

TWIN TUNNELS

Portal to Portal Access Road

Companion Report to the Twin Tunnels Environmental Assessment and Section 4(f) Evaluation

JULY 2012

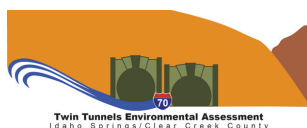
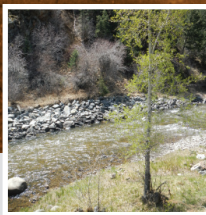
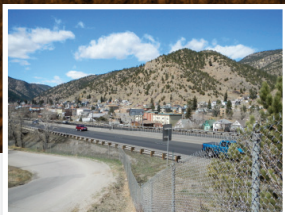


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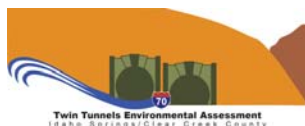
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Acronyms

BMP	Best Management Practice
CDOT	Colorado Department of Transportation
CM/GC	Construction Management/General Contracting
CPW	Colorado Parks and Wildlife
CR	County Road
EA	Environmental Assessment
FHWA	Federal Highway Administration
I-70	Interstate 70
MOU	Memorandum of Understanding
MP	milepost
NEPA	National Environmental Policy Act
PEIS	Programmatic Environmental Impact Statement
ROD	Record of Decision
TR	Technical Report
USFS	United States Forest Service

1.0 What is the purpose of the Portal to Portal Access Road Companion Report

The Federal Highway Administration (FHWA), in cooperation with the Colorado Department of Transportation (CDOT), is preparing an environmental assessment (EA) for proposed changes to the eastbound lanes of Interstate 70 (I-70) and the eastbound bore of the Twin Tunnels between milepost (MP) 241 and MP 244 in Clear Creek County, Colorado. The Twin Tunnels area is one of the most congested locations along the I-70 Corridor. Improvements are necessary to improve safety, operations, and travel time reliability in the eastbound direction of I-70 in the study area. The improvements would be consistent with the *I-70 Mountain Corridor Final Programmatic Environmental Impact Statement (PEIS) Record of Decision (ROD)*, I-70 Mountain Corridor Context Sensitive Solutions process, and other commitments of the I-70 PEIS.

This report discusses the potential environmental issues associated with a change in a construction method proposed by the Construction Management/General Contracting (CM/GC) team. This report evaluates the advantages and disadvantages of this particular construction method, as compared to the construction method that is fully assessed in the EA.

2.0 What process was followed to analyze environmental resources?

Detailed existing conditions for all environmental resources have been presented in the Twin Tunnels EA. Brief descriptions of existing conditions, evaluation of changes in environmental impact, and mitigation are presented in this report for those resources affected by the Portal to Portal Access Road (Access Road).

3.0 Description of the Proposed Portal to Portal Access Road

The Access Road would provide east-west construction access across the project site and eliminate haul trucks and other construction equipment from traveling on the proposed construction detour (see Figure 3-1). Following are the major elements of the Access Road:

3.1 Limits of Construction

The Access Road would extend approximately 1,500 feet between the east and west portals of the eastbound lanes of I-70, following the south side of the Twin Tunnels land bridge. From east to west, the road would follow Clear Creek, cross property owned by Clear Creek County, and then continue west adjacent to the northern side of the I-70 construction detour (see Figure 3-1).

3.2 Access Road Construction

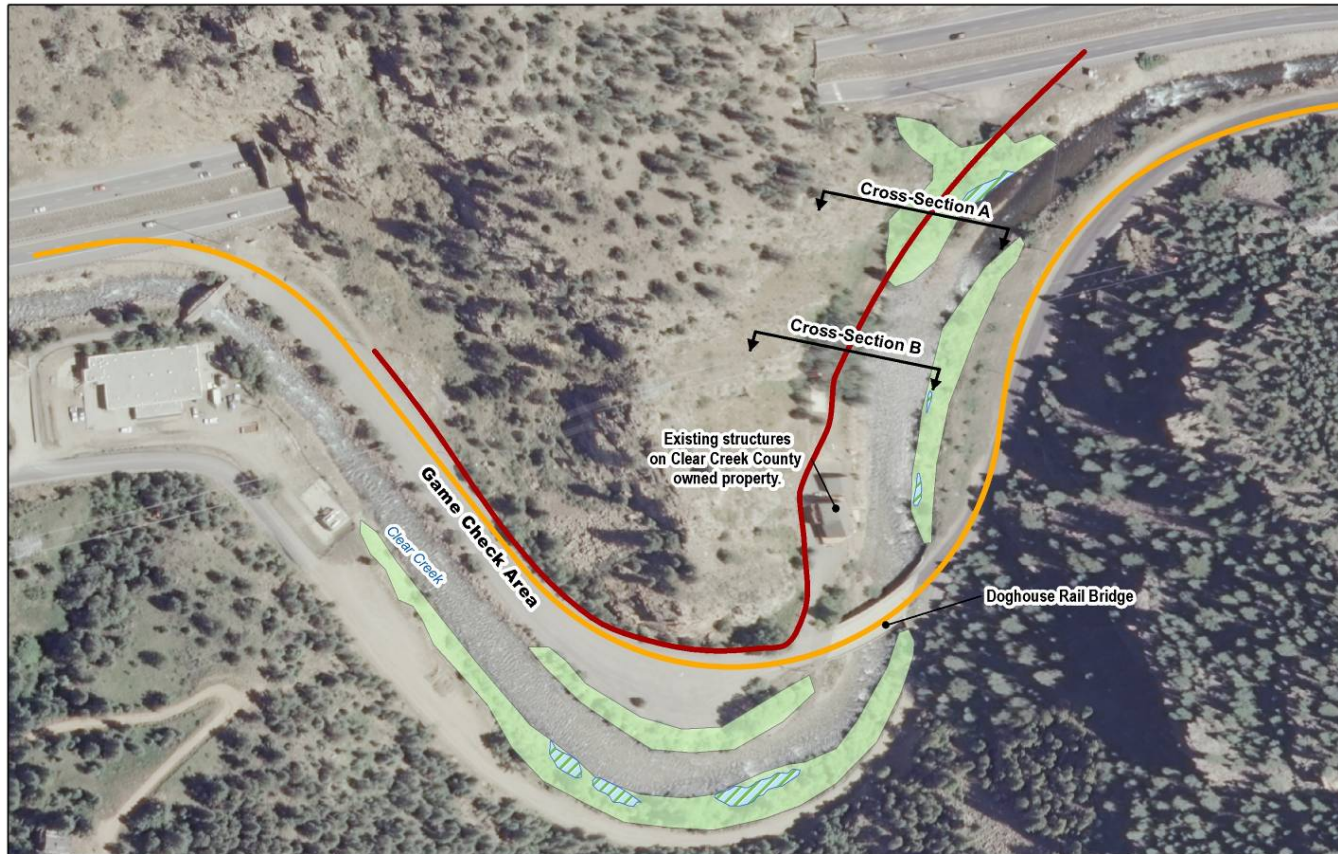
The western half of the Access Road, approximately 750 feet, would primarily be located on the existing pavement through the Game Check Area, therefore requiring minimal construction. The eastern half of the Access Road, approximately 750 feet in length, would be constructed with clearing of vegetation, as required, grading to level the area and installation of a base to create a driving surface. Final alignment of the Access Road would be determined in the field, during construction, in order to preserve as much mature vegetation as possible. The eastern most portion of the Access Road, approximately 200 feet, would require a fill wall to raise it to the elevation of eastbound I-70. A wire basket fill wall would be used as it has a smaller footprint than other wall types, thus minimizing impacts to riparian habitat. The maximum height of fill in this section of the Access Road would be approximately twenty feet. Concrete barrier would be installed on each side of the raised section of the Access Road. Due to local topography there are two cross sections for the Access Road. These cross sections are included in **Appendix A**.

