



Appendix C Context Sensitive Solutions

Context Sensitive Solutions

Introduction

The I-70 Mountain Corridor Context Sensitive Solutions (CSS) project brought together a multidisciplinary, multi-interest stakeholder group to discuss, debate, and capture what they respect and will work to preserve in the corridor. These values were captured and presented in the I-70 Mountain Corridor CSS Guidance.

The Context Statement and Core Values for the corridor provide direction to achieve improvements that exceed expectations by incorporating goals for agencies, communities, and users. Guidance was developed for use on studies, designs, and construction projects in the I-70 Mountain Corridor to ensure that planners, designers, and constructors incorporate these values into their choices.

Because the Twin Tunnels represent a point of constriction for all future improvements, in February 2011, a team of stakeholders and technical experts met to discuss the mobility and safety issues at the Twin Tunnels area just east of Idaho Springs on the I-70 Mountain Corridor. The week-long visioning workshop followed the I-70 Mountain Corridor 6-Step Process and developed recommended improvements for the section of I-70 between the City of Idaho Springs and the bottom of Floyd Hill. The recommendation from the workshop included widening the eastbound bore of the Twin Tunnels to three lanes and flattening curves to the east of the tunnel. These recommendations provided the foundation for the Proposed Action evaluated in the Twin Tunnels Environmental Assessment (EA).

The I-70 Twin Tunnels Project is one of the first Tier 2 projects on the I-70 Mountain Corridor. Project development followed the I-70 Mountain Corridor CSS Guidance developed by Colorado Department of Transportation to ensure a collaborative, interdisciplinary approach to decision-making and consistency with the unique context of the corridor. It is the first I-70 Tier 2 project to proceed into the National Environmental Policy Act (NEPA) process. This document describes the application of the I-70 Mountain Corridor CSS Guidance to the Twin Tunnels Project and describes how the use of CSS and the project Context Statement helped shape the final recommended action and advance the project's Core Values.

Defining the Context and Core Values for the Twin Tunnels

The recommended improvements from the Tunnel Visioning Workshop were advanced into the NEPA process (an Environmental Assessment) that integrated the CSS Guidance. Based on the I-70 Mountain Corridor CSS Guidance as defined on the website (www.i70mtncorridorcss.com) a Project Leadership Team (PLT) and a Technical Team (TT) were formed to guide the CSS 6-Step Process and develop recommendations consistent with Context and Core Values of the I-70 Corridor. The PLT developed a Context Statement and Core Values for the project. The Context Statement and Core Values were presented to the TT and the public for their review and endorsement.

A Context Statement seeks to capture in words the special qualities and attributes that define a place as unique. It should capture in words that which was true fifty years ago and that which must be considered during the development of improvements in order to sustain truth in those same words for fifty years to come. Core Values can be seen as goals for the project and improvement should strive to meet or enhance every Core Value. The Context Statement and Core Values for the Twin Tunnel Project helped to frame the unique context of the project area and the values that should be considered in decision-making.

I-70 Twin Tunnels Context Statement

I-70 is Colorado's only east-west Interstate, providing a link over the Continental Divide, interstate commerce and mountain access.

Blasted through a geological feature, the Twin Tunnels symbolize Colorado's historic endeavors to improve access to and from the mountains. The tunnels now are a constriction to travel and create a safety problem.

The Twin Tunnels are a gateway for arriving and departing the mountains, provide a natural crossing for wildlife and connect local communities to national and regional services. Running parallel to I-70 is Clear Creek, a natural and recreational resource.

Core Values

- ◆ **Safe** travel for people and goods. **Safety** for emergency responders and maintenance workers. A safe crossing for wildlife.
- ◆ **Mobility** through safe and reliable transportation facilities.
- ◆ A **gateway** to the Mountain Mineral Belt, historic Idaho Springs and Front Range communities.
- ◆ **Wildlife** habitat, migration routes and access to Clear Creek.
- ◆ **Clear Creek**, a quality water source, recreational asset, aquatic resource, fisheries habitat and a defining natural feature of the corridor.
- ◆ **Tourist destinations and community facilities**, including the Scott Lancaster Trail and Bridge, the water treatment plant, the planned Clear Creek Greenway, the adjacent frontage road, and Clear Creek.
- ◆ **History** as a defining element of Clear Creek County; celebrating mining, mining towns, and the first successful tunneling operation as part of the construction of I-70 west through Colorado's mountains.

Applying the Context Statement and Core Values

The Twin Tunnels Project PLT and TT worked closely with the Project Team to have the Context Statement and Core Values influence the EA Purpose and Need Statement and the recommended actions, which were folded into the EA. This process led to a number of alignment and design concepts that advanced the Core Values in the overall solution.

Examples of how the proposed solution respects the Context and Core Values include an alignment that does not impact the 100-year or 2-year floodplain of Clear Creek and improves wildlife permeability and access to the creek. CDOT and Federal Highway Administration worked closely with the City of Idaho Springs and Clear Creek County (CCC) community to identify and maintain the community objectives for the Scott Lancaster Bridge, support recreational opportunities along the Clear Creek Greenway, and accommodate economic and recreational needs such as rafting through the project area, while meeting the regulatory requirements of the NEPA process.

