boulder Slough. The impacts to Boulder Slough would be addressed through the Clean Water Act Section 404 permitting processes. In the event an active nest is present, the City would comply with the Migratory Bird Treaty Act.

The concept designs were developed to minimize impacts to the Boulder Slough and its federally regulated waters and wetlands to the extent practical, while balancing this with overall project goals and needs. Project features were located outside of the wetland limits to the extent possible, or in a way to allow restoration of the temporary impacts. The proposed improvements will, however, impact wetlands and waters of the U.S. The project will mitigate impacts if required by replacing impacted wetlands in the project area to the extent possible with native species and in-kind habitat. Only Option B (box culvert) would preclude on-site restoration or mitigation if implemented for both Sections 1 and 2. As part of the Clean Water Act Section 404 permitting process, the City will coordinate with the U.S. Army Corps of Engineers to identify a suitable offsite mitigation area in the vicinity of the project area, if required.

5.0 PREFERRED ALTERNATIVE

The preferred alternative is **Option E** for Section 1 between the BNSF Railroad and Frontier Avenue and **Option B** for Section 2 between Frontier Avenue and Foothills Parkway. A combined preferred alternative graphic is provided on the following page. The selected options minimize the width of path to 10 foot-wide City standard, with graded shoulder buffers. Other options (C-D) require walls/railings directly adjacent to path, resulting in a 2 foot additional width for railing setback.

Option E in Section 1 provides separation from the air, noise, and visual pollution of vehicular traffic on Pearl Parkway. It also provides adjacent lawn and landscaping and, thus, an enhanced user experience. This is a distinct advantage over the other options of Section 1. Option E uses a portion of an existing drainage easement on the property at 2525 Frontier Avenue, however these easement rights would have to be modified to include public access for the multi-use path. The usage of this easement will only have temporary construction impacts to the existing parking lot on that property. Under this option, the concrete box culvert carrying the Slough under Frontier Avenue will be extended to the west adjacent to the parking lot to carry the flow of the Boulder Slough and maintain existing parking. This option calls for the construction of a pedestrian bridge over the North Boulder Farmer's and Boulder & Left Hand Ditches. This bridge will be necessary to complete another future multi-use path corridor along the ditches to the east, shown in the TVAP Connections plan. This option also more easily facilitates the future TVAP underpass under Pearl Parkway, allowing the majority of this future construction without interruption of east-west path service. Option E also provides the roadway users on Pearl

Parkway with an attractive street tree planter strip along the north side of Pearl Parkway and increases the capacity of the Boulder Slough to handle the 100-year storm event. An open channel for the Slough is maintained, allowing restoration of any temporary vegetation impacts to the channel.

The preferred alternative for Section 2 between Frontier Avenue and Foothills Parkway is **Option B**. This option accomplishes both goals of carrying pedestrian and bicyclist traffic and conveying the 100-year flow for the Boulder Slough, without requiring future flood mitigation at adjoining private properties. This public safety aspect of the overall project is a significant factor. This option provides the most flexibility for the placement of the multi-use path (maximizes separation from the roadway), and also is setback the furthest from the existing mature street trees (reducing forestry impacts) over Options C and D. Sightlines for the multi-use path crossings at Frontier Avenue and Foothills Parkway are improved over Option D (where path approaches are depressed), and basically equal to Option C. This option provides the most flexibility for accommodating possible future traffic safety improvements for the southbound Foothills Parkway off-ramp to westbound Pearl Parkway acceleration lane where this is a recurring number of rear end accidents at this location.

Although this option would eliminate a section of open channel, this section of channel is primarily a steeply sloping blue-grass turf channel with a concrete low-flow channel. The side slope steepness makes maintenance difficult. Having this section filled with a box culvert will also eliminate the “barrier” the Slough creates, allowing for a more typical urban and pedestrian-oriented frontage.



Option C and Option B are similar economically in this section, but Option B is considered the best balance of floodplain aspects, maintenance, and other factors.

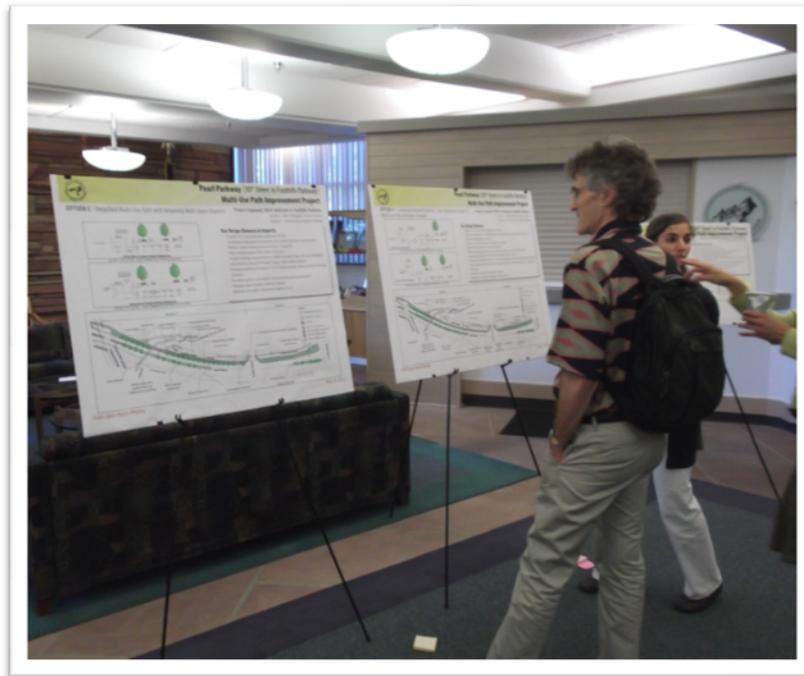
The preferred alternative of Option E and Option B accommodates a future traffic signal at Pearl Parkway and Frontier Avenue.

6.0 PUBLIC INPUT TO DATE

A Public Open House Meeting was held on Monday, May 14, 2012 at the Boulder Municipal Building lobby. Meeting notification was sent to over 800 property owners, residents and businesses, and advertised on the project webpage and city calendar. Twelve people attended the meeting and 3 comment sheets were submitted. The following provides a summary of the written comments:

- One person preferred Option E for Section 1 due to cost, addressing floodplain concerns and maintaining open channel for Boulder Slough. Also prefers Option C for Section 2.
- One person preferred Option E for Section 1 because it adds trees, has open waterway and brings path away from road. Also prefers Option D for Section 2 because it preserves trees and provides open waterway with natural slope.
- One person preferred Option E for Section 1 because it provides better separation from vehicles, integrates with future improvements and has better wetland opportunities.

The city also received two email comments following the open house supporting Option E for Section 1 and Option D for Section 2.



May 14, 2012 public meeting

The project team also coordinated with other city departments and work groups including Public Works-Utilities and Forestry to gain their input and feedback on the proposed options and preferences for the project design. As part of the CEAP review process, the project CEAP was presented to the interdepartmental staff review team on July 16, 2012 for review and discussion of the documentation and that feedback was subsequently incorporated into this document.

The project team has also met with the property owner at 2525 Frontier Avenue and are working together related to project easement needs. A coordination meeting was also held with both ditch companies and they are supportive of the planned improvements.

7.0 STAFF PROJECT MANAGEMENT

This project is being managed by the City's Public Works Department- Transportation Division. Alex May, P.E. is the Project Manager for this project, with assistance by Noreen Walsh on the public process, CEAP/ alternatives analysis components of the project.

8.0 OTHER CONSULTANTS OR RELEVANT CONTACTS

Tsiouvaras Simmons Holderness, Inc., a current On-Call Civil and Structural consultant with the City of Boulder is the prime consultant supporting the public process, CEAP, alternatives analysis and final design for the project. Subconsultants are included in the project team for environmental, landscape design, geotechnical, surveying, forestry and railroad support. Various City staff from other departments and divisions are also involved in the project, providing project feedback, assistance and design support. Local Agency project staff with CDOT Region 4 are also involved with supporting the federal aid and NEPA review aspects of this project.

GOALS ASSESSMENT

1. Using the BVCP and department master plans, describe the primary city goals and benefits that the project will help to achieve:
 - a. Community Sustainability Goals – How does the project improve the quality of economic, environmental and social health with future generations in mind?

The Pearl Parkway Multi-Use Path Improvement Project is identified in the Transportation Master Plan (TMP) and Transit Village Area Plan Transportation Connections Plan. Pearl Parkway is a Major Arterial, currently without any pedestrian facility of any kind on the north side in this identified segment. This lack of adequate pedestrian facility is a system deficiency. Adopted in 2007, TVAP (and the supplemental Connections Plan) bridges the gap between broad community goals established by the Boulder Valley Comprehensive Plan (BVCP) and site-specific development plans. The area plan outlines the desired future character, scale, land uses, location of street and path alignments, parking, and public spaces.