Existing drainage of the site shall be maintained. Water from the existing box culvert located near the east portal would be allowed to continue infiltrating in its present condition. A swale along the west side of the elevated Access Road would run south-north toward the existing box culvert, eliminating roadway runoff from directly entering Clear Creek. A temporary new culvert would be installed beneath the Access Road, allowing all roadway surface drainage to eventually enter Clear Creek.

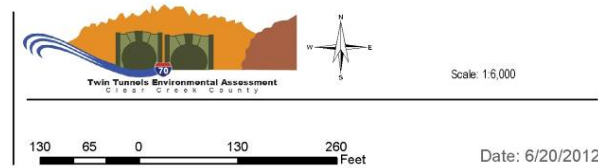
3.3 Access Road Operation

The Access Road would primarily serve as a west to east haul route for tunnel excavation material from the west portal. Operation would include travel of watering truck for fugitive dust mitigation in both directions. There would also be periodic travel of light duty trucks for supervision and inspection personnel. The Access Road would also be monitored daily by the erosion control supervisor.

Figure 3-1: Portal to Portal Access Road Location



- Access Road
- Detour Route
- Wetlands
- Riparian



Date: 6/20/2012

3.4 Vehicle Usage and Frequency

Vehicles would be restricted to construction related equipment only, consisting of haul trucks (tandem axle), heavy construction equipment (excavators, loaders, and graders), contractor light duty pickups, and CDOT/consultant light duty pickups. Haul truck size would be limited due to the restricted width of the roadway between the residential structure and the mountain side. There are estimated to be between 30 and 40 vehicle trips per day. In addition to construction traffic, emergency vehicles would use the Access Road as needed (see *Section 4*).

3.5 Access Road Removal

The Access Road is temporary and would be removed upon completion of construction. Removal would occur in the reverse manner in which it is constructed; layer-by-layer deconstruction. Each layer of roadway, support straps, and wall would be removed, from top to bottom. All imported fill material would be removed, followed by temporary drainage, and structural best management practices (BMPs). The only items that would remain would be associated with mitigation measures, such as temporary BMPs prior to reaching final site stabilization.

3.6 Riparian Mitigation Construction

Riparian mitigation includes the creation of 34,400 square feet (0.78 acre) of riparian habitat, which would offset the approximately 19,000 square feet (0.44 acre) of impacts associated with construction of the Access Road and riparian mitigation. This would result in an increase of 15,400 square feet (0.35 acre) of riparian habitat compared to existing conditions, as detailed in Table 3-1.

Activity	Impact Square Feet (Acres)
Impacts	
Access Road Construction	6,700 (0.15)
Riparian Mitigation Construction	12,300 (0.28)
Total	19,000 (0.44)
Mitigation	
Riparian Habitat Created	34,400 (0.78)
Net Increase in Riparian Habitat	15,400 (0.35)

The existing riparian area is elevated above Clear Creek with drainage from the Twin Tunnels being a major water source for the area. The new riparian habitat would be created by removing and lowering the existing man-made bench/railroad bed that is currently elevated as much as 6

to 8 feet above the Creek. This would effectively return the area to floodplain and subject it to periodic flooding.

This regrading effort includes the reconstruction of the natural terraces that are associated with western rivers and streams. Each terrace supports a different native ecosystem based on its relative relationship to the water table. The revegetation effort would be focused on reestablishing the different and unique ecosystems, increasing structural diversity compared to the existing conditions. All trees over two inches in caliper, four feet above the ground, would be replaced at a minimum ratio of one to one.

3.7 Schedule

A temporary easement for the Clear Creek County property would be required by January 2013. The Access Road would be in place throughout the construction phase of Twin Tunnels project. Construction would begin in February 2013. The road would be taken out of service by November 2013. Removal and mitigation of the Access Road would occur during the winter and spring of 2014.

4.0 What are the advantages of the Portal to Portal Access Road?

The Access Road supports many of the core values of the larger Twin Tunnels project. These include safety, mobility, wildlife, gateway (visual), and Clear Creek, as discussed below.

4.1 Emergency Response

Emergency response times to incidents east of the project limits would be improved during construction. The Access Road would allow emergency responders to bypass the detoured I-70 traffic and access the incident from the east by entering at the Hidden Valley Interchange. In addition, the presence of construction equipment along the Access Road would allow for immediate removal of barriers west of the Doghouse Rail Bridge to allow emergency access from the Access Road to other locations along the I-70 detour route.

The Access Road would improve response time to areas east of Hidden Valley by allowing emergency responders to bypass the I-70 detour traffic and merge in at the Hidden Valley Interchange where construction egress is currently planned.

Without the Access Road, there would be only constrained access for emergency responders from Idaho Springs to the east portal in the event of an incident requiring emergency services. Access would require traveling through the detoured I-70 traffic, turning around at the US 6 Interchange to enter the work zone from westbound I-70. This would require four miles of out-of-direction travel for emergency response. The Access Road would significantly improve the response time by providing direct access for emergency responders.

4.2 Improved Traffic Mobility and Public Safety

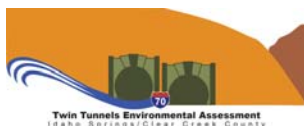
The Access Road would separate construction vehicles from general traffic and construction vehicles, resulting in the following:

- Improved mobility on County Road (CR) 314 (I-70 detour route) as use by construction vehicles would require lane closures due to limited sight distances and the poor acceleration of large equipment.
- Decreased number of accidents involving construction equipment.
- Reduced risk of construction debris falling from construction equipment, such as haul trucks, onto the I-70 detour road surface, endangering motorists.

4.3 Other Environmental Considerations

Following are other benefits provided by the use the Access Road:

- The creation of additional riparian habitat, which benefits wildlife, visual character, and Clear Creek through the addition of native vegetation, increased bank stabilization, and



construction of terraces that are associated with western rivers and streams, thereby creating a more naturalized setting.

- Reduced construction vehicle emissions because of shorter haul times, decreased idling times, and less acceleration and deceleration resulting from traveling in mixed traffic. Also, travel speeds on the detour would remain higher because there would be less interference from construction traffic. This would improve travel time on the detour.
- Less sediment tracking as the Access Road would act as an extended tracking pad. This would reduce the amount of sediment tracked along the roadway that could then be washed into Clear Creek.
- Material spills would be easier to contain on a “Construction Only” roadway because containment efforts would not be hindered by active traffic.

4.4 Project Cost Savings

The Access Road would result in an estimated \$1.0M cost savings to the Twin Tunnels project. The savings would result from decreased haul times, which leads to lower fuel and maintenance costs, and increased productivity. Haul trucks would be unable to operate 24-hours per day since lane closures on I-70 would be restricted to specific times. The Access Road would allow for 24-hour operation, thereby aiding in the opening of three lanes of eastbound I-70 by October 2013.

5.0 Who was involved in this analysis and what were their issues?

5.1 Colorado Parks and Wildlife

The project team and Colorado Parks and Wildlife (CPW) staff held a field meeting on May 16, 2012. This meeting focused on the potential impacts and mitigation measures for wildlife and aquatic species. Overall, CPW did not have a lot of concerns regarding the Access Road because of its temporary nature. Although temporary in nature, it was noted the removal and subsequent lengthy replacement time of mature vegetation, such as cottonwood trees, would result in a long-term impact. This, combined with the limited riparian habitat found along Clear Creek in the project vicinity, means a higher vegetation mitigation ratio may be warranted. Mitigation ratios will be determined in coordination with CPW, Clear Creek County, and the two following committees: the A Landscape Level Inventory of Valued Ecosystem Components (ALIVE) Committee and Stream and Wetland Ecological Enhancement Program (SWEEP) committee. At a minimum, a 1:1 mitigation ratio will be used. See **Appendix B** for the committee meeting minutes.