Planning objectives and commitments in the Stream and Wetland Ecological Enhancement Program and A Landscape-Level Inventory of Valued Ecosystem Components were advanced through Issues Task Forces and by the PLT and TT. Opportunities for implementing early recommendations from the Clear Creek Sediment Control Action Plan (SCAP) and the identification of in-stream modifications to enhance fish habitat were identified. The proposed configuration of the new bridge over Clear Creek at Hidden Valley will accommodate improved wildlife access and preserve future options for the Clear Creek Greenway. By maintaining the current alignment of I-70, the improvements are contextually consistent with the historic alignment and sensitive to the social, environmental, and aesthetic character of the project area.

Table 1 tracks the Core Values for the project and the design elements and considerations that resulted from their application to the Twin Tunnels Project.

Table 1. Summary of Twin Tunnels Core Values and Design Elements

Twin Tunnel Stakeholders' Core Values	Realizing the Core Values in the Design
<p>Safe travel for people and goods. Safety for emergency responders and maintenance workers. A safe crossing for wildlife.</p>	<ul style="list-style-type: none"> ▶ The design will address safety by improving curves at the highest accident location and by improving sight distance. ▶ The design of the corridor is for a consistent 50 mph design speed and will be signed accordingly. ▶ Outside shoulder width of 10 feet will be consistent through the project. ▶ Emergency vehicles will be able to use the consistent 10 foot outside shoulder to respond to incidents. ▶ Superelevation on reconstructed curves will be limited to 8% in accordance with current design practice. ▶ The managed lane option has been designed to provide for safe travel and safety of emergency responders. ▶ Fencing has been added and enhancements (such as replacing a concrete bottom of a culvert with a natural substrate) included to improve safety of wildlife crossings.
<p>Mobility through safe and reliable transportation facilities.</p>	<ul style="list-style-type: none"> ▶ The improvements will address congestion by widening the eastbound tunnel bore and softening the portal, and by adding a third lane from East Idaho Springs to Floyd Hill. ▶ The improvements will significantly improve travel times during peak periods (Sunday afternoon) and reduce the duration of the congested peak period by removing the bottleneck at the Twin Tunnels and providing a third lane between the tunnels and the existing three-lane section at Floyd Hill. ▶ The managed lane option would provide a more consistently reliable trip time.
<p>A primary access and visual gateway to the Mountain Mineral Belt, historic Idaho Springs, and Front Range communities.</p>	<ul style="list-style-type: none"> ▶ The improvements will address access by widening the eastbound bore and softening the portal, and by adding a third lane from East Idaho Springs to Floyd Hill. ▶ The portal design will reflect the context of the area. ▶ The eastbound improvements do not affect the gateway to Idaho Springs in the westbound direction.
<p>Wildlife, wildlife habitat, migration routes, and access to Clear Creek.</p>	<ul style="list-style-type: none"> ▶ Accommodations for wildlife migration and creek access are included in the Proposed Action. ▶ Lighting in the corridor will not be increased, and any replacement lighting installations will follow "dark skies" objectives.
<p>Clear Creek, as a clean, high-quality water resource, a recreational asset, an aquatic resource with sustainable fisheries' habitat, a drinking water source, and a defining natural feature of the corridor.</p>	<ul style="list-style-type: none"> ▶ The proposed action was developed to be completely outside the 100-year flood plain. ▶ The Proposed Action does not permanently affect the banks or riparian areas along Clear Creek (as measured by the 2-year floodplain). ▶ Any loss of riparian habitat or vegetation during construction will be replaced. ▶ Water quality impacts, fisheries, and aquatic habitat impacts have been analyzed, coordination has occurred with Colorado Parks and Wildlife representatives, and mitigation incorporated to address impacts. ▶ The improvements address issues identified through the SWEEP Issues Task Force and incorporate elements from the draft Clear Creek Sediment Control Action Plan, including: <ul style="list-style-type: none"> – New sediment control facilities to treat stormwater runoff from the highway – New spill containment facilities in locations where hazardous materials have been spilled into Clear Creek

Table 1. Summaries Project Core Values and Design Elements Continued

Twin Tunnel Stakeholders' Core Values	Realizing the Core Values in the Design
Tourist destinations and community facilities , including the Scott Lancaster Trail and Bridge, the waste-water treatment plant, the planned Clear Creek Greenway, the frontage road, and Clear Creek.	<ul style="list-style-type: none"> ▶ Restoration of the game check area impacted by the construction detour will include elements consistent with and appropriate to Clear Creek County's long term plan for the area. ▶ Impacts to the CCC Greenway have been analyzed and enhancements (such as replacement of impacted vegetation) included in the design.
History as a defining element of Clear Creek County. Celebrating the cultural resources associated with mining and mining towns, and the first successful tunneling operation as part of the construction of I-70 west through Colorado's mountains.	<ul style="list-style-type: none"> ▶ By maintaining the current alignment of I-70, the improvements are contextually consistent with the historic alignment. ▶ Changes to the historically significant tunnels have been evaluated, and mitigation measures will be implemented to honor the transportation history of the Corridor. ▶ Locally important historic mining sites have been identified and will be protected from damage during construction.

