Appendix B:

Planning Process

Decision Making Process

The Upper Fountain Creek and Cheyenne Creek Flood Restoration Master Plan

Decision Making Process

DRAFT 6/19/14

Context Statement

The Upper Fountain Creek and Cheyenne Creek watersheds include _____ acres of predominately forested land on the west side of Colorado Springs known as the "Pikes Peak Region". These watersheds are a major source of water for eastern Teller County and western El Paso County municipalities and residents. With a diversity of public and private ownerships, the watersheds are a major regional tourist and recreational destination, as well as home for a large percentage of El Paso and Teller County residents.

The watersheds are characterized by extremes in temperature and precipitation, large elevation changes, steep gradients and diverse ecosystems rich with plant life and wildlife. At 14,110 feet, Pikes Peak is the highest point in the watersheds and has stunning views that inspired the writing of "America the Beautiful".

The recent summer of 2013 floods, coupled with the 2012 Waldo Canyon fire, have resulted in considerable transport of sediment and debris. The floods altered the Creek bed, banks, floodplains and structures and have led to extensive flood damage including property and infrastructure damage, erosion and sedimentation that resulted in a net loss of flood capacity. To identify strategies that will mitigate the effects of fire damage and flood damage in the watershed, a holistic restoration planning effort will provide effective and lasting protection of at risk assets, as well as the health, safety and welfare of the public.

Core Values	Critical Issues	Evaluation Criteria
Safety	• Concern About Potential Forest Fires • Concern About Potential Flooding • Public Health • Off Channel Flooding Localized in Neighborhoods • Actions in the Upper Watershed Effecting the Lower Watershed	1. Address safety of the public and residents? 2. Impacts downstream and off-channel?
Resiliency	• Reduce Future Flood Damage Risk • Provide Smarter Infrastructure Solutions • Improve Creek Stability	3. Provide sustainable solutions to reduce future flood damage risk and increases stability?
Constructability/Costs	• Find Funding for Future Implementation • Fiscally Responsible Costs • Funding for Regional Storm Water Management Needed • Long-term maintenance funding needed?	4. Create infrastructure investments that are reasonable to construct and and provide the best value for their lifecycle, function and purpose? 5. Meet industry and local standards?
Schedule	• Prioritize Strategies as Ctritical, Necessary or Desired	6. Critical, necessary or desired?
Community	• Protect Infrastructure, Tourism and the Economy • Concern About Increased Flood Insurance Costs • Consider Greenway and Open Space Opportunities • Communication with the Residents • Are the Historic CCC Structures of Value or a Risk to Future Flooding • Need for better Flood Monitoring • Collaboration Between Agencies and Communities	7. Provide access and protect opportunities for enhancements to tourist destinations, community facilities and neighborhoods? 8. Protect infrastructure at a reasonable cost? 9. Provide partnering and collaberation opportunities?
Environment	• Off Channel Flooding Localized in Neighborhoods • Reduce Future Sediment Loading and Hydrological Impacts to the Creek Due to 2012 forest fires • Reduce Sedimentation in General • Improve Water Quality Including Turbidity, E. Coli and Debris • Improve Wildlife Habitat • Increse Channel Capacity to Accommodate future flooding • Increase Storm Water Discharge Due to Development	10. Protect wildlife needs? 11. Protect Fountain Creek? 12. Provide the ability to seek additional funding for multi-benefits? 13. Compatible with forest fire mitigation? 14. Reduce sediment loading and hydrological impacts?
Sustainability	• Minimize Maintenance Requirements and Costs • Work With Natural Systems • This Planning Effort is the First Step or the Model for the Planning Direction Needed Throughout the Entire Watershed	15. Minimize the effort required to maintain the options? 16. Incorporate sustainability by using locally available materials and environmentally friendly processes?

Upper Fountain Creek Decision Making Matrix

Upper Fountain Creek Watersheds Decision Matrix

Draft 5/27/15

Created utilizing the criteria identified in the Decision Making Flow Chat and a Fair/Better/Best ranking system