5.2 ALIVE and SWEEP

The ALIVE and SWEEP committees held a joint meeting on June 7, 2012. This meeting provided both committees an opportunity to review the Access Road and provide feedback for impacts and mitigations. General concerns included the following: the potential for a barrier effect of a raised roadway, availability of the site upon completion by recreational users, compatibility of the proposed mitigation with existing plans for the old Game Check area, and changes in the hydrologic conditions currently providing water to the riparian and wetland areas. See **Appendix C** for the meeting minutes.

6.0 What are the environmental consequences?

The following environmental resources are anticipated to be affected by the Access Road:

- Transportation
- Social resources (emergency response)
- Right-of-way
- Recreation resources
- Visual resources
- Air quality
- Wildlife resources
- Aquatic resources
- Vegetation (riparian habitat)
- Wetlands
- Water resources and water quality

The resources listed above relate to many of the core values of the larger Twin Tunnels project. These include wildlife, mobility, safety, gateway (visual), and Clear Creek. Impacts to these resources are discussed below. Mitigation of these impacts is presented in *Section 7*.

6.1 How does the No Action Alternative affect the environmental resources?

The No Action Alternative, in this case, would involve the Proposed Action described in the *Twin Tunnels EA*. The Access Road would not be developed and access would be provided via the I-70 detour route using old US 40 and CR 314 as described in the *Twin Tunnels EA*. Impacts to environmental resources are described in the *Twin Tunnels EA*.

The benefits of the Access Road, as discussed in *Section 4*, would not be realized under this alternative.

6.2 What are the direct effects of the proposed Portal to Portal Access Road?

The following section discusses the direct effects to the environmental resources resulting from the three following distinct phases:

- Access Road Construction
- Access Road Operation
- Riparian mitigation construction

The effects associated with the post-construction phase of riparian mitigation are discussed in *Section 6.3*, as these indirect effects occur later in time.

6.2.1 Transportation

Construction of the Access Road would result in a temporary increase in construction traffic in the project vicinity as the Access Road is built. This traffic would consist primarily of haul trucks, earthmoving equipment, and light trucks operated by construction personnel traveling from the eastbound tunnel to locations east of the project area.

Operation of the Access Road would improve mobility as a majority of construction traffic would be eliminated from the I-70 detour route and the number of lane closures along I-70, in the project vicinity, would be reduced. Without the Access Road, lane closures and general traffic disruptions would be required for construction traffic entering the I-70 detour route because of limited sight distances and the poor acceleration of large equipment.

Because construction traffic would be separated from general traffic along the detour route there would be reduced risk of construction debris falling from construction equipment, such as haul trucks, onto the I-70 detour road surface, endangering motorists.

Emergency access would be improved, thereby increasing safety for both construction workers and motorists, as discussed below.

Construction of riparian mitigation would generate additional haul truck traffic, which would travel on CR 314 and access I-70 at the Hidden Valley Interchange, as a result of earthwork operations to create the benched terraces along Clear Creek. For more information see **Appendix D**.

6.2.2 Social Resources (Emergency Response)

Construction of the Access Road would not result in any direct impacts.

Operation of the Access Road would result in improved emergency response times to incidents, such as automobile accidents, fires, or medical emergencies, east of the Twin Tunnels. The Access Road would allow emergency responders to bypass the detoured I-70 traffic and access

the incident from the east by entering at the Hidden Valley Interchange. In addition, the presence of construction equipment along the Access Road would allow for immediate removal of barriers west of the Doghouse Rail Bridge to allow emergency access from the Access Road to other locations along the I-70 detour route.

The Access Road would improve response time to areas east of Hidden Valley by allowing emergency responders to bypass the I-70 detour traffic and merge in at the Hidden Valley Interchange where construction egress is currently planned.

In the event of a construction incident, without the Access Road, there would be constrained access for emergency responders from Idaho Springs to the east portal. Access would require traveling through the detoured I-70 traffic, turning around at the US 6 Interchange to enter the work zone from westbound I-70. The Access Road would significantly improve the response time by providing direct access for emergency responders, eliminating four miles of out-of-direction travel.

Construction of riparian mitigation would not result in any direct impacts.

6.2.3 Right-of -Way

Construction and operation of the Access Road and construction of the riparian mitigation would require a temporary easement from Clear Creek County, who owns the property upon which the Access Road would be constructed. An agreement will be required between CDOT and Clear Creek County to disturb the property. There are no impacts anticipated to the residential structure or the household well. The septic tank, pump station and associated leach field will need to be defined to assess potential for breaching the tank and leach field. In the event that any structures, the household well, leach field, or septic system are damaged due to construction activity, they will be repaired and/or replaced when the project is completed.

6.2.4 Recreation Resources

No direct impacts would occur during construction and operation of the Access Road or the construction of riparian mitigation as access to Clear Creek and the Scott Lancaster Trail would remain unchanged, as described in the EA.

In conjunction with riparian mitigation construction, there is an opportunity to install enhancements for anglers. Any enhancements would be installed by Clear Creek County and be separate actions from both the Access Road and the Proposed Action.

Recreational users would notice a change in the visual setting; as discussed below.

6.2.5 Visual Resources

Construction and operation of the Access Road and construction of the riparian mitigation would result in temporary effects to the visual quality of the project area. These include short-

term effects, such as construction workers and equipment, and long-term effects, such as vegetation removal and the subsequent decades-long process of reestablishing mature vegetation, as discussed below.

Construction of the Access Road requires the removal of riparian shrubs and mature narrow leaf cottonwood and river birch above the north bank of Clear Creek. This would affect the visual quality and character for motorists using CR 314, recreationalists using the Scott Lancaster Memorial Trail and fishing and boating recreationalists on Clear Creek. These viewers are the most sensitive group in the viewshed because of their greater expectation of experiencing a scenic and more natural setting.

The inclusion of an elevated roadway from the old US 40 highway to I-70 would result in noticeable temporary visual impacts to recreationalists. More long term impacts would be associated with the removal of riparian vegetation that currently serves as a visual screen for I-70. Although considered a temporary impact, the loss of riparian vegetation would persist for many years.

Operation of the Access Road would result in temporary effects including: visibility of large equipment, construction workers, dust, and other construction debris.

Construction of the riparian mitigation would affect the views of motorists and recreational users. Temporary effects include the visibility of construction workers, plant material stockpiles, immature vegetation which would not screen I-70 from foreground views, and temporary water quality BMPs as the site would not have reached final stabilization.

6.2.6 Air Quality

Construction of the Access Road would generate fugitive dust and emissions from construction equipment and earthwork.

Operation of the Access Road would reduce vehicle emissions because of shorter haul times, decreased idling times, and less acceleration and deceleration resulting from traveling in mixed traffic. Also, travel speeds on the I-70 detour route would likely remain higher since the number of road closures would be reduced and slow moving construction equipment would be largely eliminated from the roadway.

Construction of the riparian mitigation would generate fugitive dust and emissions from construction equipment and earthwork.

6.2.7 Wildlife

Construction of the Access Road, including a five foot buffer on each side, would impact approximately 6,700 square feet (0.15 acre) of riparian habitat. Based on the conceptual design, construction of the temporary Access Road and the riparian mitigation would remove approximately 175 trees over two inches in caliper size four feet above the ground. The trees

include narrow-leaf cottonwood trees and river birch. Tree removal would eliminate habitat and cover for small for birds and small mammals.