*The project helps the city achieve its **economic** goals by improving access and connections to and through the Boulder Junction area to help move goods and people which supports existing and new businesses. The segment of Pearl Parkway between the BNSF railroad and Foothills Parkway is identified in the TVAP Connections plan for a multi-use path installation.*

*The project helps the city achieve its **environmental** goals by providing a facility for the multimodal transportation system for property owners, residents, visitors and employees to use which may result in a decrease in single-occupant vehicle use which is a goal of the TMP.*

*The project helps the city achieve its **social** sustainability goals by expanding transportation options for all members of the community to use. Also, the accommodation of the 100 year floodplain improvements to the Boulder Slough helps accommodate future flood control needs, mitigating natural hazards by reducing the flood hazard and improving public safety.*

- b. BVCP Goals related to:
 - Community Design/Built Environment
 - Urban Services
 - Environment
 - Economy
 - Transportation
 - Housing
 - Social Concerns and Human Services

Community Design/Built Environment – *The Pearl Parkway Multi-Use Path Improvement Project helps to fulfill the BVCP’s sustainable urban design form by providing a bicycle and pedestrian facility for the city’s multimodal system providing access to and through the area as well as to the upcoming and future local and regional bus transit service. To view this section of the BVCP, please go to:*

http://bouldercolorado.gov/index.php?option=com_content&view=article&id=15375&Itemid=5188

Urban Services - *The proposed project includes transportation and storm drainage facility improvements which will further the BVCP Transportation and Utility policy goals. This path will be maintained by the City of Boulder Streets and Bikeways Maintenance.*

Environment – *This CEAP analysis of the project alternatives provides information on the various design options and their potential impacts on the adjacent natural resources and these factors have been considered in the selection of the preferred alternative. Please go to Appendix A of this document for further environmental review analysis.*

Installation of new street landscaping is anticipated with this project, providing significant enhancements to urban forestry and street frontage aesthetics. To view this section of the BVCP, please go to:

http://bouldercolorado.gov/index.php?option=com_content&view=article&id=15376&Itemid=5199

Economy – *As stated in the BVCP, Boulder is a “mature, compact city with little remaining vacant land and the city must engage in strategic planning for redevelopment areas and ensure that economic benefit is a primary outcome.” The Pearl Parkway Multi-Use Path Improvement Project will expand transportation access and connections to a redeveloping area which will benefit existing and future businesses moving goods and people in and through the area. To view this section of the BVCP, please go to:*

http://bouldercolorado.gov/index.php?option=com_content&view=article&id=15378&Itemid=5212

Transportation – *The BVCP and Boulder TMP support the maintenance and development of a balanced transportation system that supports all modes of travel, making the system more efficient in carrying travelers while maintaining a safe system and shifting trips away from the single-occupant vehicle. The Pearl Parkway Multi-Use Path Improvements Project will help to implement this goal by providing an additional travel option for people working, living or traveling to and through the area. To view the TMP please go to:*

http://www.bouldercolorado.gov/index.php?option=com_content&view=article&id=331&Itemid=1616 To view the TVAP Connections Plan please go to:

http://www.bouldercolorado.gov/files/PDS/BoulderJunction/Chapter_4.pdf

Housing - *The BVCP identifies desired locations, densities and types of housing planned for Boulder. New housing in the Boulder Junction area, which will also include affordable housing, will provide the opportunity for people to live close to employment, services, entertainment, a new park and a local and regional bus transit facility. The Pearl Parkway Multi-Use Path Improvement Project will improve the access and connections and travel options for those living in the Boulder Junction area. To view this section of the BVCP, please go to:*

http://bouldercolorado.gov/index.php?option=com_content&view=article&id=15380&Itemid=5223

c. Describe any regional goals (potential benefits or impacts to regional systems or plans?)

The Pearl Parkway Multi-Use Path Improvement Project provides a continuous east-west bicycle and pedestrian connection to the new RTD bus transit facility which will include regional and local bus services. It will also connect with existing path facilities near Foothills Parkway (with direct connection to the Goose Creek Path), and connect to existing bike lanes and other path facility networks near 30th Street.

2. Is this project referenced in a master plan, subcommunity or area plan? If so, what is the context in terms of goals, objectives, larger system plans, etc.? If not, why not?

This project is included in the TVAP Transportation Connections Plan and the Boulder TMP. These transportation improvements are intended to create a successful pedestrian environment as well as to ensure complete and safe multimodal functions in the Boulder Junction area.

3. Will this project be in conflict with the goals or policies in any departmental master plan and what are the trade-offs among city policies and goals in the proposed project alternative? (e.g. higher financial investment to gain better long-term services or fewer environmental impacts)

The Pearl Parkway (30th-Foothills) Multi-Use Path Improvement Project is not in conflict with the goals or policies in any departmental master plan.

The trade-offs for the proposed project alternative include: Option E has a higher financial investment for Section 1 as compared to the other options but gains an improved user experience, reduces permanent impacts to adjacent properties, and more easily facilitates future TVAP path connection to the east along the ditches as well as the future TVAP underpass under Pearl Parkway.

4. List other city projects in the project area that are listed in a departmental master plan or the CIP.

There are several city projects occurring in the Boulder Junction area that are included in the CIP or departmental master plan. You can view a graphic that includes more information about these near term projects as well as private development projects in the Boulder Junction area on the following page. They include:

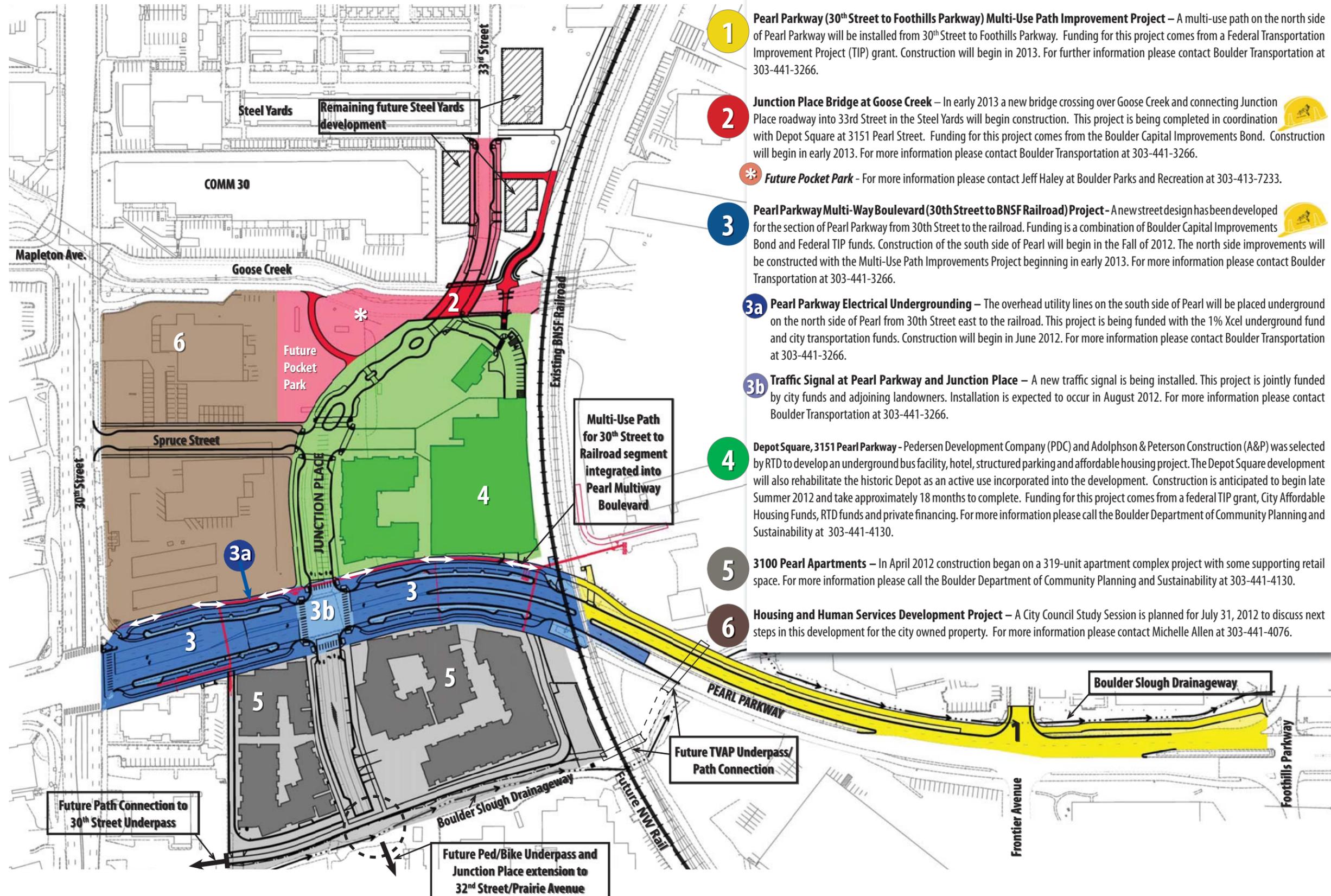
- *Junction Place Bridge at Goose Creek (2013)*
- *Pocket Park (future- 2017 approx)*
- *Pearl Parkway Electrical Undergrounding (underway)*
- *Pearl Parkway and Junction Place Traffic Signal (fall 2012)*
- *Pearl Parkway Multi-Way Boulevard (30th Street to BNSF Railroad) (South Side) (fall 2012-spring 2013)*

There are other transportation, utility and housing projects that are contained in the departmental master plan but are not occurring in the near term.