ID	Criteria	UFCP-A1: Total Bank Erosion	UFCP-A2: Total Bank Erosion	UFCP-04, 05, 06, 07, 08: Crystola	UFCP-12: Unit Bank 63 Erosion (Large Slope Above Pinecliff Stables)	UFCP-16: Unit Bank 10 Erosion (Below Pinecliff Stables)	UFCP-23: Hotel Street (El Paso Ave.), Green Mountain Falls	UFCP-27, 28, 29, 30, 31: Sand Gulch Tributary Improvements	UFCP-41: Spring Street
				Fair / Better / Best					
	Evaluation Criteria								
1	Reduces flood risk to the public and residents by providing long term solutions that increase resiliency?	Fair - no significant flood reduction	Fair - no significant flood reduction	Better - some possible flood reduction	Fair - no significant flood reduction	Fair - no significant flood reduction	Best - elimination of backwater flooding neighborhood	Better - some possible flood reduction	Better - some possible flood reduction due to elimination of back water
2	Transfers risks or creates impacts downstream to infrastructure, channel, and storm water system?	Better - little transfer of risk	Better - little transfer of risk	Best - no transfer of risk downstream	Better - little transfer of risk	Better - little transfer of risk	Fair - may affect downstream properties by increasing flows downstream	Best - no transfer of risk downstream	Fair - may affect downstream properties by increasing flows downstream
3	Physical area of watershed mitigated?	Fair - high in watershed, low flood mitigation value	Fair - high in watershed, low flood mitigation value	Better - high in watershed	Fair - low flood mitigation value	Fair - low flood mitigation value	Better - bridge backwater mitigation	Best - large area of watershed mitigation, fire affected area mitigated	Fair - bridge backwater mitigation
4	Creates infrastructure investments that are reasonable to construct and provides the best value for their lifecycle, function and purpose?	Better - large bang for the buck, return on investment	Better - large bang for the buck, return on investment	Better - good return on investment	Best - large return on investment	Best - large return on investment	Fair - very costly, low return on investment	Better - good return on investment	Fair - very costly, low return on investment
5	Meets industry and local design standards?	Better - meets industry standards	Better - meets industry standards	Better - meets industry standards	Better - meets industry standards	Better - meets industry standards	Fair - unlikely to meet 100yr flood standards	Better - meets industry standards	Fair - unlikely to meet 100yr flood standards
6	Minimizes the effort required to maintain and repair the options?	Fair -long term maintenance will be required	Fair -long term maintenance will be required	Better - some long term maintenance will be required	Fair -long term maintenance will be required	Fair -long term maintenance will be required	Best - little to no long term maintenance will be required	Better - some long term maintenance will be required	Best - little to no long term maintenance will be required
7	Compatible with forest fire mitigation?	N/A	N/A	N/A	N/A	N/A	Fair	Better - sediment and run-off issues from fire	Fair
8	Provides access and protects opportunities for enhancements to tourist destinations, community facilities and neighborhoods?	Fair - no real benefit	Fair - no real benefit	Best - protects access to Crystola Canyon	Fair - no real bennifit	Fair - no real benefit	Best - protects access to tourist destinations and neighborhoods	Fair - no real benefit	Better - protects access to neighborhood
9	Provides funding, partnering and collaboration opportunities by meeting multiple objectives?	Fair - on private property, funding difficulties	Fair - on private property, funding difficulties	Best - likely funding opportunities in the future	Fair - on private property, funding difficulties	Fair - on private property, funding difficulties	Better	Best - likely funding opportunities in the future	Better
10	Can be supported by current land use regulations or revised land use regulations?	Best - current land use supported	Best - current land use supported	Fair - possible land purchase required, possible entitlement use issues	Best - current land use supported	Best - current land use supported	Better possible ROW widening required	Fair - possible land purchase required, possible entitlement use issues	Better possible ROW widening required
11	Impacts to water rights?	Best - no water rights impacts foreseen	Best - no water rights impacts foreseen	Fair - possible water rights issues do to proposed sediment basins	Best - no water rights impacts foreseen	Best - no water rights impacts foreseen	Best - no water rights impacts foreseen	Fair - possible water rights issues do to proposed sediment basins	Best - no water rights impacts foreseen
12	Protects the habitat, water quality and geomorphology of Fountain and Cheyenne Creeks?	Better - reduces sediment, improves WQ, improves geomorphology of creek	Better - reduces sediment, improves WQ, improves geomorphology of creek	Best - major benefit to habitat, WQ, and geomorphology of creek	Better - reduces sediment, improves WQ, improves geomorphology of creek	Better - reduces sediment, improves WQ, improves geomorphology of creek	Fair - bridge project, little benefit to habitat or WQ	Best - major benefit to habitat, WQ, and geomorphology of creek	Fair - bridge project, little benefit to habitat or WQ
13	Incorporates locally available materials and environmentally friendly processes?	Best - improvements likely to be locally available and environmentally friendly	Best - improvements likely to be locally available and environmentally friendly	Better - some aspects include concrete, pipe, blocks, etc.	Best - improvements likely to be locally available and environmentally friendly	Best - improvements likely to be locally available and environmentally friendly	Fair - mainly bridge materials	Better - some aspects include concrete, pipe, blocks, etc.	Fair - mainly bridge materials