Applying the Design Criteria

The I-70 Mountain Corridor CSS Guidance includes Design Criteria for project development and design. The proposed action meets all of the Design Criteria except the design speed. Given the limits of the project and the current design speed in the corridor, it was not possible to meet this criterion. Decisions regarding the ultimate design speed for the I-70 Mountain Corridor require comprehensive consideration of the alignment beyond the physical limits of the Twin Tunnels Project and realignment of both the eastbound and westbound lanes in this segment to an ultimate configuration.

The Design Criteria addressed by this project include:

- ◆ Corridor Design Character
- ◆ Integrated and Complete Design
- ◆ Partnerships to Create the Corridor
- ◆ Use of the Programmatic Environmental Impact Statement (PEIS)
- ◆ Corridor Wide Projects—Integrated with Corridor Wide efforts
- ◆ Design Speed
- ◆ Alignment
- ◆ Slope, Cut, and Fill
- ◆ Disturbance
- ◆ Rock Cut
- ◆ Bridge Structures
- ◆ Sound Attenuations

These criteria lead to design elements in the proposed project consistent with the project context. Some notable examples of how the Design Criteria lead to a superior solution include maintaining the vertical or horizontal median separation throughout the project, limiting disturbance areas to historic disturbance limits, integrating wildlife and water quality features consistent with the Context Statement and Core Values, and reducing visual effects of cut and fill and retaining walls.

Table 2 tracks the application of the Design Criteria and the resulting outcomes.

Table 2. Application of Design Criteria to the Proposed Project

Design Criteria	Was this Design Criterion met on this project?	Results
Corridor Design Character	Yes	The engineering of the road reflects the creek and the median. The Aesthetic Guidelines must be considered. The design of the portal should be simple and integrated into the corridor.
Integrated and Complete Design	Yes	All facilities needed for this design are included in the conceptual layout. This includes consideration of disposal of the rock from tunnel blasting, water quality treatments, wildlife crossings, life cycle costs, and long-term maintenance. The Construction Management/General Contracting approach, as defined and discussed in the EA, is supportive of this criterion because the design and the construction methods are integrated before project construction begins.
Partnerships to Create the Corridor	Yes	County support for the use of CR 314 for the eastbound I-70 construction detour. County support in right-of-way acquisition Considerations for joint planning for the roadway and Greenway improvements
Using the PEIS	Yes	This project is a specific highway improvement identified in the PEIS and Record of Decision. The improvements have been carefully designed so as not to preclude future projects identified in the PEIS Preferred Alternative, such as westbound improvements, the Advanced Guideway System, or a future decision on Corridor design speeds (of 55 mph, 65 mph, or a variance).
Corridor Wide Projects– Integrated with Corridor Wide Efforts	Yes	SWEEP, ALIVE, Greenway, chain stations, Clear Creek SCAP, wetlands bank, transportation demand management/transportation systems management strategies
Design Speed	No	No design exception is required because this is a safety and congestion relief project that is not addressing the design speed for the area. Project has been designed to preserve options for future design speed decision.
Alignment	Yes - Separate	No design exception is required because separate alignments already exists, median was not reduced in width, and the vertical separation between lanes was not reduced.
Slope Cut and Fill	Yes	The disturbance area is less than 40ft from the edge of the roadway. All slopes are 2.5:1 or flatter. All walls over 12ft are below the roadway.
Disturbance	Yes	The construction disturbance will not go beyond the historic disturbance area.
Rock Cut	Yes	A Geotechnical Report was completed and used in the design of the tunnel and retaining walls.
Bridge Structures	Yes	Bridge structures will not include slope paving and all slopes under the bridges will be 2.5:1 or flatter.
Sound Attenuations	Yes (If needed)	One noise barrier is included to reduce noise impacts at the Scott Lancaster Bridge and Trail; CDOT coordinated with Clear Creek County, the owner of the trail, to include noise wall in design.

Carrying CSS into the Design Phase

The CSS process in the Environmental Assessment led to improved solutions through a collaborative, multidisciplinary approach to project development. A number of commitments and design elements, identified in the project development phase, need to be developed more fully during the design phase of the Twin Tunnels Project. Continuity of the CSS process will include ongoing involvement of the Project Leadership Team in the design phase, formation of a Technical Team specific to the technical needs of project design, and ongoing coordination with members of SWEEP, ALIVE, Idaho Springs, Clear Creek County, the rafting community, and other agencies and interested parties.

Commitments identified through the SWEEP and ALIVE processes are incorporated in two attachments (and their respective tables) to this Appendix. The attachments also identify enhancement opportunities within the project area that are beyond the scope of the Proposed Action but discussed with the SWEEP and ALIVE committees. Their evaluation/consideration will also be carried forward into the next life cycle phase.