5. What are the major city, state, and federal standards that will apply to the proposed project? How will the project exceed city, state, or federal standards and regulations (e.g. environmental, health, safety, or transportation standards)?

What's Happening at Boulder Junction?

There are many upcoming public and private development and improvement projects in the area— see below for details and contact information:



- 1 Pearl Parkway (30th Street to Foothills Parkway) Multi-Use Path Improvement Project** – A multi-use path on the north side of Pearl Parkway will be installed from 30th Street to Foothills Parkway. Funding for this project comes from a Federal Transportation Improvement Project (TIP) grant. Construction will begin in 2013. For further information please contact Boulder Transportation at 303-441-3266.
- 2 Junction Place Bridge at Goose Creek** – In early 2013 a new bridge crossing over Goose Creek and connecting Junction Place roadway into 33rd Street in the Steel Yards will begin construction. This project is being completed in coordination with Depot Square at 3151 Pearl Street. Funding for this project comes from the Boulder Capital Improvements Bond. Construction will begin in early 2013. For more information please contact Boulder Transportation at 303-441-3266.
- * Future Pocket Park** – For more information please contact Jeff Haley at Boulder Parks and Recreation at 303-413-7233.
- 3 Pearl Parkway Multi-Way Boulevard (30th Street to BNSF Railroad) Project** – A new street design has been developed for the section of Pearl Parkway from 30th Street to the railroad. Funding is a combination of Boulder Capital Improvements Bond and Federal TIP funds. Construction of the south side of Pearl will begin in the Fall of 2012. The north side improvements will be constructed with the Multi-Use Path Improvements Project beginning in early 2013. For more information please contact Boulder Transportation at 303-441-3266.
- 3a Pearl Parkway Electrical Undergrounding** – The overhead utility lines on the south side of Pearl will be placed underground on the north side of Pearl from 30th Street east to the railroad. This project is being funded with the 1% Xcel underground fund and city transportation funds. Construction will begin in June 2012. For more information please contact Boulder Transportation at 303-441-3266.
- 3b Traffic Signal at Pearl Parkway and Junction Place** – A new traffic signal is being installed. This project is jointly funded by city funds and adjoining landowners. Installation is expected to occur in August 2012. For more information please contact Boulder Transportation at 303-441-3266.
- 4 Depot Square, 3151 Pearl Parkway** – Pedersen Development Company (PDC) and Adolphson & Peterson Construction (A&P) was selected by RTD to develop an underground bus facility, hotel, structured parking and affordable housing project. The Depot Square development will also rehabilitate the historic Depot as an active use incorporated into the development. Construction is anticipated to begin late Summer 2012 and take approximately 18 months to complete. Funding for this project comes from a federal TIP grant, City Affordable Housing Funds, RTD funds and private financing. For more information please call the Boulder Department of Community Planning and Sustainability at 303-441-4130.
- 5 3100 Pearl Apartments** – In April 2012 construction began on a 319-unit apartment complex project with some supporting retail space. For more information please call the Boulder Department of Community Planning and Sustainability at 303-441-4130.
- 6 Housing and Human Services Development Project** – A City Council Study Session is planned for July 31, 2012 to discuss next steps in this development for the city owned property. For more information please contact Michelle Allen at 303-441-4076.

The project will be designed to meet or exceed ADA requirements, meet or exceed city and national standards (AASHTO) for the development of bikeway facilities and roadway improvements, meet or exceed the city's wetland ordinance requirements, include water quality and habitat enhancements where possible, meet or exceed Urban Drainage and Flood Control District standards and comply with all required city, state and federal permits. The project will also install a new multi-use path crossing of the BNSF railroad, requiring Colorado Public Utilities Commission (PUC) application and BNSF and PUC approvals.

6. Are there cumulative impacts to any resources from this and other projects that need to be recognized and mitigated?

This project is being coordinated with the Public Works Utilities Division and their floodplain work for the Boulder Creek area and Boulder Slough so that any future floodplain needs are considered in the design of this facility.

Although there will not be any impacts to threatened species, some area with trees will be removed and this will remove daytime rest area or travel corridor habitat for the local deer, raccoon or fox. These species do not live there. Additional trees and landscaping will be planted in all impact areas, which may provide a replacement location for daytime wildlife rest or travel. Significant Installation of new street landscaping is anticipated with this project, providing significant enhancements to urban forestry and street frontage aesthetics along this entire corridor.

IMPACT ASSESSMENT

The following checklist table identifies potential short and long-term impacts from the project alternatives.

- 0 indicates no effect
- + indicates a positive effect
- ++ indicates a high positive effect
- indicates a negative effect
- indicates a high negative effect

Project Title: Pearl Parkway (30th Street to Foothills Parkway/SH157) Multi-Use Path Improvement Project	Option A		Option B		Option C		Option D		Option E	Preferred Option	
	Section 1	Section 2									
A. Natural Areas or Features											
1. Disturbance to species, communities, habitat, or ecosystems due to:											
a. Construction activities	0	0	0	0	0	0	0	0	0	0	0
b. Native vegetation removal	0	0	0	0	0	0	0	0	0	0	0
c. Human or domestic animal encroachment	0	0	0	0	0	0	0	0	0	0	0
d. Chemicals (including petroleum products, fertilizers, pesticides, herbicides)	0	0	0	0	0	0	0	0	0	0	0
e. Behavioral displacement of wildlife species (due to noise from use activities)	0	0	0	0	0	0	0	0	0	0	0
f. Habitat removal	0	--	-	0	-	0	-	0	-	-	-
g. Introduction of non-native plant species in the site landscaping	0	0	0	0	0	0	0	0	0	0	0

h.	Changes to groundwater or surface runoff	0	-	0	0	0	0	0	0	0	0	0
i.	Wind erosion	0	0	0	0	0	0	0	0	0	0	0
2.	Loss of mature trees or significant plants?	-	-	-	0	-	0	-	0	-	-	-
B. Riparian Areas/Floodplains												
1.	Encroachment upon the 100-year, conveyance or high hazard flood zones?	-	++	++	++	++	++	++	++	++	++	++
2.	Disturbance to or fragmentation of a riparian corridor?	-	--	-	-	-	-	-	-	-	-	-
C. Wetlands												
1.	Disturbance to or loss of a wetland on site?	0	--	-	-	-	-	-	-	-	-	-
D. Geology and Soils												
1.	a. Impacts to unique geologic or physical features?	0	0	0	0	0	0	0	0	0	0	0
	b. Geologic development constraints?	0	0	0	0	0	0	0	0	0	0	0
	c. Substantial changes in topography?	0	0	0	0	0	0	0	0	0	0	0
	d. Changes in soil or fill material on the site?	0	0	0	0	0	0	0	0	0	0	0
	e. Phasing of earth work?	0	-	-	-	-	-	-	-	-	-	-
E. Water Quality												
1.	Impacts to water quality from any of the following?											

a.	Clearing, excavation, grading or other construction activities	-	--	--	--	--	--	--	--	--	--	--
b.	Change in hardscape	-	-	-	-	-	-	-	-	-	-	-
c.	Change in site ground features	-	-	-	-	-	-	-	-	-	-	-
d.	Change in storm drainage	0	+	+	+	+	+	+	+	+	+	+
e.	Change in vegetation	0	-	0	0	0	0	0	0	0	0	0
f.	Change in pedestrian and vehicle traffic	0	0	0	0	0	0	0	0	0	0	0
g.	Pollutants	0	0	0	0	0	0	0	0	0	0	0
2.	Exposure of groundwater contamination from excavation or pumping?	0	0	0	0	0	0	0	0	0	0	0
F. Air Quality												
1.	Short or long term impacts to air quality (CO2 emissions, pollutants)?											
a.	From mobile sources?	-	-	-	-	-	-	-	-	-	-	-
b.	From stationary sources?	0	0	0	0	0	0	0	0	0	0	0
G. Resource Conservation												
1.	Changes in water use?	0	-	-	-	-	-	-	-	-	-	-
2.	Increases or decreases in energy use?	-	-	-	-	-	-	-	-	-	-	-
3.	Generation of excess waste?	-	-	-	-	-	-	-	-	-	-	-
H. Cultural/Historic Resources												

1.	a.	Impacts to a prehistoric or archaeological site?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	b.	Impacts to a building or structure over fifty years of age?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	c.	Impacts to a historic feature of the site?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	d.	Impacts to significant agricultural land?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I. Visual Quality																				
1.	a.	Effects on scenic vistas or public views?	0	++	++	++	++	++	++	0	++	++	++	++	++	0	++	++	++	++
	b.	Effects on the aesthetics of a site open to public view?	0	+	+	+	+	+	+	0	+	+	+	+	0	+	+	+	+	+
	c.	Effects on views to unique geologic or physical features?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	d.	Changes in lighting?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
J. Safety																				
1.		Health hazards, odors, or radon?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.		Disposal of hazardous materials?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.		Site hazards?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K. Physiological Well-being																				
1.		Exposure to excessive noise?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.		Excessive light or glare?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.		Increase in vibrations?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