Upper Fountain Creek Prioritization Table

Upper Fountain Creek Project List and Priority Ranking							
Project No.	Reach	Project Rank	Reach Alternatives	Planning Area	Map book Sheet Number	Project Description	Project Type [1]
UFCP-01	RUF030	High	N/A	UFC-A	1	Bank ID: 101 490.2 Tons Per Year	BANCS Restoration Priority
UFCP-02	RUF030	High	N/A	UFC-A	1	Bank ID: 102 2616.4 Tons Per Year	BANCS Restoration Priority
UFCP-03	RUF030	Moderate	Natural Channel Design	UFC-A	2	Bank ID: 104 1354.4 Tons Per Year	BANCS Restoration Priority
UFCP-04	RUF030	Moderate	Natural Channel Design	UFC-A	3	Potential Offline Detention Basin Approximately 26 Acre-Feet	Flood-risk Reduction
UFCP-05	RUF030	Moderate	Natural Channel Design	UFC-A	3	Bank ID: 105 945.6 Tons Per Year	BANCS Restoration Priority
UFCP-06	RUF030	Low	Natural Channel Design	UFC-A	3	Field Identified Active Head Cut Stabilization Required	Flood-risk Reduction
UFCP-07	RUF030	Immediate	Natural Channel Design	UFC-A	4	Flood Levee Wall Required	Flood-risk Reduction
UFCP-08	RUF030	High	Natural Channel Design	UFC-A	4	Potential Offline Sediment Basin Approximately 6 Acre-Feet	Flood-risk Reduction
UFCP-09	RUF030	High	Natural Channel Design	UFC-A	4	Culvert FC 03 Backwater Analysis	Crossing Analysis
UFCP-10	RUF030	High	Natural Channel Design	UFC-A	4	Culvert FC 04 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis
UFCP-11	RUF030	High	Natural Channel Design	UFC-A	4	Bank ID: 02 145.7 Tons Per Year	BANCS Restoration Priority
UFCP-12	RUF050	Moderate	Natural Channel Design	UFC-A	5	Bank ID: 5 422.8 Tons Per Year	BANCS Restoration Priority
UFCP-13	RUF050	Low	Natural Channel Design	UFC-A	5	Exposed Gas Line Vertical Relocation and Encasement Required	Exposed and Vulnerable Utilities
UFCP-14	RUF050	High	Natural Channel Design	UFC-A	5	Bank ID: 63 327.9 Tons Per Year	BANCS Restoration Priority
UFCP-15	RUF050	Moderate	Natural Channel Design	UFC-A	5	Bank ID: 6 230.2 Tons Per Year	BANCS Restoration Priority
UFCP-16	RUF050	Moderate	Natural Channel Design	UFC-A	5	Bank ID: 7 500.8 Tons Per Year	BANCS Restoration Priority
UFCP-17	RUF050	Moderate	Natural Channel Design	UFC-A	5	Bank ID: 8 101 Tons Per Year	BANCS Restoration Priority
UFCP-18	RUF050	Moderate	Natural Channel Design	UFC-A	5	Identified Project: (PineCliff Stables) Grade Control, Banks and Channel Stability	Grade Control, Bank and Channel Stability
UFCP-19	RUF050	High	Natural Channel Design	UFC-A	5	Bank ID: 10 241.3 Tons Per Year	BANCS Restoration Priority
UFCP-20	RUF050	Moderate	Natural Channel Design	UFC-A	6	Bank ID: 12 109.9 Tons Per Year	BANCS Restoration Priority
UFCP-21	RUF050	Moderate	Natural Channel Design	UFC-A	6	Bank ID: 13 239.0 Tons Per Year	BANCS Restoration Priority
UFCP-22	RUF050	Moderate	Natural Channel Design	UFC-A	6	Bank ID: 14 286.1 Tons Per Year	BANCS Restoration Priority
UFCP-23	RUF050	Low	Natural Channel Design	UFC-B	6	Area of Very Incised and Confined Channel Grade Control Required	Grade Control, Bank and Channel Stability
UFCP-24	RUF050	Moderate	Natural Channel Design	UFC-B	6,7	Bank ID: 20 663 Tons Per Year	BANCS Restoration Priority
UFCP-25	RUF130	Low	Natural Channel Design	UFC-B	7	Potential Tributary Detention Pond Location Approximately 10 Acre-Feet	Flood-risk Reduction
UFCP-26	RUF130	High	Natural Channel Design	UFC-B	7	Culvert FC 09 Fail - Overtops	Crossing Analysis
UFCP-27	RUF130	Low	Natural Channel Design	UFC-B	7	Vertical Banks Behind Houses Toe Stabilization / Bank Stabilization Required	Grade Control, Bank and Channel Stability
UFCP-28	RUF140	Moderate	Protect in Place	UFC-B	7	Bank ID: 62 362.2 Tons Per Year	BANCS Restoration Priority
UFCP-29	RUF140	Low	Protect in Place	UFC-C	8	Potential Detention Basin Approximately 20 Acre-Feet	Flood-risk Reduction
UFCP-30	RUF140	High	Protect in Place	UFC-C	9	Bank ID: 65 227.4 Tons Per Year	BANCS Restoration Priority