Attachment 1 is the *Twin Tunnels EA and Frontage Road Project SWEEP Issues Task Force Recommendations* (draft May 2, 2012). Attachment 2 is the *Twin Tunnels EA and Frontage Road Project ALIVE Issues Task Force Recommendations* (draft May 2, 2012).

Attachment 1
Twin Tunnels EA and Frontage Road Project
SWEEP Issues Task Force Recommendations

Twin Tunnels EA and Frontage Road Project SWEEP Issues Task Force Recommendations

This matrix presents issues identified by the Stream, Wetland, and Ecological Enhancement Program (SWEEP) Task Force. These issues are based on resource-specific core values taken from a larger set of core values developed by the Twin Tunnels stakeholders. The following core values apply to the issues identified by SWEEP:

- ◆ **Clear Creek**—as a clean, high-quality water resource, a recreational asset, an aquatic resource with sustainable fisheries habitat, a drinking water source, and a defining natural feature of the corridor.

Addressing issues fall into one of two categories:

1. **Mitigation**—A commitment in response to an identified impact resulting from the project. Mitigation to offset an impact is required by the National Environmental Policy Act (NEPA).
2. **Enhancement Opportunities**—Resource improvements that are not in response to a particular impact. Pursuit of these opportunities is a commitment by CDOT and the SWEEP Task Force to a process that continues discussion to evaluate the value, practicability, and feasibility of a particular enhancement. Enhancement opportunities are considered “outside the proposed action” but will be incorporated in project design, as appropriate.

Table 1. SWEEP Issues Task Force Recommendations

Issue	How was it evaluated?	Data/information obtained and used	How is the issue to be addressed? (Where is it presented in the Twin Tunnels EA or other plans?)
Water Quality—Sediment Management			
Excavated rocks and possibilities for mineralization	Tunnel and roadway Boring Sampling and Analysis Plan <ul style="list-style-type: none"> ▶ Limited Phase II Environmental Site Analysis completed (soils, mineralized rock, water from seeps) 	Data: <ul style="list-style-type: none"> ▶ Rock content, structure, mineralized structures ▶ Tunnel seep samples Information: <ul style="list-style-type: none"> ▶ Zone of weakly mineralized rock ▶ No evidence of mine wastes ▶ Seep water slightly exceeds Water Quality standards ▶ Seeps are from natural processes; not mining activities 	Mitigation: Mineralized Rock <ul style="list-style-type: none"> ▶ Dispose of at an appropriate site, ▶ Encapsulate away from groundwater, or ▶ Fill beneath roadway pavement. (See Section 3.16, <i>Water Resources and Water Quality</i> ; Section 3.17, <i>Geology</i> ; and Section 3.18, <i>Regulated Materials and Solid Waste</i> ¹)

Table 1. SWEEP Issues Task Force Recommendations (Continued)

Issue	How was it evaluated?	Data/information obtained and used	How is the issue to be addressed? (Where is it presented in the Twin Tunnels EA or other plans?)
Water Quality—Sediment Management (Continued)			
Sediment control and ongoing maintenance of best management practices (BMP)	Clear Creek Sediment Control Action Plan <ul style="list-style-type: none"> ▶ Sediment Control Action Plan completed for the Twin Tunnels project area. 	Data: <ul style="list-style-type: none"> ▶ Sediment sources and recommended BMPs Information: <ul style="list-style-type: none"> ▶ Sources—traction sand, natural rockfall, erosion of cut slopes ▶ BMPs—below-grade inlet sediment traps, sedimentation basins or ponds, valley pan drains or curb and gutters, and rundowns 	Mitigation: <p>Sediment Control</p> <ul style="list-style-type: none"> ▶ Implementation of BMPs (inlet sediment traps, sedimentation basins or ponds, valley pan drains or curb and gutters, and rundowns) <p>Maintenance of BMPs</p> <ul style="list-style-type: none"> ▶ Long-term corridor maintenance commitment to prepare and implement BMP maintenance plan as part of the Upper Clear Creek Sediment Control Action Plan (See Section 3.16, <i>Water Resources and Water Quality</i> , ¹ Preliminary Sediment Control Action Plan [SCAP], I-70 Twin Tunnels Project [Milepost 241-244] ²)
Water Quality—Clean Water Act			
Event (precipitation) impacts	Monitoring <ul style="list-style-type: none"> ▶ Sediment Control Action Plan completed for the Twin Tunnels project area ▶ Boring Sampling and Analysis Plan prepared 	Data: <ul style="list-style-type: none"> ▶ Stations at Kermitts and Twin Tunnels provided baseline data for PEIS Information: <ul style="list-style-type: none"> ▶ Sediment, nutrient, and chloride concentrations estimated to increase by approximately 5% over existing conditions as a result of the Proposed Action. Trace metals estimated to increase by approximately 0.5 to 1.5% as a result of the Proposed Action (with either cross section). These increases do not require mitigation. 	Mitigation: <p>Sediment Control</p> <ul style="list-style-type: none"> ▶ Implementation of BMPs (inlet sediment traps, sedimentation basins or ponds, valley pan drains or curb and gutters, and rundowns) <p>Maintenance of BMPs</p> <ul style="list-style-type: none"> ▶ Long-term corridor maintenance commitment to prepare and implement BMP maintenance plan as part of the Upper Clear Creek Sediment Control Action Plan (See Section 3.16, <i>Water Resources and Water Quality</i> ¹ ; Preliminary Sediment Control Action Plan, I-70 Twin Tunnels Project [Milepost 241-244] ²)