L. Services										
1.	Additional need for:									
a.	Water or sanitary sewer services?	0	-	-	-	-	-	-	-	-
b.	Storm sewer/Flood control features?	0	++	++	0	++	0	++	0	++
c.	Maintenance of pipes, culverts and manholes?	0	-	0	0	0	0	0	0	0
d.	Police services?	0	0	0	0	0	0	0	0	0
e.	Fire protection services?	0	0	0	0	0	0	0	0	0
f.	Recreation or parks facilities?	0	0	0	0	0	0	0	0	0
g.	Library services?	0	0	0	0	0	0	0	0	0
h.	Transportation improvements/traffic mitigation?	++	++	++	++	++	++	++	++	++
i.	Parking?	0	0	0	0	0	0	0	0	0
j.	Affordable housing?	0	0	0	0	0	0	0	0	0
k.	Open space/urban open land?	0	0	0	0	0	0	0	0	0
l.	Power or energy use?	0	0	0	0	0	0	0	0	0
m.	Telecommunications?	0	0	0	0	0	0	0	0	0
n.	Health care/social services?	0	0	0	0	0	0	0	0	0
o.	Trash removal or recycling services?	0	0	0	0	0	0	0	0	0
M. Special Populations										

CHECKLIST QUESTIONS

Note: The following questions are a supplement to the CEAP checklist. Only those questions indicated on the checklist are to be answered in full.

A. Natural Areas and Features

1. Describe the potential for disturbance to or loss of significant: species, plant communities, wildlife habitats, or ecosystems via any of the activities listed below. (Significant species include any species listed or proposed to be listed as rare, threatened or endangered on federal, state, county lists.)
 - a. Construction activities
 - b. Native Vegetation removal
 - c. Human or domestic animal encroachment
 - d. Chemicals to be stored or used on the site (including petroleum products, fertilizers, pesticides, herbicides)
 - e. Behavioral displacement of wildlife species (due to noise from use activities)
 - f. Introduction of non-native plant species in the site landscaping
 - g. Changes to groundwater (including installation of sump pumps) or surface runoff (storm drainage, natural stream) on the site
 - h. Potential for discharge of sediment to any body of water either short term (construction-related) or long term
 - i. Potential for wind erosion and transport of dust and sediment from the site

There is limited vegetation and wildlife habitat present in the project area, none of which is significant, but there would be some impacts under all of the alternatives. Impacts would be least for Option A. The other alternatives would disturb the majority of the Slough vegetation, but for Options C-E, these impacts would all be temporary. Although the alternatives would affect vegetation, the effects would not be significant because the vegetation is not uncommon or particularly sensitive. Most vegetation that is removed will be replaced with other plantings. There may be temporary reductions in wildlife use of the area during construction, but use would likely return to preconstruction levels. Following construction of the multi-use trail, there will be an increase in the number and frequency of humans and domestic animals (specifically dogs) in the area. Because the area is already highly developed, the change in use of the area would be expected to have negligible to minor effects on use of the area by wildlife. Please refer to Appendix A of the CEAP document for additional analysis and information.

2. Describe the potential for disturbance to or loss of mature trees or significant plants.

Under all alternatives, except Option A, several volunteer cottonwood and elm trees at the irrigation ditch overflow into the Boulder Slough would be removed for the project. Under Option A, street trees (primarily locust trees) would be removed from the tree-lawn areas along the north side of Pearl Parkway (adjoining the office park at 2540 Frontier Avenue). A significant increase in street trees over existing conditions will result with any of the options.

If potential impacts have been identified, please provide any of the following information that is relevant to the project:

- A description of how the proposed project would avoid, minimize, or mitigate identified impacts.
- A habitat assessment of the site, including: 1. a list of plant and animal species and plant communities of special concern found on the site; 2. a wildlife habitat evaluation of the site.
- Maps of the site showing the location of any Boulder Valley Natural Ecosystem, Boulder County Environmental Conservation Area, or critical wildlife habitat.

Wetlands affected by the project would be mitigated if required in accordance to Section 404 Clean Water Act permit conditions. Compensatory mitigation if required, would most likely be in the form of restoration in the impacted Boulder Slough channel, or possibly constructed along any adjoining waterway, where the likelihood of success would be highest. Trees removed by the project would be replaced on at least a one-to-one basis.

B. *Riparian Areas and Floodplains*

1. Describe the extent to which the project will encroach upon the 100-year, conveyance or high hazard flood zones.

Option A would convey the existing capacity of the Slough channel as restricted by upstream constrictions. Options B, C, D and E would increase the capacity of the Slough channel to convey the entire 100-year flow anticipated with future upstream improvements. Options B, C, D and E comport with floodplain management planning for the Slough by providing the long term design capacity for this section of the drainage. However, Options C and D will likely require future floodplain mitigation at 2540 Frontier, making them less desirable over Option B (preferred).

2. Describe the extent to which the project will encroach upon, disturb, or fragment a riparian corridor: (This includes impacts to the existing channel of flow, streambanks, adjacent riparian zone extending 50 ft. out from each bank, and any existing drainage from the site to a creek or stream.)

The proposed project would improve the flood plain conveyance capacity of the Boulder Slough. Most of the proposed options would affect a small number of trees and shrubs along the Boulder Slough, which are not regulated under the City of Boulder wetland protection ordinance. Section 1 channel impacts would be largely restored with all options. While Option B would eliminate a section of open channel in Section 2, primary impact area is blue-grass turf lawn, on steeply sloping (and difficult to maintain) open channel, that has minimal natural resource or wildlife habitat value.

There will be compliance with the US Army Corps of Engineers 404 permit conditions. See Appendix A for additional information.

If potential impacts have been identified, please provide any of the following information that is relevant to the project:

- A description of how the proposed project would avoid, minimize, or mitigate identified impacts to habitat, vegetation, aquatic life, or water quality.
- A map showing the location of any streams, ditches and other water bodies on or near the project site.
- A map showing the location of the 100-year flood, conveyance, and high hazard flood zones relative to the project site.

Due to constraints in the project area, most of the alternatives would disturb the Boulder Slough, along with the associated trees and shrubs. The modified Slough would be designed to contain the entire 100-year flood and would improve flood conveyance. As previously described, removed trees and shrubs would be replaced.

Impacts to the two area ditches are minimal with all options, and the City has the support of the ditch companies for this project.

C. Wetlands

1. Describe any disturbance to or loss of a wetland on site that may result from the project.

Wetlands associated with the Boulder Slough would be temporarily impacted by Options A, B, C, D and E. Option B would result in permanent impacts to any wetland vegetation, primarily in Section 1 (Section 2 is primarily a blue-grass turf channel with a concrete low flow bottom). The wetlands are not regulated under the City of Boulder wetland protection ordinance, but may be regulated under the Clean Water Act. The project would look to restore impacted areas to pre-existing or better conditions, and with Option B, would identify mitigation sites as required by any permitting.

If potential impacts have been identified, please provide any of the following information that is relevant to the project:

- A description of how the proposed project would avoid, minimize, or mitigate identified impacts.
- A map showing the location of any wetlands on or near the site. Identify both those wetlands and buffer areas which are jurisdictional under city code (on the wetlands map in our ordinance) and other wetlands pursuant to federal criteria (definitional).

Project constraints make impact avoidance and minimization impracticable. Wetland mitigation would most likely occur through restoration on site, or in adjoining drainageways, where conditions may be more conducive to successful mitigation than may be present along the Boulder Slough following construction.

D. Geology and Soils

There will be no impacts to unique geologic or physical features.

1. Describe any:
 - a. impacts to unique geologic or physical features;
 - b. geologic development constraints or effects to earth conditions or landslide, erosion, or subsidence;
 - c. substantial changes in topography; or
 - d. changes in soil or fill material on the site that may result from the project.

If potential impacts have been identified, please provide the following:

- A description of how the proposed project would avoid, minimize, or mitigate identified impacts.

- A map showing the location of any unique geologic or physical features, or hazardous soil or geologic conditions on the site.

E. Water Quality

1. Describe any impacts to water quality that may result from any of the following:
 - a. Clearing, excavation, grading or other construction activities that will be involved with the project;
 - b. Changes in the amount of hardscape (paving, cement, brick, or buildings) in the project area;
 - c. Permanent changes in site ground features such as paved areas or changes in topography;
 - d. Changes in the storm drainage from the site after project completion;
 - e. Change in vegetation;
 - f. Change in pedestrian and vehicle traffic;
 - g. Potential pollution sources during and after construction (may include temporary or permanent use or storage of petroleum products, fertilizers, pesticides, or herbicides).