UFCP-31	RUF140	High	Protect in Place	UFC-C	9	Bank and Channel Stability, Grade Control, Culvert Capacity, Major Road Crossing Redesign and Overhanging Outlet)	Grade Control, Bank and Channel Stability
UFCP-32	RUF150	High	Protect in Place	UFC-C	9	Major Erosion w/ Blocked Culvert	Grade Control, Bank and Channel Stability
UFCP-33	RUF150	High	Protect in Place	UFC-C	9	Potential Detention Basin Approximately 6 Acre-Feet	Flood-risk Reduction
UFCP-34	RUF150	High	Protect in Place	UFC-C	9	Bank ID: 35 174.7 Tons Per Year	BANCS Restoration Priority
UFCP-35	RUF150	Low	Protect in Place	UFC-C	9	Culvert FC 12 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis
UFCP-36	RUF150	Moderate	Protect in Place	UFC-C	9	Bank ID: 37 143.1 Tons Per Year	BANCS Restoration Priority
UFCP-37	RUF150	Moderate	Protect in Place	UFC-C	9	Bank ID: 39 194.7 Tons Per Year	BANCS Restoration Priority
UFCP-38	RUF150	Moderate	Protect in Place	UFC-C	10	Bank ID: 41 148.8 Tons Per Year	BANCS Restoration Priority
UFCP-39	RUF150	Moderate	Protect in Place	UFC-C	10	Bank ID: 66 103 Tons Per Year	BANCS Restoration Priority
UFCP-40	RUF160	Moderate	Natural Channel Design	UFC-C	10	Bank ID: 47 597.9 Tons Per Year	BANCS Restoration Priority
UFCP-41	RUF160	Moderate	Natural Channel Design	UFC-C	11	Bank ID: 50 736.8 Tons Per Year	BANCS Restoration Priority
UFCP-42	RUF160	Moderate	Natural Channel Design	UFC-C	11	Bank ID: 52 176.8 Tons Per Year	BANCS Restoration Priority
UFCP-43	RUF160	Low	Natural Channel Design	UFC-C	11	Potential Offline Detention Basin Approximately 5 Acre-Feet	Flood-risk Reduction
UFCP-44	RUF160	High	Natural Channel Design	UFC-C	12	Culvert FC 13 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis
UFCP-45	RUF160	Moderate	Natural Channel Design	UFC-C	12	Bank ID: 57 113.2 Tons Per Year	BANCS Restoration Priority
UFCP-46	RUF260	Moderate	Protect In Place and Monitor	UFC-D	12	Culvert FC 14 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis
UFCP-47	RUF261	Low	Small Drop Struct. W/Toe Protection	UFC-D	16	Channel and Bank Stability, Grade Control	Grade Control, Bank and Channel Stability
UFCP-48	RUF270	Low	Small Drop Struct. W/Toe Protection	UFC-E	16	Existing Detention / Sediment Basin to be Maintained	Flood-risk Reduction
UFCP-49	RUF270	Moderate	Small Drop Struct. W/Toe Protection	UFC-E	17	Culvert FC 20 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis
UFCP-50	RUF270	Moderate	Small Drop Struct. W/Toe Protection	UFC-E	17	MSDSD - Facility Serpentine Dr. Small Sediment Basin Existing Culvert Replacement	Flood-risk Reduction
UFCP-51	RUF270	Low	Small Drop Struct. W/Toe Protection	UFC-E	17	Raise Elevation of Serpentine Dr. Primary Evacuation Route	Flood-risk Reduction
UFCP-52	RUF270	Low	Small Drop Struct. W/Toe Protection	UFC-E	17	Culvert FC 26 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis
UFCP-53	RUF270	Moderate	Small Drop Struct. W/Toe Protection	UFC-E	18	Proposed Conveyance Swale	Offline Drainage Improvements
UFCP-54	RUF270	Moderate	Small Drop Struct. W/Toe Protection	UFC-E	18	Existing 7' x 7' Box Culvert Is Undersized - Proposed Upsizing Replacement	Offline Drainage Improvements
UFCP-55	RUF270	Moderate	Small Drop Struct. W/Toe Protection	UFC-E	18	City of Manitou Project WCP III - Proposed Levee Walls	Flood-risk Reduction
UFCP-56	RUF270	Low	Small Drop Struct. W/Toe Protection	UFC-E	18	Culvert FC 33 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis
UFCP-57	RUF270	Low	Small Drop Struct. W/Toe Protection	UFC-E	18	Culvert FC 35 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis
UFCP-58	RUF350	Moderate	Natural Channel Design	UFC-E	18	Identified Cut Bank Stabilization Required	Other Identified Projects
UFCP-59	RUF350	Low	Natural Channel Design	UFC-E	18	Culvert FC 38 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis
UFCP-60	RUF350	Low	Natural Channel Design	UFC-E	18	Potential In-line / Off-line Drainage Basin Approximately 24 Acre-Feet	Flood-risk Reduction