Operation of the Access Road would serve as a barrier between the south facing slopes (where bighorn sheep have been observed) and Clear Creek. Bighorn sheep are known to use the steep south facing slopes north of the Doghouse Rail Bridge, but officials with CPW noted that bighorn sheep would likely avoid the area of the Access Road during construction and operation. Birds may avoid nesting in the area during construction.

Approximately 200 feet of the easternmost portion of the Access Road would be raised to match the elevation of eastbound I-70, creating a barrier for wildlife movement. The remaining 1,300 feet would be at the existing grade.

Construction of the riparian mitigation would impact approximately 12,300 square feet (0.28 acre) of riparian habitat. Based on the conceptual design, construction of the Access Road and riparian mitigation would remove approximately 175 trees over two inches in caliper size four feet above the ground. Tree removal would eliminate habitat and cover for small for birds and small mammals. The trees include narrow-leaf cottonwood trees and river birch. Construction of the riparian mitigation would continue to serve as a barrier to wildlife movement. Although the raised portion of the Access Road would be lowered, the presence of workers and equipment would have the potential to deter wildlife from the area. Once construction of the riparian mitigation is complete the habitat would recover with time. Shrubs and willows would establish within a few growing seasons and narrowleaf cottonwoods would continue to grow, reaching maturity within 50-70 years.

6.2.8 Aquatic Resources

No impacts would occur during construction and operation of the Access Road or the construction of riparian mitigation.

6.2.9 Vegetation (Riparian Habitat) and Noxious Weeds

The riparian habitat in this area is unique in terms of species abundance as well as species diversity. The CPW has identified this area as valuable because it supports some of the last remaining structurally diverse (i.e. river birch and narrow leaf cottonwoods with an understory of high quality riparian shrubs) riparian vegetation in the area. Willows, which will not be impacted, have also become established within the upland zones of this riparian habitat. This area is considered a remnant of Clear Creek riparian habitat that was not altered during construction of I-70.

Construction of the Access Road and the riparian mitigation would disturb approximately 19,000 square feet (0.44 acre) of riparian habitat. This includes removal of approximately 175 trees which are two inches in diameter or greater. Riparian habitat that currently exists 3 to 6 feet vertically above Clear Creek may be difficult to reestablish because of the lack of subsurface water. This impact would be more permanent than temporary since it would take 50 to 70 years

to replace the existing older cottonwoods. In addition, grading would temporarily increase soil disturbance and susceptibility to the spread of weed species. Noxious weed species observed in these areas [especially diffuse knapweed (*Centaurea diffusa*) and Chinese clematis (*Clematis orientalis*)] have the potential to spread into areas impacted by Access Road and riparian mitigation construction.

Operation of the Access Road could introduce noxious weeds should equipment have any seeds or other plant material capable of establishment on them.

6.2.10 Wetlands

No impacts would occur during construction and operation of the Access Road or the construction of riparian mitigation.

6.2.11 Water Resources and Water Quality

Construction of the Access Road includes earthwork near a known leach field associated with a vacated residential parcel. The leach field appears to be located outside the limits of the Access Road construction; however, the access would cross over the septic tank and pump station. Disruption of the existing septic tank and associated leach field could cause a release of raw sewage and potentially increase biological oxygen demand in Clear Creek.

The Access Road would generate additional ground disturbing activity. Disturbance and erosion of underlying soil and stockpiles during construction could contribute to water quality degradation in Clear Creek. The Access Road would be built with a permeable roadway surface; therefore there is no increase in impervious surface.

Material spills would be easier to contain on a “Construction Only” roadway because containment efforts would not be hindered by active traffic.

Construction of riparian mitigation would generate additional ground disturbing activity. Disturbance and erosion of underlying soil and stockpiles during construction could contribute to water quality degradation in Clear Creek.

6.3 What indirect effects are anticipated?

The following section discusses the indirect effects to the environmental resources resulting from the four following distinct phases:

- Access Road Construction
- Access Road Operation
- Riparian mitigation construction
- Riparian mitigation, post-construction

For the following resources, no indirect impacts would occur during construction and operation of the Access Road or during the construction/post-construction phase of riparian mitigation, and are therefore excluded from further discussion:

- Transportation
- Social Resources (Emergency Response)
- Right-of-way
- Air Quality

6.3.1 Recreation Resources

Construction and operation of the Access Road and construction of riparian mitigation could indirectly affect brown trout by potentially introducing additional sediment to Clear Creek, disrupting spawning, which requires an aerated and sediment free environment. This would lower reproductive success, thereby lowering the amount of brown trout, at least in the short term, in Clear Creek in the project area.

The post-construction phase of riparian mitigation would include 34,400 square feet (0.78 acre) of riparian habitat connected to the natural function of Clear Creek. This would provide additional shade for aquatic species, which is a benefit as it lowers water temperatures. In addition, stream bank stabilization would reduce erosion, benefitting brown trout, which require a sediment free environment for reproduction. Recreational users would also see a change in the visual setting, as discussed below.

6.3.2 Visual Resources

No indirect impacts would occur during construction and operation of the Access Road or during the construction of riparian mitigation.

The post-construction phase of riparian mitigation would alter the visual experience through time. Over the course of 50 to 70 years, vegetation would mature, with saplings reaching an adequate size to screen the view of I-70 traffic. The total area of riparian habitat would be increased and terraced as part of the project mitigation; thereby creating a more naturalized appearance compared to the existing conditions.

6.3.3 Wildlife

Construction of the Access Road and riparian mitigation would result in soil disturbance, which increases the potential for noxious weeds to either establish or further spread, degrading existing habitat.

Operation of the Access Road would not result in any indirect impacts.

The post-construction phase of riparian mitigation would result in additional riparian habitat being created. The narrowleaf cottonwoods and willows would provide forage for terrestrial wildlife and potential nesting sites for birds.

6.3.4 Aquatic Resources

Construction and operation of the Access Road and construction of riparian mitigation could indirectly affect brown trout by potentially introducing additional sediment to Clear Creek, disrupting spawning, which requires an aerated and sediment free environment. This would lower reproductive success, thereby lowering the amount of brown trout, at least in the short term, in Clear Creek in the project area.

The post-construction phase of riparian mitigation would include 34,400 square feet (0.78 acre) of riparian habitat connected to the natural function of Clear Creek. This would provide additional shade for aquatic species, which is a benefit as it lowers water temperatures. In addition, stream bank stabilization would reduce erosion, benefitting brown trout, which require a sediment free environment for reproduction.

6.3.5 Vegetation (Riparian Habitat) and Noxious Weeds

Construction of the Access Road and riparian mitigation would result in soil disturbance, which increases the potential for noxious weeds to either establish or further spread, degrading existing habitat.

Operation of the Access Road would not result in any direct impacts

Construction of the riparian mitigation would create favorable conditions for noxious weeds to introduce and establish, or to further spread.

The post-construction phase of riparian mitigation would include 34,400 square feet (0.78 acre) of riparian habitat connected to the natural function of Clear Creek. This would increase the species abundance and diversity. This would benefit wildlife through the creation of additional habitat and aquatic species by providing shade. In addition, the new vegetation would increase stormwater infiltration and bank stabilization, which would reduce erosion and benefit brown trout, which require a sediment free environment for reproduction.

6.3.6 Wetlands

Construction and operation of the Access Road and construction of riparian mitigation could indirectly impact wetlands because of the potential for increased sedimentation and temporary effects to the existing hydrologic conditions that convey water to the wetlands. The existing drainage patterns would be maintained; therefore no permanent changes are anticipated from hydrologic changes.