Following construction, there will be a small increase in the area of impervious surface associated with the trail surface, however some of this is being offset by a reduction in the paved area of Pearl Parkway by 5'. In the context of surrounding development, the increase will be minor. Stormwater drainage will be affected by the reconfiguration of the Slough, which will be designed to convey 100-year events. Option B differs from the other options as it is not an open channel but conveys the Boulder Slough with a concrete box culvert. Local storm drainage in Option B-E will be received by new curb inlets installed due to the narrowing of the westbound lanes of Pearl Parkway and new reinforced concrete laterals will need to penetrate the wall of the proposed box culvert (B) or retaining walls (C, D and E). There will be no adverse effects on water quality from potential sources of pollution during or after construction.

The recommended alternative of Option E (Section 1) and B (Section 2) has less overall impermeable area added to the corridor, due to providing natural graded buffers adjoining the path. This results in an improvement to runoff patterns and water quality, as well as a safer and more easily maintained path system. Options A, C and D include retaining walls/railing adjoining the path, requiring added 2 foot concrete buffers to meet path setback standards.

2. Describe any pumping of groundwater that may be anticipated either during construction or as a result of the project. If excavation or pumping is planned, what is known about groundwater contamination in the surrounding area (1/4 mile in all directions from the project) and the direction of groundwater flow?

Surface water in the Boulder Slough will be diverted around the project area. Construction phasing would be planned to minimize ground water pumping to the extent possible.

If potential impacts have been identified, please provide any of the following that is relevant to the project:

- A description of how the proposed project would avoid, minimize, or mitigate impacts to water quality.
- Information from city water quality files and other sources (state oil inspector or the CDPHE) on sites with soil and groundwater impacts within 1/4 mile radius of project or site.
- If impacts to site are possible, either from past activities at site or from adjacent sites, perform a Phase I Environmental Impact Assessment prior to further design of the project.
- Groundwater levels from borings or temporary peizometers prior to proposed dewatering or installation of drainage structures.

Adverse effects on water quality during construction will be avoided by implementing City of Boulder stormwater and erosion control best management practices such as silt fencing, designating fueling areas, and diverting water around the site. Post-construction effects will be minimized because the project design will comply with all City of Boulder and state permanent water quality standards.

F. Air Quality

1. Describe potential short or long term impacts to air quality resulting from this project. Distinguish between impacts from mobile sources (VMT/trips) and stationary sources (APEN, HAPS).

Emissions from construction equipment would have a short term effect on air quality during construction. The effects of the emissions would be negligible because of the small number of short term emission sources.

The manufacture and use of resources in construction can provide some short-term impacts to air quality at manufacture site or at the construction site. The general types of construction for the various options are fairly similar. The primary key contrasting construction elements would be earthwork required and the volume of concrete used in each option listed as follows:

- A. 850 Cubic Yards of Concrete, 650 Cubic Yards of Earthwork
- B. 2400 Cubic Yards of Concrete, 6000 Cubic Yards of Earthwork
- C. 1400 Cubic Yards of Concrete, 5000 Cubic Yards of Earthwork
- D. 1700 Cubic Yards of Concrete, 3000 Cubic Yards of Earthwork
- E. 1100 Cubic Yards of Concrete, 2200 Cubic Yards of Earthwork**

** Option E only includes Section 1 (RR to Frontier)

With an increase in use of alternative modes, there could be minor, long-term improvements to air quality.

G. Resource Conservation

1. Describe potential changes in water use that may result from the project.
 - a. Estimate the indoor, outdoor (irrigation) and total daily water use for the facility.
 - b. Describe plans for minimizing water use on the site (Xeriscape landscaping, efficient irrigation system).

The proposed landscaping along the north side of Pearl Parkway and a reconstruction of the existing deteriorated landscaping in the center median, will result in the installation of new irrigation systems and increase the consumption of treated water. All irrigation systems, however, will be low-water use drip systems, designed in accordance with City standards and conservation goals.

2. Describe potential increases or decreases in energy use that may result from the project.
 - a. Describe plans for minimizing energy use on the project or how energy conservation measures will be incorporated into the building design.
 - b. Describe plans for using renewable energy sources on the project or how renewable energy sources will be incorporated into the building design?
 - c. Describe how the project will be built to LEED standards.

The existing street lights on the project between the railroad and Foothills Parkway will be reset thereby not increasing energy consumption from existing levels. As part of the multiway boulevard (30th to railroad), the city will be installing a pilot project of City-owned and operated, LED street lighting, which will replace existing Xcel street lighting and reduce energy use in this Segment of the overall project.

See Air Quality section above, for key quantities of concrete and earthwork for each Option for anticipated energy use during construction and manufacturing of materials. There will also be short increase of energy use for equipment used during construction.

3. Describe the potential for excess waste generation resulting from the project.

If potential impacts to waste generation have been identified, please describe plans for recycling and waste minimization (deconstruction, reuse, and recycling, green points).

Other than in the manufacture of construction materials and completion of the construction work, the proposed project results in no changes in the use of energy and would not generate excess waste, other than excess channel excavation materials. Recycling of removed concrete materials will be pursued to possibly incorporate these materials into crushed road base and backfill material on site, or recycled at area facilities.

H. Cultural/Historic Resources

1. Describe any impacts to:

- a. a prehistoric or historic archaeological site;
- b. a building or structure over fifty years of age;
- c. a historic feature of the site such as an irrigation ditch; or
- d. significant agricultural lands

that may result from the project.

The North Boulder Farmer's and Boulder & Left Hand Ditches may be eligible for listing on the National Register of Historic Places, although this segment of the ditches has been significantly modified by Pearl Parkway construction in 1981 and is considered non-contributing. The proposed project would likely have either no effect or only minor effects on the ditches because the trail may be constructed on the existing Pearl Parkway culvert crossing of the ditch (Options A-D), or with Option E have minor impacts (installation of a pedestrian bridge) on a non-contributing segment.

If potential impacts have been identified, please provide the following:

- A description of how the proposed project would avoid, minimize, or mitigate identified impacts.

Potential effects on the ditch have been minimized by having the trail attached to the existing Pearl Parkway crossing in Options A, B, C and D and extending the crossing to the north as little as possible in Option E, with a separate pedestrian bridge crossing.

I. Visual Quality

1. Describe any effects on:

- a. scenic vistas or views open to the public;
- b. the aesthetics of a site open to public view; or
- c. view corridors from the site to unique geologic or physical features that may result from the project.

All options will improve the aesthetics of the site along the north side of Pearl Parkway, which is open to public view.

J. Safety

1. Describe any additional health hazards, odors, or exposure of people to radon that may result from the project.
2. Describe measures for the disposal of hazardous materials.
3. Describe any additional hazards that may result from the project. (Including risk of explosion or the release of hazardous substances such as oil, pesticides, chemicals or radiation)

The project will not expose people to radon or other hazards. No hazardous materials are anticipated to be generated by the project.

If potential impacts have been identified, please provide the following:

- A description of how the proposed project would avoid, minimize, or mitigate identified impacts during or after site construction through management of hazardous materials or application of safety precautions.

In the unlikely event hazardous materials are generated by the project, they will be disposed of in accordance with manufacture's labels and applicable city and state regulations.

K.

1. Describe the potential for exposure of people to excessive noise, light or glare caused by any phase of the project (construction or operations).
2. Describe any increase in vibrations or odor that may result from the project.

Because the project area is located in a highly urbanized area, noise associated with construction equipment will not significantly increase ambient noise levels. There are no permanent anticipated increases in light, glare, vibrations or odors.

If potential impacts have been identified, please provide the following:

- A description of how the proposed project would avoid, minimize, or mitigate identified impacts.

L. *Services*

1. Describe any increased need for the following services as a result of the project:
 - a. Water or sanitary sewer services
 - b. Storm sewer / Flood control features
 - c. Maintenance of pipes, culverts and manholes
 - d. Police services
 - e. Fire protection
 - f. Recreation or parks facilities
 - g. Libraries
 - h. Transportation improvements/traffic mitigation
 - i. Parking
 - j. Affordable housing
 - k. Open space/urban open land
 - l. Power or energy use
 - m. Telecommunications
 - n. Health care/social services
 - o. Trash removal or recycling services

All options include new landscape/irrigation systems which will increase the use of treated water. However, all irrigation systems will be low-water use, drip systems designed to City conservation standards. Option B may require some additional maintenance efforts of the proposed concrete box culvert, over Options A, C, D and E. All options result in a new multi-use path to be added to city inventories for maintenance activity including snow removal, repair and general maintenance.

2. Describe any impacts to any of the above existing or planned city services or department master plans as a result of this project. (e.g. budget, available parking, planned use of the site, public access, automobile/pedestrian conflicts, views)

None.

M. Special Populations

1. Describe any effects the project may have on the following special populations:
 - a. Persons with disabilities
 - b. Senior population
 - c. Children or Youth
 - d. Restricted income persons
 - e. People of diverse backgrounds (including Latino and other immigrants)
 - f. Sensitive Populations located near the project (e.g. adjacent neighborhoods or property owners, schools, hospitals, nursing homes)

This project will benefit all of the above populations by providing access and connections for pedestrians and bicyclists. The path will be designed to comply with the Americans with Disabilities Act and AASHTO multi-use path design guidelines.