Upper Fountain Creek Project List and Priority Ranking							
Project No.	Reach	Project Rank	Reach Alternatives	Planning Area	Map book Sheet Number	Project Description	Project Type [1]
UFCP-61	RUF350	Low	Natural Channel Design	UFC-E	18	Culvert FC 39 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis
UFCP-62	RUF350	Moderate	Natural Channel Design	UFC-E	19	Proposed Inlet With 3 - 36" Culverts	Offline Drainage Improvements
UFCP-63	RUF350	Moderate	Natural Channel Design	UFC-E	19	Raise Elevation of Manitou Ave. Primary Evacuation Route	Flood-risk Reduction
UFCP-64	RUF350	Low	Natural Channel Design	UFC-E	19	Culvert FC 41 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis
UFCP-65	RUF350	Low	Natural Channel Design	UFC-E	19	Potential Joint Use Park/Flood Relief Area Approximately 8 Acre-Feet	Flood-risk Reduction
UFCP-66	RUF360	Moderate	Natural Channel Design	UFC-E	19	Culvert FC 48 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis
UFCP-67	RUF360	Moderate	Natural Channel Design	UFC-E	20	Culvert FC 50 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis
UFCP-68	RUF360	Low	Natural Channel Design	UFC-E	20	Culvert FC 51 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis
UFCP-69	RUF360	Low	Natural Channel Design	UFC-E	20	Culvert FC 54 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis
UFCP-70	RUF360	Low	Natural Channel Design	UFC-E	21	Field Identified Cut Bank Stabilization Required	Other Identified Projects
UFCP-71	RUF360	Low	Natural Channel Design	UFC-E	21	Steep Banks	Other Identified Projects
UFCP-72	RUF360	Low	Natural Channel Design	UFC-E	21	Field Identified Approximate 10' Cut Bank Stabilization Required	Other Identified Projects
UFCP-73	RUF360	Moderate	Natural Channel Design	UFC-E	21	Culvert FC 55 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis
UFCP-74	RUF400	Low	Protect In Place and Monitor	UFC-E	21	Field Identified Approximate 6' Cutbank Stabilization Required	Other Identified Projects
UFCP-75	RUF400	Moderate	Protect In Place and Monitor	UFC-E	21	Heavily Damaged / Eroded Bank Approximately 15' Possibly Threatening Road Stabilization Required	Grade Control, Bank and Channel Stability
UFCP-76	RUF410	Moderate	Protect In Place and Monitor	UFC-E	22	Filed Identified Approximate 10' Cut Bank with Concrete Rubble Stabilization Required	Other Identified Projects
UFCP-77	RUF410	Moderate	Protect In Place and Monitor	UFC-F	22	Eroded Bank Approximately 10' May Threaten Road Stabilization Required	Grade Control, Bank and Channel Stability
UFCP-78	RUF410	Low	Protect In Place and Monitor	UFC-F	22	Steep / Vertical Banks	Other Identified Projects
UFCP-79	RUF410	Low	Protect In Place and Monitor	UFC-F	22	Steep Banks	Other Identified Projects
UFCP-80	RUF410	Low	Protect In Place and Monitor	UFC-F	22	Steep Banks	Other Identified Projects
UFCP-81	RUF410	Low	Protect In Place and Monitor	UFC-F	23	Field Identified Approximate 10' Cutbank Stabilization Required	Other Identified Projects
UFCP-82	RUF410	Moderate	Protect In Place and Monitor	UFC-F	23	Culvert FC 58 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis
UFCP-83	RUF410	Low	Protect In Place and Monitor	UFC-F	23	Steep Banks	Other Identified Projects
UFCP-84	RUF470	Low	Small Drop Struct. W/Toe Protection	UFC-F	23	Existing Engineered Bank (Failed)	Grade Control, Bank and Channel Stability
UFCP-85	RUF470	Low	Small Drop Struct. W/Toe Protection	UFC-F	24	Sediment Removal, Channel Stability, Grade Control	Grade Control, Bank and Channel Stability
UFCP-86	RUF470	Moderate	Small Drop Struct. W/Toe Protection	UFC-F	24	Existing Head Cuts Stabilization Required	Field Identified Head Cuts
UFCP-87	RUF470	Moderate	Small Drop Struct. W/Toe Protection	UFC-F	25	Culvert FC 60 Fail - Overtops, Does Not Meet Freeboard Capacity	Crossing Analysis