The post-construction phase of riparian mitigation would include 34,400 square feet (0.78 acre) of riparian habitat connected to the natural function of Clear Creek. The increase in vegetation would serve as an upland buffer to the wetland, reducing erosion and the potential for sediment to impact the adjacent wetland, as well filtering stormwater runoff.

6.3.7 Water Resources and Water Quality

Construction and operation of the Access Road and construction of riparian mitigation would not result in any indirect impacts.

The post-construction phase of riparian mitigation would include 34,400 square feet (0.78 acre) of riparian habitat connected to the natural function of Clear Creek. The new vegetation would increase stormwater infiltration and bank stabilization, which would reduce erosion and benefit brown trout, which require a sediment free environment for reproduction.

7.0 What mitigation is needed?

7.1 What Tier 2 mitigation is needed for the Access Road?

All appropriate BMPs to prevent, minimize, and mitigate impacts to environmental resources will be followed during construction and operation of the Access Road and the construction/post-construction of riparian mitigation, as detailed in Table 7-1.

Table 7-1: Mitigation Commitments for Environmental Resources

Activity	Location	Impact	Mitigation*
Transportation – no mitigation measures required			
Social and Economic Resources– no mitigation measures required			
Right-of-Way			
Temporary Easement	Clear Creek County-owned property	Temporary easement for property access	<p>CDOT will comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.</p> <p>The extent of the septic system will be determined and if within the Access Road alignment, bridging with crane mats or steel plate will be required to avoid damage to the septic tanks and pump station.</p> <p>Pre-construction and post-construction inspection of the septic system facilities, household well and residential structure(s) will be performed.</p> <p>High visibility markings will be used to identify hazards where needed. Any damages shall be repaired at the expense of the contractor.</p> <p>The temporary easement will include a two-to-five year agreement for right-of-entry to the property for the continued care, repair, and replacement of newly planted vegetation.</p>
Recreation - no mitigation measures required			
Visual Resources			
Construction and operation of Access Road	Between Old US 40 and I-70 east of eastbound east portal	Changes to visual setting to motorists and recreationalists along Clear Creek and the Scott Lancaster Memorial Trail	<p>Evaluate sites for elevation, solar orientation, soil conditions, and Mountain Mineral Belt ecosystem type (subalpine, montane, foothills, or riparian).</p> <p>Review plant selections for drought tolerance, salt and alkali tolerance, seedling vigor, fire-retardant characteristics, growth habit, suitable soil groups, and seeding rates; natural patterns and distribution of plants is the predominate landscape principle; ensure that the selected plant palette complements the site-specific existing vegetation, vary plant height, size, and width in restored plant communities.</p>

Table 7-1: Mitigation Commitments for Environmental Resources

Activity	Location	Impact	Mitigation*
			<p>Minimize the linear effect of vegetation clearing.</p> <p>Mimic surrounding conditions of plant density and spacing, species composition, and plant community structure.</p> <p>Blend existing rock and natural materials from the site with the landscape; save and reuse native rock, stumps, and other natural materials in conditions such as boulder fields, talus slopes, or ground cover that emulates the existing landscape; reuse of existing materials should be part of site design.</p> <p>Visually obtrusive erosion-control devices, such as silt fences, plastic ground cover, and straw bales, will be removed as soon as the area is stabilized.</p>
Air Quality			
Construction activities involving earth moving and storage of fill and rock products	Between Old US 40 and I-70 east of eastbound east portal	Fugitive dust	Require the contractor to prepare and implement a fugitive dust control plan that includes wetting of disturbed areas.
Wildlife (including Riparian Habitat)			
Construction of Access Road	Between Old US 40 and I-70 east of eastbound east portal	Loss of Vegetation, including sensitive habitat and riparian area	<p>Riparian trees and shrubs removed will be replaced as stipulated in CDOT's Guidelines for Senate Bill 40 Wildlife Certification, which states that trees removed during construction, whether native or non-native, shall be replaced with a goal of 1:1 replacement based on a stem count of all trees with diameter at breast height of two inches or greater. Shrubs removed during construction, whether native or non-native will be replaced based on their preconstruction areal coverage. In all cases, all such trees and shrub will be replaced with native species. Considering the area to be impacted is an area of remnant habitat and the riparian trees are 60 years old or older, this mitigation shall be commensurate with the length of time required for restoration.</p> <p>Loss of riparian vegetation will be offset by the creation of 34,400 sq. ft. of riparian habitat connected to the natural function of the Creek. The existing riparian area is elevated above the Creek with drainage from the Twin Tunnels being a major water source for the area. The new riparian habitat will be created by removing and lowering the existing man-made bench / railroad bed that is currently elevated as much as 6 to 8 feet above the Creek. This will effectively return the area to floodplain and subject it to periodic flooding.</p>

Table 7-1: Mitigation Commitments for Environmental Resources

Activity	Location	Impact	Mitigation*
			<p>This regrading effort will include the reconstruction of the natural terraces that are associated with western rivers and streams. Each terrace supports a different native ecosystem based on its relative relationship to the water table. The revegetation effort will be focused on re-establishing the different and unique ecosystems. All large trees, measured at two inches or more (in caliper) measured four feet above ground level, will be replaced at a minimum of one for one. Long pole plantings will be used.</p> <p>The final mitigation ratio will be determined through subsequent discussions with the ALIVE/SWEEP committees as well as CPW and Clear Creek County.</p> <p>New trees and shrubs must be watered by truck. A two to five year establishment warranty or incentive specification must be required of the contractor.</p>
Soil disturbance from construction activities	Between Old US 40 and I-70 east of eastbound east portal	Vegetation disturbance and ground clearing that creates potential noxious weed issues	<p>Reseed and protect temporary disturbance areas with CDOT approved BMPs and avoid disturbance to existing vegetation, to the maximum extent possible.</p> <p>Seed, mulch and mulch tackifier will be applied in phases throughout construction.</p> <p>Where permanent seeding operation are not feasible due to seasonal construction (e.g., summer and winter months), disturbed areas will have mulch and mulch tackifier applied to prevent erosion.</p> <p>Minimize disturbance and limit time that disturbed areas are allowed to remain non-vegetated.</p> <p>An Integrated Noxious Weed Management Plan will be developed during final design and implemented during construction to prevent the spread of noxious weeds into temporary disturbed areas.</p>
Construction-related disturbance between April 1 and August 31	Between Old US 40 and I-70 east of eastbound east portal	Potential loss of eggs or young of nesting migratory birds	If construction is to commence between April 1 and August 31, to avoid impacts to nesting birds in accordance with the MBTA, a qualified biologist will conduct a nest survey prior to construction. If active nests are found during construction, coordination with CPW and USFWS is required to determine an appropriate course of action, which may include, but is not limited to, a delay in construction to avoid the breeding season.