If potential impacts have been identified, please provide the following:

- A description of how the proposed project would avoid, minimize, or mitigate identified impact.
- A description of how the proposed project would benefit special populations.

N. Economic Vitality

1. Describe how the project will enhance economic activity in the city or region or generate economic opportunities?
2. Describe any potential impacts to:

- a. businesses in the vicinity of the project (ROW, access or parking),
- b. employment,
- c. retail sales or city revenue and how they might be mitigated.

All options with improve multi-modal transportation along this stretch of Pearl Parkway and improved access to existing businesses and the Boulder Junction area, which can enhance economic activity and generate economic opportunities.

Option A has no effect on any private property, but does not accommodate future flood control needs. Options C and D permanently impact parking at 2525 Frontier Avenue which is located on an existing drainage easement. Options B and E, would only have temporary effects at this location. All options that incorporate flood control improvements would have a significant affect on existing land uses, and potential for redevelopment in areas affected by the Boulder Slough floodplain. This would have significant economic impacts.

**APPENDIX A -
MULTI-USE PATH NATURAL RESOURCES
ASSESSMENT MEMO**

July 5, 2012

To: Alex May, City of Boulder
George Tsiouvaras, TSH
Kyle Dorrenbacher, TSH

From: Mary L. Powell

Re: Pearl Parkway Federal Aid Project – 30th Street to Foothills Parkway, North side Multi-Use Path Natural Resources Assessment

Background

The City of Boulder is proposing to construct a multi-use path on the north side of Pearl Parkway from 30th Street to Foothills Parkway. On April 18, 2012, a biologist with ERO Resources Corporation (ERO) assessed the area within which project alternatives are proposed for the presence of sensitive natural resources that could make the current project concepts difficult or infeasible to implement or on which the alternatives could have a significant adverse effect. Potential sensitive natural resources include habitat for threatened or endangered species, raptor nests, unique wetlands or other sensitive vegetation communities, and use by regulated wildlife such as black-tailed prairie dog.

Existing Conditions

The study area is generally the north side of Pearl Parkway from 30th Street to Foothills Parkway (Figure 1). The project is located in Section 29, Township 1 North, Range 70 West of the 6th PM. The UTM coordinates of the approximate center of the project area are NAD 83: Zone 13N; 478703mE, 4430319mN. The approximate elevation of the study area is 5,250 feet above mean sea level.

The project area is located in a densely developed area in the City of Boulder. From west to east, the project area is surrounded by commercial and light industrial businesses. The Burlington Northern and Santa Fe Railroad and the combined North Boulder Farmer's and Left Hand irrigation ditches cut across the project area. East of the railroad, the Boulder Slough parallels the north side of Pearl Parkway from the combined ditches to the Foothills Parkway exit ramp, in an alignment similar to the proposed multi-use path. The slough conveys over flow from the combined North Boulder Farmer's and Left Hand ditches east to Goose Creek, which flows to Boulder Creek. Flows into the slough are regulated by the height of an overflow structure on the ditch. The slough typically flows only following storm events that exceed the capacity of the combined ditch. Some standing water is present when the slough is not conveying storm water.

Vegetation

East of the combined ditches, vegetation consists of a narrow strip of weedy species such as *Bassia scoparia* and introduced upland grasses. West of the combined ditches, both naturalized and maintained areas surround the Boulder Slough. The western end of the

Denver
1842 Clarkson St.
Denver, CO 80218
303.830.1188

Boise
3314 Grace St.
Boise, ID 83703
208.373.7983

Durango
1065 Main Ave., Ste. 200
Durango, CO 81301
970.422.2136

Western Slope
P.O. Box 932
161 South 2nd St.
Hotchkiss, CO 81419
970.872.3020

slough has an overstory of plains cottonwood (*Populus deltoides* subsp. *monilifera*) and other trees. There is also an upland patch of sandbar willow (*Salix exigua*) with understory of smooth brome (*Bromopsis inermis*) at the ditch overflow.

Along most of its length in the project area, the slough has been incorporated into the landscaping of office complexes. West of Frontier Avenue, the slough is a natural-bottom channel and the adjacent vegetation is not irrigated or regularly mowed. Upland vegetation in this area is dominated by smooth brome. East of Frontier Avenue, the slough is a concrete-lined trickle channel and the adjacent vegetation is irrigated and regularly mowed. Upland vegetation in this area is dominated by Kentucky bluegrass (*Poa pratensis*). There are 10 landscaping trees parallel to Pearl Parkway east of Frontier Avenue.

Wetland vegetation in the slough is present in patches along the channel and is dominated by reed canarygrass (*Phalaris arundinacea*), softstem bulrush (*Schoenoplectus lacustris*), and cattail patches. Patches of sandbar willow occur in the riprap east of Frontier Avenue.

The vegetation communities and species in the project area are not uncommon or sensitive for their type.

Wildlife

Use of the project area by wildlife is limited by the lack of vegetation. Vegetation that is present is sandwiched between Pearl Parkway and commercial development and is not buffered from ongoing disturbance associated with human activities. Wildlife species expected to use the corridor are those that are tolerant of urbanization and activity. Species likely to use the project area include common birds such as European starling, American robin, black-capped chickadee, black-billed magpie, and house sparrow and mammals including house mouse, red fox, raccoon, and fox squirrel.

Wildlife using the project area is not uncommon or designated as sensitive.

Sensitive Resources

Some natural resources are particularly sensitive to the effects of changes in the environment that result from human activities. In many cases, these resources are protected by federal, state, or local regulations. Wetlands, threatened and endangered species, migratory birds, and black-tailed prairie dogs are examples of sensitive and regulated natural resources.

The project area was assessed for the actual and potential presence of sensitive and regulated resources that may be affected by the proposed project alternatives.

Wetlands

As previously described, wetlands in the project area are associated with Boulder Slough. The functions of the wetlands are minimal due to species composition, regular maintenance, and their small size. Because the Boulder Slough is tributary to Goose and Boulder creeks, the slough and its wetlands may be jurisdictional waters of the U.S. regulated under the Clean Water Act. Boulder Slough is not mapped as a wetland regulated by the City of Boulder wetland protection ordinance.

Threatened and Endangered Species

During the April 2012 site visit, ERO assessed the study area for suitable habitat for federally listed threatened and endangered species protected under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (ESA). The project area does not fall within U.S. Fish and Wildlife Service (Service) habitat or survey guidelines for any of the species listed by the Service as potentially occurring in Boulder County (Table 1), so the project would have no effect on threatened or endangered species.

Table 1. Federally threatened, endangered, and candidate species potentially found in Boulder County or potentially affected by projects in Boulder County.

Common Name	Scientific Name	Status*	Habitat	Suitable Habitat Present
Mammals				
Canada lynx	<i>Lynx canadensis</i>	T	Climax boreal forest with a dense understory of thickets and windfalls	No
Preble's meadow jumping mouse	<i>Zapus hudsonius preblei</i>	T	Shrub riparian/wet meadows	No
Birds				
Interior least tern**	<i>Sterna antillarum athalassos</i>	E	Sandy/pebble beaches on lakes, reservoirs, and rivers	No habitat and no depletions anticipated
Mexican spotted owl	<i>Strix occidentalis</i>	T	Closed canopy forests in steep canyons	No
Piping plover**	<i>Charadrius melodus</i>	T	Sandy lakeshore beaches, river sandbars	No habitat and no depletions anticipated
Whooping crane**	<i>Grus americana</i>	E	Mudflats around reservoirs and in agricultural areas	No habitat and no depletions anticipated
Fish				
Greenback cutthroat trout	<i>Oncorhynchus clarki stomias</i>	T	Cold, clear, gravel headwater streams and mountain lakes	No
Pallid sturgeon**	<i>Scaphirhynchus albus</i>	E	Large, turbid, free-flowing rivers with a strong current and gravel or sandy substrate	No habitat and no depletions anticipated

Common Name	Scientific Name	Status*	Habitat	Suitable Habitat Present
Plants				
Colorado butterfly plant	<i>Gaura neomexicana</i> ssp. <i>coloradensis</i>	T	Subirrigated, alluvial soils on level floodplains and drainage bottoms between 5,000 and 6,000 feet in elevation	No
Ute ladies'-tresses orchid	<i>Spiranthes diluvialis</i>	T	Moist to wet alluvial meadows, floodplains of perennial streams, and around springs and lakes below 6,500 feet in elevation	No
Western prairie fringed orchid**	<i>Platanthera praeclara</i>	T	Moist to wet prairies and meadows	No habitat and no depletions anticipated

*T = Federally Threatened Species, E = Federally Endangered Species.

**Water depletions in the South Platte River may affect the species and/or critical habitat in downstream reaches in other counties or states.

Source: Service 2010.

Because Preble's meadow jumping mouse (Preble's) and Ute ladies'-tresses orchid (ULTO) are known to be present in wetland/riparian habitat in Boulder, the lack of habitat for these species in the project area is discussed in the following sections.