Cheyenne Creek Decision Making Matrix

Cheyenne Creek Watersheds Decision Matrix

Draft 5/27/15

Created utilizing the criteria identified in the Decision Making Flow Chat and a Fair/Better/Best ranking system

Fair | Better | Best

ID	Criteria	CC-P1 - Failing Grade Control Structure Below Evans Bridge	CC-P17 - Cheyenne Rd. Drainage Improvements	CC-P19 - Cheyenne Blvd. Drainage Improvements	CC-P18 - Stratton Ave Culvert Failed Capacity	CC-P22 - Cresta Road Culvert Failed Capacity	CC-P43 - Cheyenne Road Culvert Failed Capacity	CC-P46 - Trash and Debris Along South Bank	CC-P47 - Brookside St. Culvert Failed Capacity
	Evaluation Criteria								
1	Reduces flood risk to the public and residents by providing long term solutions that increase resiliency?	Fair - no flood risk reduction	Better - some flood risk benefit	Better - some flood risk benefit	Better - results in reduced back water	Better - results in reduced back water	Best - results in reduced back water, lower in the basin	Better - reduces risk of debris causing backups on downstream bridges	Best - results in reduced back water, lower in the basin
2	Transfers risks or creates impacts downstream to infrastructure, channel, and storm water system?	Better - little to no downstream impacts	Best - lower risks of downstream flooding	Best - lower risks of downstream flooding	Fair - opens up flow down stream, may have negative downstream impacts	Fair - opens up flow down stream, may have negative downstream impacts	Fair - opens up flow down stream, may have negative downstream impacts	Best - lower risks of downstream flooding	Best - bottom of the watershed, nothing downstream to be impacted
3	Physical area of watershed mitigated?	Fair - does not apply	Best - mitigates large area	Best - mitigates large area	Fair - smaller area	Fair - smaller area	Better - lower in the basin, large area	Fair - does not apply	Better - lower in the basin, large area
4	Creates infrastructure investments that are reasonable to construct and provides the best value for their lifecycle, function and purpose?	Best - easy to construct, big bang for the buck	Better - easy to construct, large for the buck, long term maintenance required	Better - easy to construct, large for the buck, long term maintenance required	Fair - very expensive, large investment for returns	Fair - very expensive, large investment for returns	Fair - very expensive, large investment for returns	Best - easy to address, big bang for the buck, large reduction in flood risk down stream	Fair - very expensive, large investment for returns
5	Meets industry and local design standards?	Best - likely to meet all standards	Best - likely to meet all standards	Best - likely to meet all standards	Fair - very unlikely to meet 100yr flood criteria	Better - unlikely to meet 100yr flood critera	Better - unlikely to meet 100yr flood criteria	Fair - very unlikely to meet 100yr flood criteria	Fair - very unlikely to meet 100yr flood criteria
6	Minimizes the effort required to maintain and repair the options?	Better - requires some ongoing maintenances	Fair - requires ongoing maintenance	Fair - requires ongoing maintenance	Best - requires little to no maintenance	Best - requires little to no maintenance	Best - requires little to no maintenance	Best - requires little to no maintenance	Best - requires little to no maintenance
7	Compatible with forest fire mitigation?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8	Provides access and protects opportunities for enhancements to tourist destinations, community facilities and neighborhoods?	Best - protects access to several tourist destinations, community facilities	Best - protects access to several tourist destinations, community facilities	Best - protects access to several tourist destinations, community facilities	Better - protects access to neighborhoods	Better - protects access to neighborhoods	Better - protects access to neighborhoods	Fair - no significant tourist destinations, neighborhood mainly commercial	Fair - no significant tourist destinations, neighborhood mainly commercial
9	Provides funding, partnering and collaboration opportunities by meeting multiple objectives?	Better - likely to be funded, involves private property owner and City collaborations	Best - definite funding opportunities, opportunity to meet multiple objectives, flood reduction, water quality improvements, etc.	Best - definite funding opportunities, opportunity to meet multiple objectives, flood reduction, water quality improvements, etc.	Better - likely to be funded, involves private property owner and City collaborations	Better - likely to be funded, involves private property owner and City collaborations	Best	Fair - unlikely to have funding opportunities, on private property	Better - likely to be funded, involves private property owner and City collaborations
10	Can be supported by current land use regulations or revised land use regulations?	Fair - limits of work may fall on private property	Better - work most likely within current right-of-way	Better - work most likely within current right-of-way	Fair - limits of work may fall on private property	Fair - limits of work may fall on private property	Fair - limits of work may fall on private property	Fair - limits of work may fall on private property	Fair - limits of work may fall on private property
11	Impacts to water rights?	Best - no impacts on water rights foreseen	Fair - possible water rights issue	Fair - possible water rights issue	Best - no impacts on water rights foreseen	Best - no impacts on water rights foreseen	Best - no impacts on water rights foreseen	Best - no impacts on water rights foreseen	Best - no impacts on water rights foreseen
12	Protects the habitat, water quality and geomorphology of Fountain and Cheyenne Creeks?	Best - preventing headcut will protect geomorphology and habitat	Better - will increase water quality of main stem	Better - will increase water quality of main stem	Fair - no water quality and little geomorphological benefit	Fair - no water quality and little geomorphological benefit	Fair - no water quality and little geomorphological benefit	Best - major improvement to water quality and habitat	Fair - no water quality and little geomorphological benefit
13	Incorporates locally available materials and environmentally friendly processes?	Fair - materials not local	Better - provides water quality treatment options local plantings, soils	Better - provides water quality treatment options local plantings, soils	Fair - materials not local	Fair - materials not local	Fair - materials not local	Best - major improvement to water quality	Fair - materials not local