Table 7-1: Mitigation Commitments for Environmental Resources

Activity	Location	Impact	Mitigation*
Aquatic Resources			
Construction and Operation of Access Road	Adjacent to Clear Creek	Loss of mature riparian vegetation and associated shading and fish food source	<p>Riparian trees and shrubs removed will be replaced as stipulated in CDOT’s Guidelines for Senate Bill 40 Wildlife Certification, which states that trees removed during construction, whether native or non-native, shall be replaced with a goal of 1:1 replacement based on a stem count of all trees with diameter at breast height of two inches or greater. Shrubs removed during construction, whether native or non-native will be replaced based on their preconstruction areal coverage. In all cases, all such trees and shrub will be replaced with native species. Considering the area to be impacted is an area of remnant habitat and the riparian trees are 60 years old or older, this mitigation shall be commensurate with the length of time required for restoration.</p> <p>Loss of riparian vegetation will be offset by the creation of 34,400 sq. ft. of riparian habitat connected to the natural function of the Creek. The existing riparian area is elevated above the Creek with drainage from the Twin Tunnels being a major water source for the area. The new riparian habitat will be created by removing and lowering the existing man-made bench / railroad bed that is currently elevated as much as 6 to 8 feet above the Creek. This will effectively return the area to floodplain and subject it to periodic flooding.</p> <p>This regrading effort will include the reconstruction of the natural terraces that are associated with western rivers and streams. Each terrace supports a different native ecosystem based on its relative relationship to the water table. The revegetation effort will be focused on re-establishing the different and unique ecosystems. All large trees, measured at two inches or more (in caliper) measured four feet above ground level, will be replaced at a minimum of one for one. Long pole plantings will be used.</p> <p>The final mitigation ratio will be determined through subsequent discussions with the ALIVE/SWEEP committees as well as CPW and Clear Creek County.</p> <p>New trees and shrubs must be watered by truck. A two to five year establishment warranty or incentive specification must be required of the contractor.</p>
		Sedimentation from erosion of disturbed soils covering brown trout eggs incubating in	<p>CDOT will discuss with CPW the possibility of a spawning survey during the fall of 2012 to locate active redds within and immediately downstream from the study Proposed Action.</p> <p>Erosion control BMPs will be established along the Access</p>

Table 7-1: Mitigation Commitments for Environmental Resources

Activity	Location	Impact	Mitigation*
		the stream substrate	Road to avoid or minimize sedimentation within Clear Creek.
Vegetation (Riparian Habitat)			
Construction and Operation of Access Road	Near drainage supporting wetland adjacent to Clear Creek	Removal of riparian trees and shrubs	<p>Loss of riparian vegetation will be offset by the creation of 34,400 sq. ft. of riparian habitat connected to the natural function of the Creek. The existing riparian area is elevated above the Creek with drainage from the Twin Tunnels being a major water source for the area. The new riparian habitat will be created by removing and lowering the existing man-made bench / railroad bed that is currently elevated as much as 6 to 8 feet above the Creek. This will effectively return the area to floodplain and subject it to periodic flooding.</p> <p>This regrading effort will include the reconstruction of the natural terraces that are associated with western rivers and streams. Each terrace supports a different native ecosystem based on its relative relationship to the water table. The revegetation effort will be focused on re-establishing the different and unique ecosystems. All large trees, measured at two inches or more (in caliper) measured four feet above ground level, will be replaced at a minimum of one for one. Long pole plantings will be used.</p> <p>The final mitigation ratio will be determined through subsequent discussions with the ALIVE/SWEEP committees as well as CPW and Clear Creek County.</p> <p>For minimal protection of trees older than four years, barricades will extend beyond the dripline; for each inch of diameter of the tree’s trunk, the protection area will be extended an additional foot. For additional protection, a layer of wood chips (4 to 6 inches deep) will be placed around each tree prior to placement of the barricades.</p> <p>Additionally, during surface grading and MSE wall construction of the Access Road riparian habitat (particularly older cottonwoods and river birch) will be protected from construction activities by properly installed construction limit fencing, to the greatest extent possible.</p>
		Vegetation disturbance and ground clearing that creates potential noxious weed issues	<p>Reseed and protect temporary disturbance areas with CDOT approved BMPs and avoid disturbance to existing vegetation, to the maximum extent possible.</p> <p>Seed, mulch and mulch tackifier will be applied in phases throughout construction.</p> <p>Where permanent seeding operations are not feasible due to seasonal constraints (e.g., summer and winter months),</p>

Table 7-1: Mitigation Commitments for Environmental Resources

Activity	Location	Impact	Mitigation*
			<p>disturbed areas will have mulch and mulch tackifier applied to prevent erosion.</p> <p>Minimize the amount of disturbance and limit the amount of time that disturbed areas are allowed to remain non-vegetated.</p> <p>An Integrated Noxious Weed Management Plan will be developed during final design and implemented during construction to prevent the spread of noxious weeds into temporary disturbance areas.</p>
Wetlands			
Construction and Operation of Access Road	Near drainage supporting wetland adjacent to Clear Creek	Indirect impacts to wetlands	<p>All wetlands delineated and mapped for the project will be protected from construction activities by properly installed construction limit fencing.</p> <p>CDOT will achieve permanent stabilization through revegetation and permanent erosion controls measures and through maintenance of temporary erosion controls and plantings to stabilize non-rocky areas.</p> <p>Fertilizers and/or hydro-mulching will not be allowed within 50 feet of wetlands.</p> <p>Construction staging and materials stockpiling will be located greater than 50 feet from the edge of wetlands or the edge of Clear Creek, when possible, to avoid disturbance of vegetation and to prevent pollutant discharges into sensitive habitats. Specific locations will be determined during construction planning and, considering the narrowness of the corridor and limited areas available, this buffer may need to be reduced. If this buffer is not achievable, CDOT will consider the placement of materials closer to the edge of wetlands or the edge of water and identify appropriate additional best management practices (BMPs) that would be required to minimize disturbance of vegetation and prevent pollutant discharges into sensitive habitats. BMPs will be determined on a site-by-site basis and any modifications will require CDOT environmental staff approval.</p>
Water Resources and Water Quality			
Construction and Operation of Access Road	Between Old US 40 and I-70 east of eastbound east portal	Elevated sediments within Clear Creek	CDOT will implement appropriated BMPs for erosion and sediment control according to the CDOT Erosion Control and Storm Water Quality Guide (CDOT, 2002), develop storm water management plan, which includes water quality monitoring, and use and use adaptive mitigation identified in the Upper Clear Creek Sediment Control Action Plan.
Long-term erosion impacts	Between Old US 40 and I-70 east of	Erosion, leading to increased	CDOT will achieve permanent stabilization through revegetation and permanent erosion controls measures and