Table 1. SWEEP Issues Task Force Recommendations (Continued)

Issue	How was it evaluated?	Data/information obtained and used	How is the issue to be addressed? (Where is it presented in the Twin Tunnels EA or other plans?)
Water Quality—Clean Water Act (Continued)			
This segment of Clear Creek is on the Section 303(d) list for cadmium	Monitoring: <ul style="list-style-type: none"> ▶ Stream data collected since the I-70 Mountain Corridor PEIS ▶ Boring Sampling and Analysis Plan prepared 	Data: <ul style="list-style-type: none"> ▶ Heavy metals Information: <ul style="list-style-type: none"> ▶ Proposed Action anticipated to contribute approximately 0.5% additional cadmium to Clear Creek ▶ This segment of Clear Creek is listed as impaired for cadmium because of high levels from North Clear Creek (downstream). The very small increase in cadmium is not expected to cause exceedance at this location. 	Mitigation: <p>Cadmium concentration/loading</p> <ul style="list-style-type: none"> ▶ Re-start water quality sampling program to monitor for cadmium and other potential pollutants listed in Table 3-14.¹ (See Section 3.16, <i>Water Resources and Water Quality</i> ; ¹ and Twin Tunnels Environmental Assessment, <i>Water Resources Technical Memorandum</i> ³)
Dewatering	Monitoring: <ul style="list-style-type: none"> ▶ Boring Sampling and Analysis Plan prepared 	Data: <ul style="list-style-type: none"> ▶ Seep samples and flow rate before and after Information: <ul style="list-style-type: none"> ▶ Groundwater flow intercepting the tunnel is very low (<1 gallon per minute) ▶ No impacts to water resources anticipated. 	<p>Dewatering</p> <ul style="list-style-type: none"> ▶ No impacts anticipated (See Twin Tunnels Environmental Assessment, <i>Water Resources Technical Memorandum</i> ³)
Spill control	Clear Creek Sediment Control Action Plan <ul style="list-style-type: none"> ▶ Sediment Control Action Plan completed for the Twin Tunnels project area. 	Data: <ul style="list-style-type: none"> ▶ Spill and crash reports, BMPs: Information: <ul style="list-style-type: none"> ▶ Clear Creek has very high potential for contamination from hazardous substance spills ▶ Water supplies could be impacted 	Enhancement Opportunity: <p>Spill Control</p> <ul style="list-style-type: none"> ▶ Install hazardous spill containment structures at locations identified during the environmental assessment/ Sediment Control Action Plan development and as part of the proposed action (See Section 3.16, <i>Water Resources and Water Quality</i> , Section 3.18, <i>Regulated Materials and Solid Waste</i> , and Section 2.1.3 of Chapter 2 ¹)

Table 1. SWEEP Issues Task Force Recommendations (Continued)

Issue	How was it evaluated?	Data/information obtained and used	How is the issue to be addressed? (Where is it presented in the Twin Tunnels EA or other plans?)
Water Quality—Mine Workings			
Area of mineralized rock and mine workings east of Idaho Springs and west of Twin Tunnels	Review and document, develop recommendations: <ul style="list-style-type: none"> ▶ Limited Phase II ESA completed (soils, mineralized rock, water from seeps) 	Data: <ul style="list-style-type: none"> ▶ Inventory, mapping, roadway boring analysis Information: <ul style="list-style-type: none"> ▶ Zone of weakly mineralized rock ▶ No evidence of mine wastes ▶ Seep water slightly exceeds water quality standards 	Mitigation: <p>Mineralized Rock and Mine Workings</p> <ul style="list-style-type: none"> ▶ Dispose of at an appropriate site, ▶ Encapsulate away from groundwater, or ▶ Fill beneath roadway pavement. (See Section 3.16, <i>Water Resources and Water Quality</i> ; Section 3.17, <i>Geology</i> ; and Section 3.18, <i>Regulated Materials and Solid Waste</i> ¹)
County Road 314 could have mine waste as sub-base material	Review and document, develop recommendations: <ul style="list-style-type: none"> ▶ Five-Year Reviewed Report for the Central City/Clear Creek Superfund Site, Operable Unit 3. 	Data: <ul style="list-style-type: none"> ▶ Five-Year Reviewed Report for the Central City/Clear Creek Super fund Site, Operable Unit 3. Information: <ul style="list-style-type: none"> ▶ Potential mine wastes 	Mitigation: <p>Mine waste as County Road 314 sub-base material</p> <ul style="list-style-type: none"> ▶ Subsurface investigation ▶ Project-specific standard operating procedures ▶ Materials Management Plan (See Section 2.3, <i>Hazardous Materials in the I-70 Frontage Road Improvements Categorical Exclusion</i> ⁴)
South side of the bank on the frontage road east of the Twin Tunnels	Review and document, develop recommendations: <ul style="list-style-type: none"> ▶ Five-Year Reviewed Report for the Central City/Clear Creek Super fund Site, Operable Unit 3. 	Data: <ul style="list-style-type: none"> ▶ Five-Year Reviewed Report for the Central City/Clear Creek Super fund Site, Operable Unit 3. Information: <ul style="list-style-type: none"> ▶ Potential mine wastes 	Mitigation: <p>Mine waste on the frontage road (CR 314) south side of bank</p> <ul style="list-style-type: none"> ▶ Subsurface investigation ▶ Project-specific standard operating procedures ▶ Materials Management Plan <p>Sediment Control</p> <ul style="list-style-type: none"> ▶ Implementation of BMPs (inlet sediment trap basin) downstream of mineralized area to keep such sediments out of Clear Creek, per SCAP (See Section 2.3, <i>Hazardous Materials in the I-70 Frontage Road Improvements Categorical Exclusion</i> ⁴)