Preble's Meadow Jumping Mouse

Typically, Preble's occurs below 7,600 feet in elevation, generally in lowlands with medium to high moisture along permanent or intermittent streams and canals. Preble's occurs in low undergrowth consisting of grasses and forbs, in open wet meadows, riparian corridors near forests, or where tall shrubs and low trees provide adequate cover. Preble's typically inhabits areas characterized by well-developed riparian vegetation with relatively undisturbed grassland and a water source nearby.

ERO evaluated the project area and determined that suitable habitat is not present in the study area and Preble's would not be affected by work in the study area because —

- The irrigation ditch and Boulder Slough do not contain the well-developed riparian habitat typically associated with Preble's.
- The study area is isolated from other known populations of Preble's by urban development. The nearest known population of Preble's is located about 2.5 miles away on South Boulder Creek near Base Line Reservoir.
- Densely developed land surrounds the project site.

Because of these reasons, it is unlikely that the project area supports a population of Preble's or that Preble's moves through the corridor. Therefore, any work in the project area would have no effect on individual Preble's or the continued existence of the species.

Ute Ladies'-Tresses Orchid

Ute ladies'-tresses orchid occurs at elevations below 6,500 feet in moist to wet alluvial meadows, floodplains of perennial streams, and around springs and lakes where the soil is

seasonally saturated within 18 inches of the surface. Generally, the species occurs where the vegetative cover is relatively open and not overly dense or overgrazed.

ERO determined that the project area is not conducive to the establishment of Ute ladies'-tresses orchid and differs from the criteria of the Service's November 1992 *Interim Survey Requirements for Spiranthes diluvialis* for the following reasons:

- The irrigation ditch and Boulder Slough do not support the type of sub-irrigated wetlands with which Ute ladies'-tresses orchid is typically associated.
- Most of the riparian corridor is heavily shaded by tree canopy and would likely preclude the shade-intolerant orchid.
- Dry uplands, dominated by introduced species, and mowed areas surround the Boulder Slough.

Because of these reasons, it is unlikely that the project area supports a population of Ute ladies'-tresses orchid. Therefore, any work in the study area would have no effect on individuals or the continued existence of the species.

Other Sensitive Species and Wildlife

Habitat in the project area is typical for disturbed urban riparian habitat throughout the City of Boulder and surrounding areas. Although this type of habitat supports more species of wildlife than do habitats such as uplands or urban areas, there are no unique or particularly sensitive plant communities or wildlife species present. Migratory birds make the most use of the project area and are protected by the Migratory Bird Treaty Act (MBTA).

Migratory Birds

ERO assessed the project area for potential habitat and the presence of species protected by the MBTA. Migratory birds, as well as their eggs and active nests, are protected under the MBTA. In addition to the MBTA, Colorado Parks and Wildlife recommends establishing buffers around active raptor nests in which encroachment should be limited.

Migratory bird habitat typically includes trees and shrubs, but upland grasslands also are used for nesting. ERO did not observe any nests during the site visit, but the leafed out condition of the trees prevented a thorough survey. Although not seen during the site visit, it is likely that a least a couple of nests are present in the project area.

If the proposed project would require removing or disturbing trees and shrubs, the removal or disturbance should be done during the non-nesting season (April 1 through August 15) immediately prior to construction if possible; otherwise, a survey for active nests should be done prior to the work to ensure that active migratory bird nests are not present.

Other Wildlife

As with any human development, including multi-purpose trails, wildlife species sensitive to human disturbance are likely to decline in abundance or abandon the area, while other wildlife species adapted to urban development are likely to remain in the study area. Because of the extensive urbanization and high levels of human activity, construction and use of the multi-purpose trail would probably not further reduce wildlife use of the area. Overall, surrounding and continuing development contributes to a decline in the number and diversity of wildlife species nearby and to a change in species composition to favor species that adapt better to human disturbance.

Potential Impacts of Options

Five options for the new multi-use path from the railroad to Foothills Parkway were evaluated. The options include typical cross sections that would be used in one or both of Sections 1 (west of Frontier Avenue) and 2 (east of Frontier Avenue). The options vary in the extent of impacts each would have on the Boulder Slough and Pearl Parkway. In some cases, hybrids of cross section options could be constructed. All of the options include increasing the number of trees in the median. The following discussion focuses on options A through E that are depicted on graphics for the May 14, 2012 public open-house meeting.

Option A provides a minimum 10-foot wide multi-use path and 2-foot wide buffer while minimizing impacts to the existing stormwater conveyance in the Boulder Slough. This option provides no floodplain drainage improvements and is considered a minimum baseline option. Impacts to Pearl Parkway would include reducing the width of the westbound driving lanes. These reductions would allow the north curb line to be shifted to the south and the multi-use path to be installed with minimum impacts to stormwater conveyance in the Boulder Slough. This option includes installing a concrete retaining wall along the south bank of the Boulder Slough instead of installing a concrete box culvert as would be done under Options B. This option leaves trees west of Frontier Avenue, but would remove 10 existing trees along Boulder Slough east of Frontier Avenue.

Option B would consist of a minimum 10-foot wide multi-use path with an 8-foot wide landscaped detachment. To accommodate the trail and detachment, the widths of the westbound driving lanes would be reduced and Boulder Slough flows would be placed in a culvert. This option includes installing an 18-foot wide, 6-foot high concrete box culvert under the multi-use path to mitigate construction impacts on stormwater conveyance and incorporate 100-year floodplain drainage improvements in the Boulder Slough from the North Boulder Farmer's and Left Hand ditches to Foothills Parkway. Under this option, some trees west of Frontier Avenue would be removed, but the existing trees east of Frontier Avenue would remain.

Option C provides a minimum 10-foot wide multi-use path with an 8-foot wide detachment using different cross sections in project sections. In Section 1, a retaining wall would be constructed to form the south bank of Boulder Slough. A new open channel would be constructed with a 10-foot wide bottom and a 2.5:1 slope would form the north bank. In Section 2, because of more constricted space, Boulder Slough would be placed in an open channel with a 20-foot wide bottom and retaining walls on both banks. This option incorporates 100-year floodplain drainage improvements in both sections 1 and 2. Under this option, some trees in east of Frontier Avenue would be removed, but the existing trees east of Frontier Avenue would remain.

Option D has two cross sections. The Section 1 cross section includes an attached minimum 10-foot multi-use path. The width of westbound lanes would be reduced and the median would be narrowed and moved slightly south. The changes to the Pearl Parkway configuration would allow for the Boulder Slough to be an open channel with a 6-foot wide bottom and 2.5:1 sideslopes. The Section 2 cross section, used east of Frontier Avenue, would have a detached multi-use path that would be along the south edge of the existing low flow channel of the slough and would be inundated when stormwater flows exceeded a particular volume. This option incorporates 100-year

floodplain drainage improvements in both sections 1 and 2. Under this option, some trees in east of Frontier Avenue would be removed, but the existing trees east of Frontier Avenue would remain.

Option E would align the multi-use path north of Boulder Slough through Section 1. The Boulder Slough channel would be reconfigured into an open channel with a 10-foot wide bottom with a retaining wall forming the south bank and a 2.5:1 slope north bank. This option incorporates 100-year floodplain drainage improvements in section 1. The width of the westbound Pearl Parkway lanes would be reduced. Several trees would be removed in Section 1. Any Section 2 cross section from the other options could be used in Section 2.

Despite the differences in their final configurations, the five options would substantially disturb the Boulder Slough. In all options, virtually the entire length of the slough would be disturbed by either construction access or excavation for the retaining wall or the culvert. The exception is Option A, in which most of the slough would not be disturbed, but will also not provide 100-year floodplain drainage improvements along the Boulder Slough, which is a public safety concern. Although Option A minimizes impacts to the slough, it is the only option that would have no trees adjacent to the trail east of Frontier Avenue. The other options either leave the trees in place or replace removed trees.