Cheyenne Creek Prioritization Table

Cheyenne Creek Project List and Priority Ranking							
Project No.	Reach	Project Rank	Reach Alternatives	Planning Area	Map Book Sheet Number	Project Description	Project Type[1]
NC-P1	NCC1	Low	Protect in Place	NC-A	1	CSU Intake Structure Design-Build	Other Identified Projects
NC-P2	NCC2	Low	Protect in Place	NC-A	1	Field Identified Previously Repaired Bank Failed - Requires Stabilization	Grade Control, Bank and Channel Stability
NC-P3	NCC2	Low	Protect in Place	NC-A	1	Field Identified Storm Drain Outlet and Bank Require Stabilization	Grade Control, Bank and Channel Stability
NC-P4	NCC2	Moderate	Protect in Place	NC-A	1	N. Cheyenne Canyon Road Crossing 1 Failed Freeboard Criteria (overtops in 50yr)	Crossing Analysis
NC-P5	NCC2	Low	Protect in Place	NC-A	1	Field Identified 4' Cut Bank Requires Stabilization	Other Identified Projects
NC-P6	NCC2	Low	Protect in Place	NC-A	1	Field Identified 4' Cut Bank Requires Stabilization	Other Identified Projects
NC-P7	NCC2	Moderate	Protect in Place	NC-A	1	N. Cheyenne Canyon Road Crossing 2 Failed Freeboard Criteria (overtops in 50yr)	Crossing Analysis
NC-P8	NCC3	Moderate	Protect in Place	NC-A	1	Field Identified Previously Repaired Bank Failed - Requires Stabilization	Grade Control, Bank and Channel Stability
NC-P9	NCC3	Low	Protect in Place	NC-A	1	Field Identified Previously Repaired Bank Failed - Requires Stabilization	Grade Control, Bank and Channel Stability
NC-P10	NCC3	Low	Protect in Place	NC-A	1	Field Identified 7' Cutbank Requires Stabilization	Other Identified Projects
NC-P11	NCC4	Moderate	Protect in Place	NC-A	1	Field Identified Previously Repaired Bank Failed - Requires Stabilization	Grade Control, Bank and Channel Stability
NC-P12	NCC4	Moderate	Protect in Place	NC-A	1	Field Identified Storm Drain Outlet and Cut Bank Repair Required	Other Identified Projects
NC-P13	NCC4	Moderate	Protect in Place	NC-A	1	Field Identified 10' Concrete Drop Structure Failing - Requires Repair	Grade Control, Bank and Channel Stability
NC-P14	NCC4	Low	Protect in Place	NC-A	2	Field Identified Storm Inlet Requires Stabilization	Other Identified Projects
NC-P15	NCC4	Low	Protect in Place	NC-A	2	Field Identified 3' Drop Structure Requires Repair / Replacement	Grade Control, Bank and Channel Stability
NC-P16	NCC5	Low	Protect in Place	NC-A	2	Field Identified Storm Drain Outlet Repair Required	Other Identified Projects
SC-P1	SCC1	Low	Small Drop Structures w/ Toe Protection	SC-A	2	CSU Intake Structure Design-Build	Other Identified Projects
SC-P2	SCC3	Low	Small Drop Structures w/ Toe Protection	SC-A	2	Roadway, Bank and Channel Stability, Recreation and Access	Grade Control, Bank and Channel Stability
SC-P3	SCC3	Moderate	Small Drop Structures w/ Toe Protection	SC-A	2	Field Identified 3' Failing Drop Structure Requires Replacement	Grade Control, Bank and Channel Stability
SC-P4	SCC3	Low	Small Drop Structures w/ Toe Protection	SC-A	2	Field Identified Previously Repaired Bank Requires Monitoring - Additional Repair May Be Required	Grade Control, Bank and Channel Stability
SC-P5	SCC3	Low	Small Drop Structures w/ Toe Protection	SC-A	2	Field Identified Previously Repaired Bank Requires Monitoring - Additional Repair May Be Required	Grade Control, Bank and Channel Stability
SC-P6	SCC5	Moderate	Small Drop Structures w/ Toe Protection	SC-A	2	Field Identified Exposed Utility Requires Encasement and Stabilization	Exposed and Vulnerable Utilities
SC-P7	SCC5	Low	Small Drop Structures w/ Toe Protection	SC-A	2	Field Identified Cut Bank Requires Stabilization	Other Identified Projects
CC-P1	CC1	High	Protect in Place	CC-A	2	Failing Grade Control Structure Below Evans Bridge	Grade Control, Bank and Channel Stability
CC-P2	CC1	Moderate	Protect in Place	CC-A	2	Field Identified Headcut Requires Stabilization	Field Identified Headcuts
CC-P3	CC1	Low	Protect in Place	CC-A	3	Field Identified 5' Cutbank Requires Stabilization	Other Identified Projects
CC-P4	CC1	Low	Protect in Place	CC-A	3	Field Identified Exposed Utility Requires Encasement and Stabilization	Exposed and Vulnerable Utilities
CC-P5	CC1	Low	Protect in Place	CC-A	3	Field Identified 5' Cutbank Requires Stabilization	Other Identified Projects
CC-P6	CC1	Low	Protect in Place	CC-A	3	Field Identified Existing Rock Wall To Be Monitored - May Require Toe Protection	Other Identified Projects
CC-P7	CC1	Low	Protect in Place	CC-A	3	Field Identified Exposed Utility Requires Encasement and Stabilization	Exposed and Vulnerable Utilities
CC-P8	CC1	Moderate	Protect in Place	CC-A	3	Field Identified Flooding Issue - Recommend Levee Protection Wall	Flood-Risk Reduction
CC-P9	CC1	Low	Protect in Place	CC-A	3	Field Identified Cutbank Requires Stabilization	Other Identified Projects
CC-P10	CC1	Moderate	Protect in Place	CC-A	3	Cheyenne Blvd. Drainage Improvements	Offline Drainage Improvements
CC-P11	CC1	Moderate	Protect in Place	CC-A	3	Potential Offline Detention Basin Approximately 11 Acre-Feet	Flood-Risk Reduction
CC-P12	CC1	Moderate	Protect in Place	CC-A	3	Field Identified Headcut Requires Stabilization	Field Identified Headcuts
CC-P13	CC1	Moderate	Protect in Place	CC-A	3	Field Identified Headcut Requires Stabilization	Field Identified Headcuts
CC-P14	CC2	Moderate	Small Drop Structures w/ Toe Protection	CC-B	3	Mayhurst Ave Culvert Fail - Overtops, Does Not Meet Freeboard Criteria	Crossing Analysis
CC-P15	CC2	Moderate	Small Drop Structures w/ Toe Protection	CC-B	3	Field Identified Failing Energy Dissipation Structure Requires Response	Other Identified Projects
CC-P16	CC2	Low	Small Drop Structures w/ Toe Protection	CC-B	3	Field Identified Exposed Utility Requires Encasement and Stabilization	Exposed and Vulnerable Utilities
CC-P17	CC2	High	Small Drop Structures w/ Toe Protection	CC-B	3	Cheyenne Road Drainage Improvements	Offline Drainage Improvements
CC-P18	CC2	High	Small Drop Structures w/ Toe Protection	CC-B	3	Stratton Ave Culvert Fail - Overtops, Backwater	Crossing Analysis
CC-P19	CC2	High	Small Drop Structures w/ Toe Protection	CC-B	3	Cheyenne Blvd. Drainage Improvements	Offline Drainage Improvements
CC-P20	CC2	Moderate	Small Drop Structures w/ Toe Protection	CC-B	3	Cheyenne Blvd. Drainage Improvements Demonstration Project	Offline Drainage Improvements
CC-P21	CC3	Moderate	Small Drop Structures w/ Toe Protection	CC-B	3	Identified Utility Requires Encasement and Stabilization	Exposed and Vulnerable Utilities
CC-P22	CC2	Moderate	Small Drop Structures w/ Toe Protection	CC-B	3	Field Identified Headcut - Requires Monitoring	Field Identified Headcuts
CC-P23	CC3	High	Protect in Place	CC-C	3	Cresta Road Culvert Fail - Overtops, Does Not Meet Freeboard Criteria	Crossing Analysis
CC-P24	CC3	Low	Protect in Place	CC-C	4	Field Identified Headcut Requires Stabilization	Field Identified Headcuts
CC-P25	CC3	Moderate	Protect in Place	CC-C	4	Field Identified Headcut Requires Stabilization	Field Identified Headcuts

Notes:

[1]see project identification section of report

Cheyenne Creek Project List and Priority Ranking							
Project No.	Reach	Project Rank	Reach Alternatives	Planning Area	Map Book Sheet Number	Project Description	Project Type[1]
CC-P26	CC4	Moderate	Protect in Place	CC-C	4	Identified Utility Requires Encasement and Stabilization	Exposed and Vulnerable Utilities
CC-P27	CC3	Low	Protect in Place	CC-C	4	Field Identified Exposed Utility Requires Encasement and Stabilization	Exposed and Vulnerable Utilities
CC-P28	CC3	Low	Protect in Place	CC-C	4	Field Identified 4' Cut Bank Requires Stabilization	Other Identified Projects
CC-P29	CC3	Moderate	Protect in Place	CC-C	4	Potential Offline Detention / Sediment Basin Approximately 30 Acre-Feet	Flood-Risk Reduction
CC-P30	CC3	Moderate	Protect in Place	CC-C	4	Potential Offline Detention / Sediment Basin Approximately 5 Acre-Feet	Flood-Risk Reduction
CC-P31	CC3	Moderate	Protect in Place	CC-C	4	Field Identified Headcut Requires Stabilization	Field Identified Headcuts
CC-P32	CC3	Moderate	Protect in Place	CC-C	4	Field Identified Headcut Requires Stabilization	Field Identified Headcuts
CC-P33	CC3	Low	Protect in Place	CC-C	5	Field Identified Cutbank Requires Stabilization	Other Identified Projects
CC-P34	CC3	Moderate	Protect in Place	CC-C	5	Field Identified Head Cut Requires Stabilization	Other Identified Projects
CC-P35	CC3	Low	Protect in Place	CC-C	5	Field Identified Cutbank Requires Stabilization	Other Identified Projects
CC-P36	CC3	Low	Protect in Place	CC-C	5	Field Identified Cutbank Requires Stabilization	Other Identified Projects
CC-P37	CC4	Low	Small Drop Structures w/ Toe Protection	CC-D	5	Alsace Way Culvert Fail - Overtops, Does Not Meet Freeboard Criteria	Crossing Analysis, Exposed and Vulnerable Utilities
CC-P38	CC4	Moderate	Small Drop Structures w/ Toe Protection	CC-D	5	Field Identified 3' Cutbank Requires Stabilization	Other Identified Projects
CC-P39	CC5	Low	Protect in Place	CC-D	5	Manor Lane Culvert Fail - Backwater Flooding	Crossing Analysis, Exposed and Vulnerable Utilities
CC-P40	CC5	Moderate	Protect in Place	CC-D	5	Field Identified Failing Drop Structure Requires Stabilization	Grade Control, Bank and Channel Stability
CC-P41	CC5	Low	Protect in Place	CC-D	5	Field Identified Headcut Requires Stabilization	Field Identified Headcuts
CC-P42	CC5	Moderate	Protect in Place	CC-D	5	Woodburn St Culvert Fail - Overtops, Does Not Meet Freeboard Criteria	Crossing Analysis, Exposed and Vulnerable Utilities
CC-P43	CC5	Low	Protect in Place	CC-D	5	Field Identified Exposed Utility Requires Encasement and Stabilization	Exposed and Vulnerable Utilities
CC-P44	CC5	Moderate	Protect in Place	CC-D	5	Field Identified Failing Existing Rock Drop Structure Requires Stabilization	Grade Control, Bank and Channel Stability
CC-P45	CC6	High	Small Drop Structures w/ Toe Protection	CC-E	6	Cheyenne Road Culvert Fail - Overtops, Does Not Meet Freeboard Criteria	Crossing Analysis, Exposed and Vulnerable Utilities
CC-P46	CC7	Moderate	Small Drop Structures w/ Toe Protection	CC-E	6	Identified Utility Requires Encasement and Stabilization	Exposed and Vulnerable Utilities
CC-P47	CC8	Moderate	Small Drop Structures w/ Toe Protection	CC-E	6	Identified Utility Requires Encasement and Stabilization	Exposed and Vulnerable Utilities
CC-P48	CC6	Low	Small Drop Structures w/ Toe Protection	CC-E	6	Field Identified 7' Cutbank Requires Stabilization	Other Identified Projects
CC-P49	CC6	Low	Small Drop Structures w/ Toe Protection	CC-E	6	Field Identified Headcut Requires Stabilization	Field Identified Headcuts
CC-P50	CC7	Immediate	Protect in Place	CC-E	6	Trash and Debris Along South Side of Bank	Other Identified Projects
CC-P51	CC7	High	Protect in Place	CC-E	6	Brookside St. Fail - Backwater Flooding	Crossing Analysis
CC-P52	CC6	Moderate	Protect in Place	CC-E	6	Arvada St. Fails in 50 Year, Large Backwater	Crossing Analysis
CC-P53	CC8	Low	Small Drop Structures w/ Toe Protection	CC-E	6	Field Identified Existing Rock Drop Structure Requires Monitoring	Grade Control, Bank and Channel Stability
CC-P54	CC8	Low	Small Drop Structures w/ Toe Protection	CC-E	6	Field Identified 6' Cutbank Requires Stabilization	Other Identified Projects
CC-P55	CC8	Moderate	Small Drop Structures w/ Toe Protection	CC-E	6	I-25 South Ramp Backwater Flooding	Crossing Analysis
CC-P56	CC8	Moderate	Small Drop Structures w/ Toe Protection	CC-E	6	Field Identified Existing Parking Lot Runoff Detention Basins Require Rehabilitation	Flood-Risk Reduction
CC-P57	CC8	Low	Small Drop Structures w/ Toe Protection	CC-E	6	Field Identified Eroding Bank Requires Stabilization	Grade Control, Bank and Channel Stability
CC-P58	CC8	Low	Small Drop Structures w/ Toe Protection	CC-E	6	Field Identified Eroding Bank Requires Stabilization	Grade Control, Bank and Channel Stability
CC-P59	CC8	Low	Small Drop Structures w/ Toe Protection	CC-E	6	Field Identified Existing Rock Drop Structure Requires Monitoring	Grade Control, Bank and Channel Stability

Notes:

[1]see project identification section of report