Table 1. SWEEP Issues Task Force Recommendations (Continued)

Issue	How was it evaluated?	Data/information obtained and used	How is the issue to be addressed? (Where is it presented in the Twin Tunnels EA or other plans?)
Water Quality—Mine Waste			
Mine waste impacts	Determine the need for a Liability Relief Memo: <ul style="list-style-type: none"> ▶ Coordination with the Colorado Department of Public Health and Environment and report decision. 	Data: <ul style="list-style-type: none"> ▶ Identify properties, mine workings inventory 	Mitigation: <ul style="list-style-type: none"> ▶ Health and Safety Management Plan ▶ Materials Management Plan (See Section 2.3, <i>Hazardous Materials</i> , ⁴ and Section 3.18, <i>Regulated Materials and Solid Waste</i> ¹)
Natural Habitat—Wetlands Protection			
Wetlands impacts	Wetlands inventory: <ul style="list-style-type: none"> ▶ Wetlands delineated 	Data: <ul style="list-style-type: none"> ▶ Extent of permanent impacts Information: <ul style="list-style-type: none"> ▶ 7 wetland areas; 0.9 acre total ▶ No direct permanent impacts to wetlands ▶ Indirect effects; increased impervious surface 	Mitigation: Wetlands <ul style="list-style-type: none"> ▶ Fencing of construction limits ▶ Sediment control measures ▶ Fertilizer/hydro-mulching restrictions ▶ Staging and materials stockpiling restrictions ▶ Construction equipment activity restrictions
Natural Habitat—Aquatic Species			
Aquatic species impacts, including construction impacts	Ecological and species inventory: <ul style="list-style-type: none"> ▶ Colorado Parks and Wildlife, U.S. Forest Service, species lists and recent inventories 	Data: <ul style="list-style-type: none"> ▶ Brown trout spawning season ▶ Other species from CPW and River Watch inventories Information: <ul style="list-style-type: none"> ▶ Brown trout spawn through study area; potential sedimentation and water quality impacts ▶ Benthic invertebrates; potential sedimentation and water quality impacts 	Mitigation: Aquatic Species <ul style="list-style-type: none"> ▶ Possible spawning surveys to identify redds ▶ Sediment Control Concept Plan ▶ Water quality monitoring (See Section 3.11 <i>Aquatic Resources</i> and Section 3.16 <i>Water Resources and Water Quality</i> ; ¹ Preliminary Sediment Control Conceptual Plan, I-70 Twin Tunnels Project [Milepost 241-244] ²) Enhancement Opportunity: Stream Habitat <ul style="list-style-type: none"> ▶ Stream Enhancement (as a separate project, but within the I-70 Corridor SWEEP opportunities being considered)

Table 1. SWEEP Issues Task Force Recommendations (Continued)

Issue	How was it evaluated?	Data/information obtained and used	How is the issue to be addressed? (Where is it presented in the Twin Tunnels EA or other plans?)
Information and Research Needs			
Repository for project data	Identify and post additional data on CSS website	Deicing studies Inventory of riparian and aquatic species Additional studies	Prepare an interactive map and links to resource documents. This will be placed on the I-70 Mountain Corridor Context Sensitive Solutions website.
<p>¹ CDOT. 2012. <i>Twin Tunnels EA</i>.</p> <p>² CDOT. 2012. <i>Clear Creek Sediment Control Action Plan</i>. In preparation.</p> <p>³ CDOT. 2012. <i>Twin Tunnels EA Water Resources Technical Memorandum</i>.</p> <p>⁴ CDOT. 2012. <i>I-70 Frontage Road Improvements Categorical Exclusion</i>. March.</p>			

Attachment 2
Twin Tunnels EA and Frontage Road Project
ALIVE Issues Task Force Recommendations

Twin Tunnels EA and Frontage Road Project ALIVE Issues Task Force Recommendations

This matrix presents issues identified by the A Landscape-level Inventory of Valued Ecosystem Components (ALIVE) Task Force. These issues are based on resource-specific core values taken from a larger set of core values developed by the Twin Tunnels stakeholders. The following core values apply to the issues identified by ALIVE:

- **Wildlife**—Wildlife habitat, migration routes, and access to Clear Creek
- **Clear Creek**—As a clean, high-quality water resource, a recreational asset, an aquatic resource with sustainable fisheries habitat, a drinking water source, and a defining natural feature of the corridor.