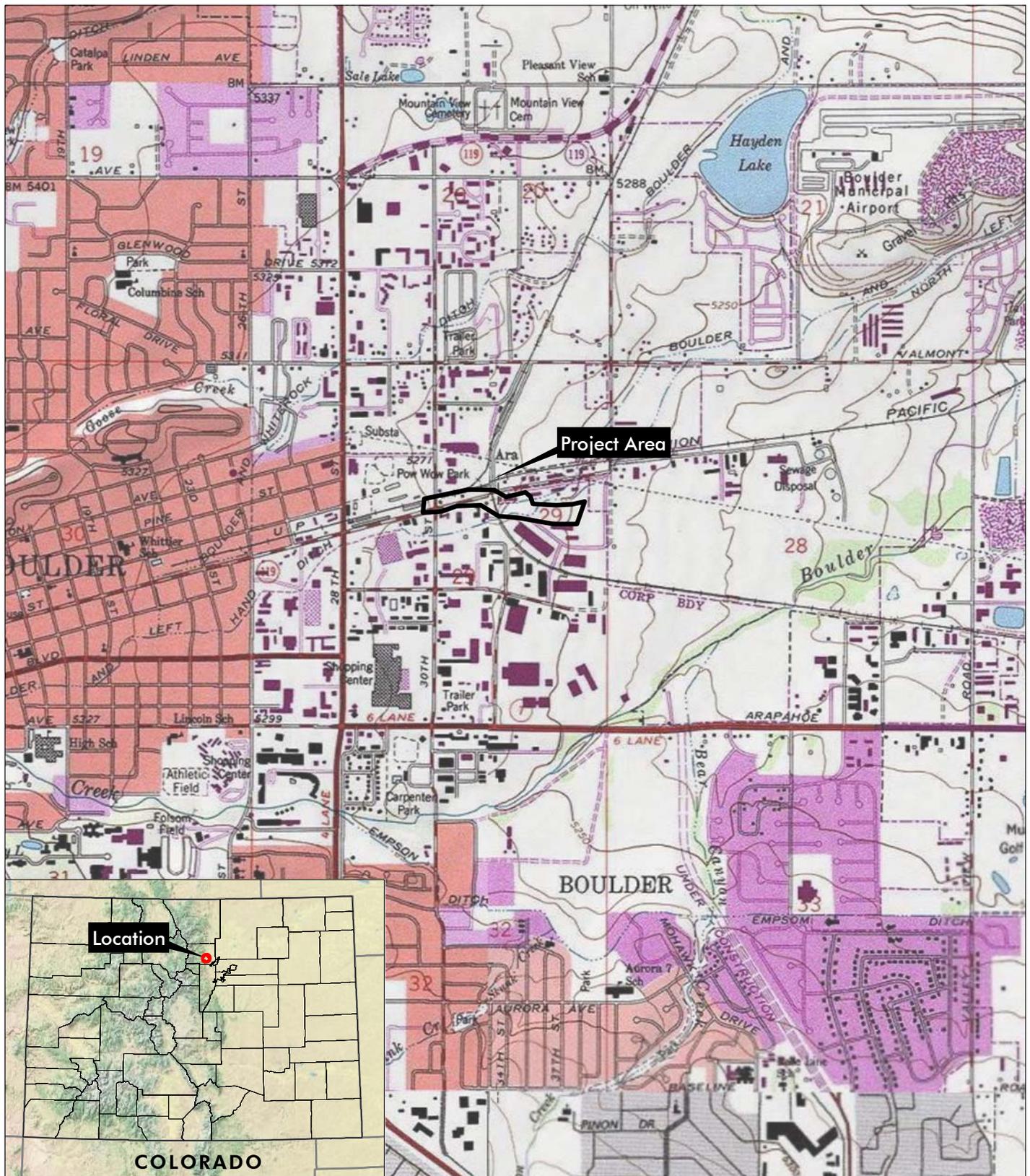
From a natural resources perspective, Option A is generally preferable because it would have the least impacts on the Boulder Slough. Drawbacks of Option A are that it would not provide 100-year drainage improvements and would have the least number of trees in the project reach at project completion. The other options would disturb virtually all of the Boulder Slough, but would provide 100-year drainage improvements along the slough and would retain landscaping trees north of Pearl Parkway.

Conclusions

Although riparian corridors are often important in urban areas where they can be used as movement corridors for larger mammal such as deer and for nesting by songbirds and raptors, the Boulder Slough has limited, low quality vegetation that provides marginal habitat for wildlife. As a result, the plant and wildlife species likely to be present in the project area are not unique or uncommon.

Option A would have a slightly smaller affect on natural resources, but none of the options evaluated for the proposed project would affect any unique or significant natural resources. There would be impacts to the Boulder Slough, which may be regulated under the Clean Water Act. The impacts would be addressed through the Clean Water Act Section 404 permitting processes. In the event an active nest is present, the City would comply with the MBTA and avoid unlawful take of migratory birds or active nests.

Based on a review of background information, the site visit, and professional experience, ERO determined that significant natural resources that would make the project infeasible are not likely to be present in the study area. There is no suitable habitat for federally listed threatened or endangered species. Although there is suitable nesting substrate, no nests were observed in the study area. It is likely that one or more nests were present but obscured from view by leaves. Wetlands associated with the Boulder Slough are limited in their extent and quality and the lateral extent of riparian trees and shrubs is limited due to encroachment by development.



Pearl Parkway Federal Aid Project – 30th Street to Foothills Parkway, North side Multi-Use Path

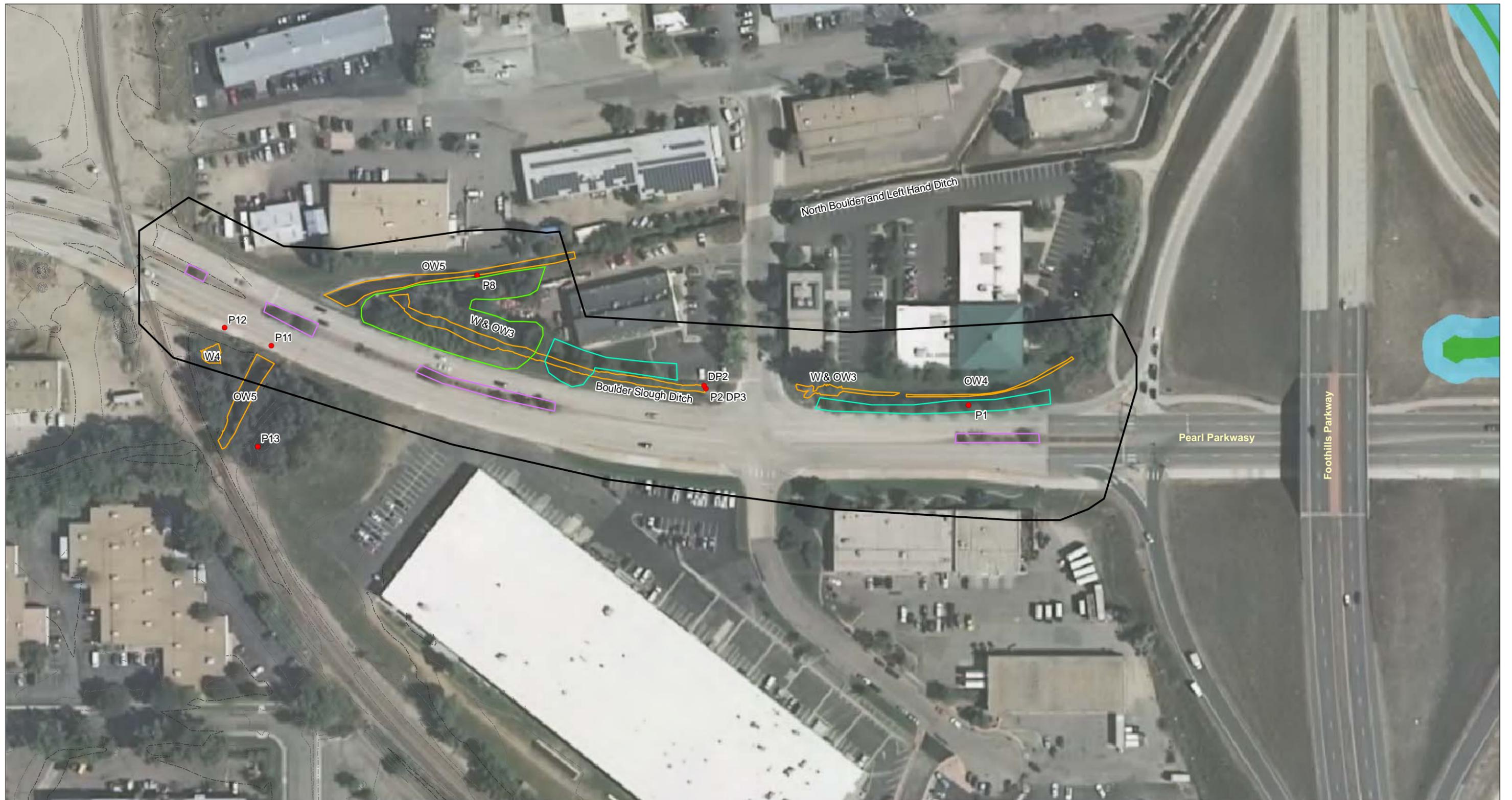
Section 29, T1N, R70W; 6th PM
 UTM NAD 83: Zone 13N; 478703mE, 4430319mN
 Latitude, Longitude: 40.023068°N, 105.249476°W
 USGS Niwot and Boulder, CO Quadrangles
 Boulder County, Colorado

**Figure 1
 Site Location**



Prepared for: TSH Consulting Engineers
 File: 5163 Figure 1.mxd [GS]
 May 2012





Pearl Parkway Federal Aid Project - 30th Street to Foothills Parkway, North Side Multi-Use Path

- Data Point
- Wetland/Open Water
- Boulder Regulatory Wetland
- Boulder Regulatory Wetland Buffer
- Landscaping Tree
- Median Tree
- Riparian Tree
- Study Area East of the Railroad

Image Source: Landiscor®, August 2011

**Figure 2
Natural Resources
East of the Railroad**

Prepared for: TSH Engineers
File: 5163 Figure 2.mxd (WH)
May 2012