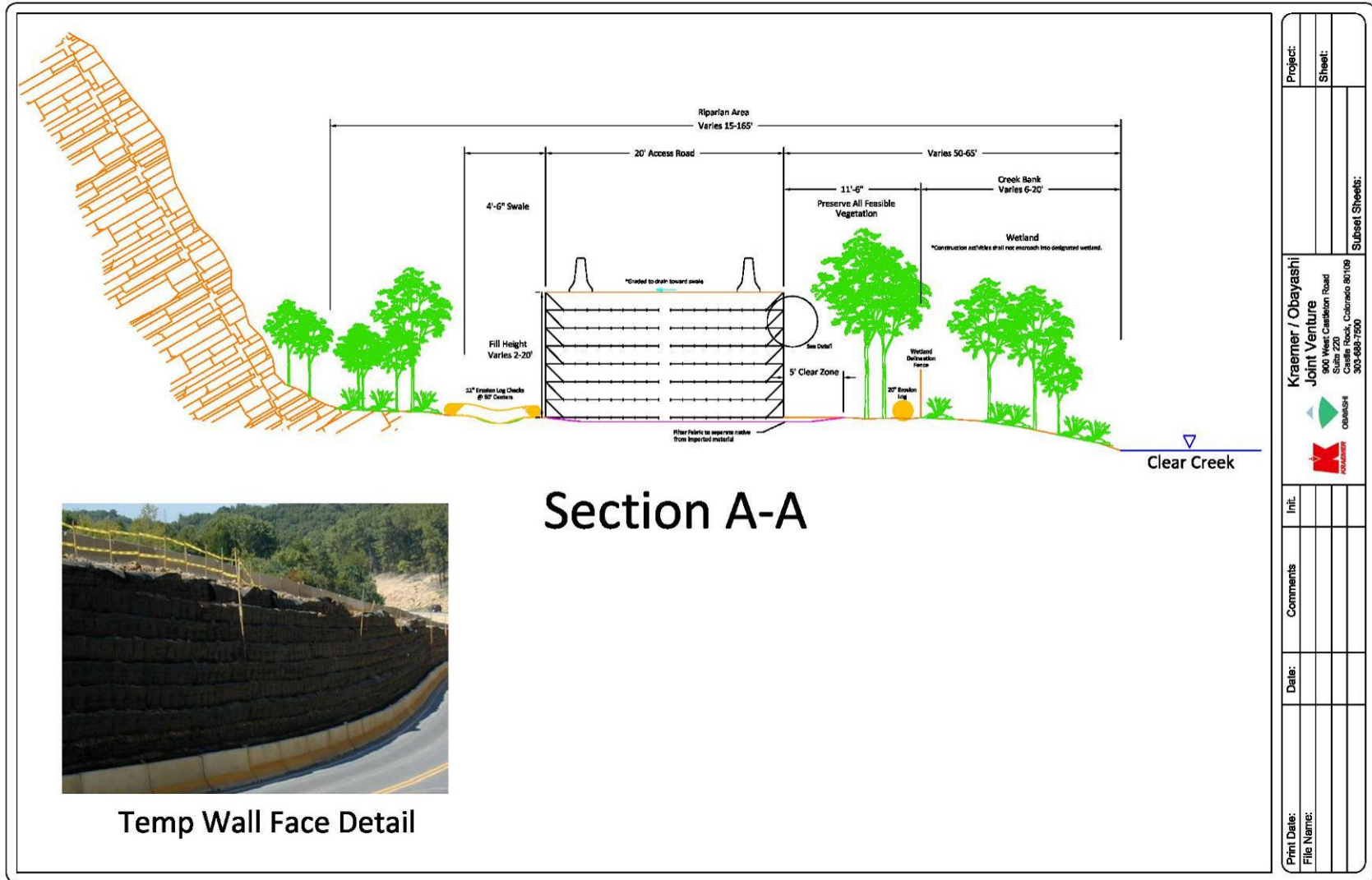
Table 7-1: Mitigation Commitments for Environmental Resources

Activity	Location	Impact	Mitigation*
from soil disturbance during construction	eastbound east portal	sedimentation	through maintenance of temporary erosion controls and plantings to stabilize non-rocky areas.
Construction and Operation of Access Road	Residence near Dog House Rail Bridge	Disturbance of residence's septic system (tank and/or pump station and leach field)	The extent of the septic system will be determined and if within the Access Road alignment, bridging with crane mats or steel plate will be required to avoid damage to the septic tanks and pump station. Pre-construction and post-construction inspection of the septic system facilities, household well and residential structure(s) will be performed.
Construction			
Construction of Access Road	Between Old US 40 and I-70 east of eastbound east portal	Visibility and noise resulting from the construction and operation of the Access Road adjacent to Clear Creek would disrupt the relative quiet experience for anglers and rafters on Clear Creek and bicyclists and pedestrians using the trail. Also, removal of vegetation will eliminate visual buffer of I-70.	Visually obtrusive erosion-control devices, such as silt fences, plastic ground cover, and straw bales, will be removed as soon as the area is stabilized. Require the contractor to prepare and implement a fugitive dust control plan that includes wetting of disturbed areas. Require contractor to use well-maintained equipment, particularly with respect to mufflers.
		Removal of mature vegetation could impact recreational fishing quality by reducing fish food resources	Riparian trees and shrubs removed will be replaced as stipulated in CDOT's Guidelines for Senate Bill 40 Wildlife Certification, which states that trees removed during construction, whether native or non-native, shall be replaced with a goal of 1:1 replacement based on a stem count of all trees with diameter at breast height of two inches or greater. Shrubs removed during construction, whether native or non-native will be replaced based on their preconstruction areal coverage. In all cases, all such trees and shrub will be replaced with native species. Considering the area to be impacted is an area of remnant habitat and the riparian trees are 60 years old or older, this mitigation shall be

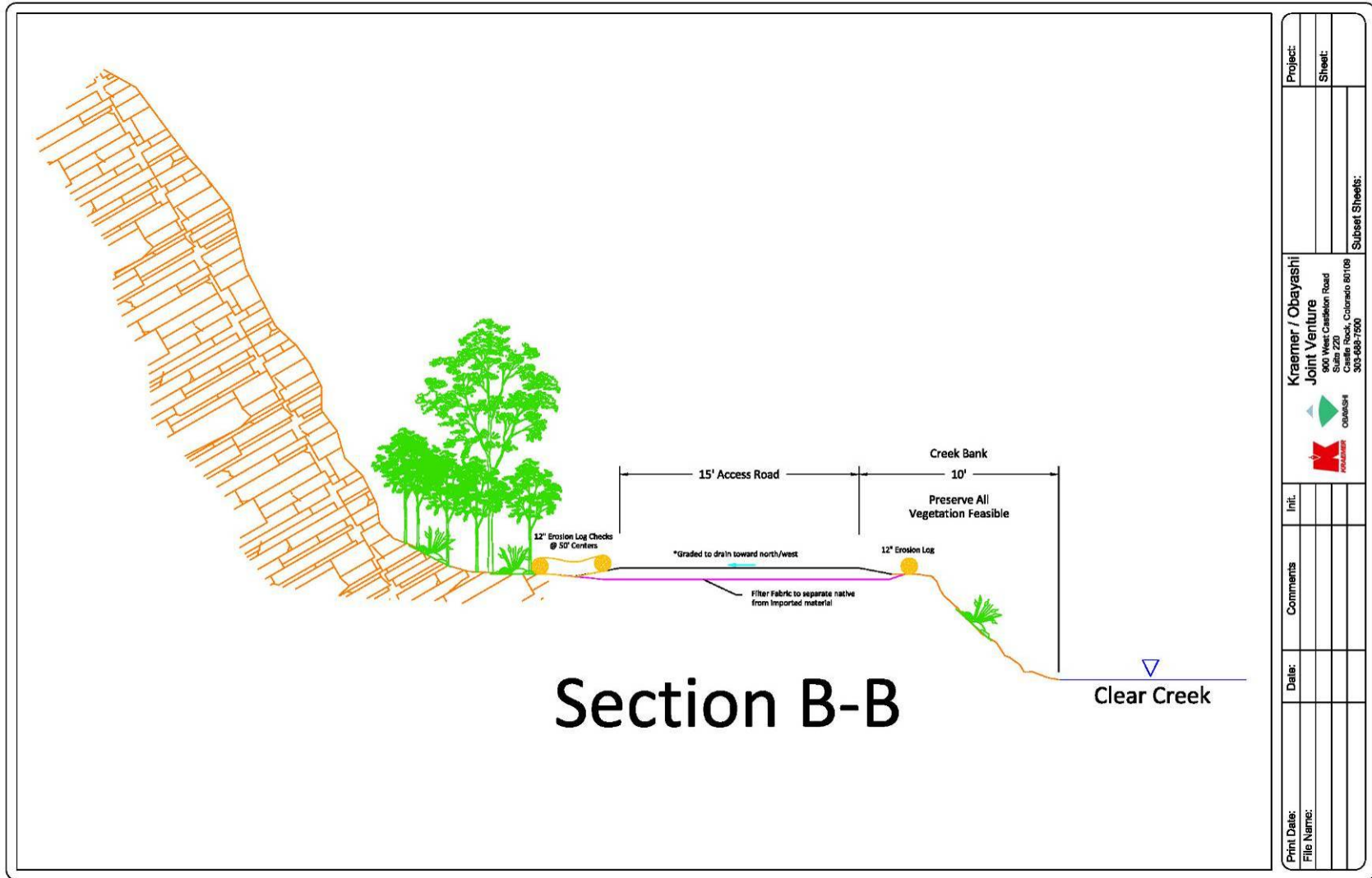
Table 7-1: Mitigation Commitments for Environmental Resources



Activity	Location	Impact	Mitigation*
			<p>commensurate with the length of time required for restoration.</p> <p>New trees and shrubs must be watered by truck. A two to five year establishment warranty or incentive specification must be required of the contractor.</p>
<p>*Mitigation is not necessary if impact can be avoided through changes in the design or construction of the Portal to Portal Access Road (i.e., the activity is avoided)</p>			

Appendix A: Roadway Cross Sections



The approximate location of this cross section is shown in Figure 1.