Addressing issues fall into one of two categories:

1. **Mitigation**—A commitment in response to an identified impact resulting from the project. Mitigation to offset an impact is required by the National Environmental Policy Act (NEPA).
2. **Enhancement Opportunities**—Resource improvements that are not in response to a particular impact. Pursuit of these opportunities is a commitment by CDOT and the ALIVE Task Force to a process that continues discussion to evaluate the value, practicability, and feasibility of a particular enhancement. Enhancement opportunities are considered “outside the proposed action” but will be incorporated in project design, as appropriate.

Table 1. ALIVE Issues Task Force Recommendations

Issue	How was it evaluated?	Data/information obtained and used	How is the issue addressed? (Where is it presented in the Twin Tunnels EA or I-70 Frontage Road Improvements Categorical Exclusion?)
Wildlife Connectivity and Habitat			
Barrier separation along Clear Creek Greenway	Identify location for breaks and consider various designs and types: <ul style="list-style-type: none"> ▶ Meeting with ALIVE Committee, Colorado Parks & Wildlife, and U.S. Forest Service 	Data: <ul style="list-style-type: none"> ▶ Drainage locations ▶ Kintsch et al., 2011. A Regional Ecosystem Framework for Terrestrial and Aquatic Wildlife Along the I-70 Mountain Corridor ▶ Wildlife crossing areas Information: <ul style="list-style-type: none"> ▶ Additional Linkage Interference Zone (LIZ) identified (Clear Creek Junction LIZ) with the Twin Tunnels Study area from MP 243.0 to MP 244.9 ▶ Opportunity to improve wildlife connectivity at the Hidden Valley Bridge 	Enhancement Opportunities: Wildlife Connectivity <ul style="list-style-type: none"> ▶ Extend bench beneath Hidden Valley Bridge with the Twin Tunnels preferred alternative as an opportunity to improve wildlife movement (See Section 3.10, <i>Terrestrial Wildlife</i>¹) ▶ Spaces between cut walls along the frontage road in the Hidden Valley Bridge area. ▶ Barrier between greenway/frontage road/Clear Creek to be removed ▶ Frontage road preferred alternative design accommodates wildlife permeability (See Section 2.7, <i>Wildlife</i>²)
Need to provide pathway for deer and elk under Hidden Valley bridge over Clear Creek	Will include deer passage under bridge and improve bench in project design <ul style="list-style-type: none"> ▶ Meetings with ALIVE Task Force Committee, Colorado Parks & Wildlife (CPW), and U.S. Forest Service 	Data: <ul style="list-style-type: none"> ▶ Drainage locations Information: <ul style="list-style-type: none"> ▶ Opportunity to improve wildlife connectivity at the Hidden Valley Bridge 	Enhancement Opportunities: Wildlife Connectivity <ul style="list-style-type: none"> ▶ Extend bench beneath Hidden Valley Bridge with the Twin Tunnels preferred alternative as an opportunity to improve wildlife movement (See Section 3.10, <i>Terrestrial Wildlife</i>¹) ▶ Spaces between cut walls along the frontage road in the Hidden Valley Bridge area (See Section 2.7, <i>Wildlife</i>²)
Sheep get stuck in the fence along north side of I-70 at the west portal of the westbound tunnel	Minimal fencing. If needed, must meet CPW guidelines: <ul style="list-style-type: none"> ▶ Meetings with Colorado Parks & Wildlife 	Data: <ul style="list-style-type: none"> ▶ Identify existing fence ownership Information: <ul style="list-style-type: none"> ▶ Bighorn sheep ensnare in existing woven wire fencing. 	Mitigation: Fencing <ul style="list-style-type: none"> ▶ Existing fence to be replaced with “wildlife-friendly” fence as mitigation for increasing wildlife movement barrier by widening the roadway. (See Section 3.10, <i>Terrestrial Wildlife</i>¹)

Table 1. ALIVE Issues Task Force Recommendations (Continued)

Issue	How was it evaluated?	Data/information obtained and used	How is the issue addressed? (Where is it presented in the Twin Tunnels EA or I-70 Frontage Road Improvements Categorical Exclusion?)
Wildlife Connectivity and Habitat (Continued)			
Fencing needed on south side of the tunnel during I-70 construction to redirect wildlife downstream away from the detour	Fencing and lighting to minimize impacts to wildlife along detour. <ul style="list-style-type: none"> ▶ Meetings with Colorado Parks & Wildlife 	Data: <ul style="list-style-type: none"> ▶ Movement patterns for big game Information: <ul style="list-style-type: none"> ▶ Land bridge not significant movement corridor ▶ Occasional mule deer use 	Mitigation: Redirect Wildlife away from Detour <ul style="list-style-type: none"> ▶ Temporary fencing on the north side of old US 40. ▶ Temporary lighting at detour. ▶ Place salt blocks north of I-70 and the Twin Tunnels to attract Bighorn sheep and other wildlife away from the construction area. (See Section 3.10, <i>Terrestrial Wildlife</i> ¹)
Consider opportunities to accommodate wildlife in culvert west of the Twin Tunnels near Clear Creek Rafting	Maintain access on the south end to allow animals to move up and down Clear Creek. Improve drop from outlet. <ul style="list-style-type: none"> ▶ Meetings with Colorado Parks & Wildlife 	Data: <ul style="list-style-type: none"> ▶ Set cameras to inventory use. Information: <ul style="list-style-type: none"> ▶ Infrequent use of the culvert ▶ Concrete bottom ▶ Steep drop off at Clear Creek 	Mitigation: Facilitate wildlife movement within the concrete box culvert <ul style="list-style-type: none"> ▶ Natural bottom substrate ▶ Baffles to prevent scour ▶ Fill material to eliminate steep drop off at discharge point. (See Section 3.10, <i>Terrestrial Wildlife</i> ¹)
Aquatic and fish permeability and passage	Develop design with CPW and U. S. Army Corps of Engineers for permitting: <ul style="list-style-type: none"> ▶ Meetings with Colorado Parks & Wildlife 	Data: <ul style="list-style-type: none"> ▶ Fish population density and diversity Information: <ul style="list-style-type: none"> ▶ Fish surveys conducted by CPW have been outside the Twin Tunnels study area. 	Enhancement Opportunity: Fish Population Monitoring <ul style="list-style-type: none"> ▶ As a baseline/monitoring for the Twin Tunnels and Frontage Road projects, CPW tentatively agrees to conduct fish survey in the fall of 2012.

Table 1. ALIVE Issues Task Force Recommendations (Continued)

Issue	How was it evaluated?	Data/information obtained and used	How is the issue addressed? (Where is it presented in the Twin Tunnels EA or I-70 Frontage Road Improvements Categorical Exclusion?)
Wildlife Connectivity and Habitat (Continued)			
Limit lighting on the frontage road and at wildlife crossings	Frontage Road impacts to Wildlife: <ul style="list-style-type: none"> ▶ Meetings with Colorado Parks & Wildlife 	Data: <ul style="list-style-type: none"> ▶ Confirm frontage road lighting. Information: <ul style="list-style-type: none"> ▶ Frontage Road will not incorporate additional lighting beyond existing conditions 	Mitigation: Frontage Road Lighting <ul style="list-style-type: none"> ▶ Directional lighting at Hidden Valley Bridge. ▶ No permanent lighting on the frontage road. ▶ Design lighting in accordance with the policies and programs of the International Dark Sky Association to minimize light pollution along the corridor.
Coordinate between the two projects (Twin Tunnels Project and I-70 Frontage Road Improvement Project) to enhance connectivity	Ongoing		Mitigation: Facilitate wildlife movement within the concrete box culvert <ul style="list-style-type: none"> ▶ Natural bottom substrate ▶ Baffles to prevent scour ▶ Fill material to eliminate steep drop off at discharge point. (See Section 3.10, <i>Terrestrial Wildlife</i> ¹) Enhancement Opportunities: Wildlife Connectivity <ul style="list-style-type: none"> ▶ Extend bench beneath Hidden Valley Bridge with the Twin Tunnels preferred alternative as an opportunity to improve wildlife movement (See Section 3.10, <i>Terrestrial Wildlife</i> ¹) <ul style="list-style-type: none"> ▶ Spaces between cut walls along the frontage road in the Hidden Valley Bridge area (See Section 2.7, <i>Wildlife</i> ²)

Table 1. ALIVE Issues Task Force Recommendations (Continued)

Issue	How was it evaluated?	Data/information obtained and used	How is the issue addressed? (Where is it presented in the Twin Tunnels EA or I-70 Frontage Road Improvements Categorical Exclusion?)
Information Needs and Updates			
Need project specific and small species data not included in the recent I-70 inventory	Add to Context Sensitive Solutions inventory on website	<ul style="list-style-type: none"> ▶ CPW aquatic survey ▶ Camera inventory in culvert ▶ Landowner observation documentation ▶ Migratory bird nest survey 	Prepare an interactive map and links to resource documents. This will be placed on the I-70 Mountain Corridor Context Sensitive Solutions website.
<p>¹ CDOT. 2012. <i>Twin Tunnels EA</i>.</p> <p>² CDOT. 2012. <i>I-70 Frontage Road Improvements Categorical Exclusion</i>. March.</p>			