Project:	
Sheet:	
Subset Sheets:	
Kraemer / Obayashi Joint Venture 900 West Cascade Road Clear Creek, Colorado 80108 303-689-7500	
 	
Print Date:	
File Name:	
Date:	
Comments:	
Init:	

The approximate location of this cross section is shown in Figure 1.

Appendix B: Colorado Parks and Wildlife Meeting Minutes



Meeting Summary

Project: Twin Tunnels EA

Purpose: Discuss Impacts/Mitigation Measures from Proposed Temporary Portal to Portal Access Road

Date Held: May 16, 2012

Location: Twin Tunnels - Onsite

Attendees: **CP&W:** Ty Petersburg, Paul Winkle, Ben Kraft
CDOT: Jim Eussen
Jacobs: Francesca Tordonato, Bob Quinlan
THK: Kevin Shanks

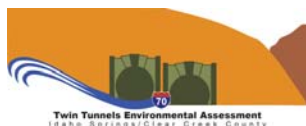
Copies: Attendees, File

Summary of Discussion:

The contractor has proposed an alternative construction method that we have not analyzed in the Environmental Assessment for the Twin Tunnels project. The purpose of this meeting was to provide Colorado Parks and Wildlife (CPW) an opportunity to look at a proposed conceptual temporary portal to portal access road alignment and a temporary creek crossing and convey any concerns or provide comments related to both aquatic and terrestrial wildlife. We also discussed additional mitigation measures that would be necessary if these proposed actions move forward.

Potential Impacts- Wildlife and Riparian Habitat

Bighorn sheep have been observed on the south facing slopes in the vicinity of the temporary haul road. CPW believes that during operation of the road, sheep or other wildlife will likely avoid this area. There wasn't a lot of concern from CPW about the proposed road because it is temporary and will be reclaimed once construction is complete. The comment was made that mature vegetation removed would likely take years to reestablish and everyone was in agreement that this would be a long-term if not permanent impact from the proposed access road. Riparian trees and shrubs removed during construction will be replaced as stipulated in CDOT's Guidelines for Senate Bill 40 Wildlife Certification, which states that trees removed during construction, whether native or non-native, shall be replaced



with a goal of 1:1 replacement based on a stem count of all trees with diameter at breast height of two inches or greater. Shrubs removed during construction, whether native or non-native will be replaced based on their preconstruction aerial coverage. In all cases, all such trees and shrubs will be replaced with native species. Due to the limited amount of riparian habitat adjacent to Clear Creek within the project area, a higher mitigation ratio may be warranted. The final mitigation ratio will be determined through subsequent discussions with the ALIVE/Sweep committees as well as CPW and Clear Creek County. The proposed access road would impact approximately 6,700 square feet of riparian habitat. Based on the conceptual design, construction of the temporary access road would remove approximately 6 mature cottonwood trees as well as several mature stands of river birch.

CPW would like to see a list of proposed BMPs to reduce sediment, control erosion, and prevent the spread of noxious weeds- it was noted that diffuse knapweed is currently present along the proposed access road so this will require treatment prior to disturbance.

Potential Aquatic Impacts from Temporary Creek Crossing

There could be some impacts to spawning brown trout while the temporary culverts are in place near the Hidden Valley Bridge (but the footprint is small and the impact would be temporary). CPW would like to see decontamination for mud snails and zebra/quagga mussels, whirling disease, and any other aquatic invasive species.

If heavy equipment to be used for the project has been previously used in another stream, river, lake, reservoir, pond, or wetland than one of the following disinfection practices is necessary prior to construction to prevent the spread of invasive species/whirling disease.

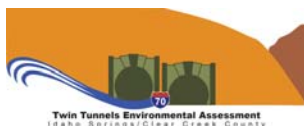
- Remove all mud, plants, and debris from equipment (tracks, turrets, buckets, drags, teeth, etc.) and spray/soak equipment a 1:15 solution of Sparquat institutional cleaner and water. Keep equipment moist for at least 10 minutes **OR**
- Remove all mud, plants and debris from equipment (tracks, turrets, buckets, drags, teeth, etc.) and spray/soak equipment with water greater than 140 degrees F for at least 10 minutes.

Clean hand tools, boots, and any other equipment that will be used in the water with one of the above options as well. Do not move water from one water body to another. Be sure equipment is dry before use.

Additional Mitigation Measures

There was discussion about additional enhancement and mitigation measures in the vicinity of access road. There is opportunity to perform stream habitat improvements downstream of the Dog House Rail bridge for aquatic species. Proposed improvements would need to be coordinated with the rafting companies to (because they have expressed concern about changing the rapids around this location).

Fencing adjacent to the access road was discussed as one possible mitigation measure. It was noted that money would be better spent fencing the north side of I-70 adjacent to the west bound lanes (east of the Twin Tunnels) where in the last five years (2006 through May 2011) three bighorn sheep have been



killed and recovered from this location. The bighorn killed at this location are probably foraging on the north shoulder of I-70 (they are likely not attempting to cross the highway).

Possible mitigation efforts per recent CPW publication "*Reducing Vehicle Caused Mortality in the Georgetown Bighorn Herd*" at this location just east of the tunnels include:

- Discouraging bighorn from being on the road by:
 - Removing vegetation on shoulder
 - Making vegetation less attractive
 - Installing wildlife deterrent system
 - Install fencing to prevent sheep from accessing shoulder
 - Removing any objects from north side of the road that obscure driver's view (there is some vegetation that could possibly be removed to improve visibility)
 - Installing bighorn sheep signage to alert drivers about possibility of sheep on the shoulder.
 - Install bighorn detection and warning system similar to that used on Highway 6 in Golden, wherein if a bighorn is detected on the shoulder via a trailmaster camera a lightboard tells motorists that there are bighorn sheep on I-70.

Additional mitigation measures would include the monitoring of construction activities by a biologist onsite to ensure older cottonwoods are avoided or at least minimally impacted. Construction personnel and equipment operators should also take care during construction of the temporary access road to avoid impacts or damaging vegetation (especially mature cottonwoods) outside the construction footprint.

Appendix C: ALIVE/SWEEP Meeting Minutes



PROJECT:	I-70 Twin Tunnels Design / Construction Phase
PURPOSE:	SWEEP / ALIVE Task Force Meeting
DATE/TIME HELD:	June 7, 2012 1:00 PM – 4:00 PM
LOCATION:	CDOT, 425 Corporate Circle, Golden

Final Meeting Minutes

1. Introductions (see sign in sheet)
2. Project updates
Handouts: Project Schedule
 - a. The NEPA phase will be completed after the EA release in early July and the decision document in November. The review process for the EA includes a July 25 public meeting and the public will have a 30-day review period beginning earlier in July.
 - b. The Frontage Road project is under contract and CDOT will begin construction this month.
 - c. The westbound tunnel bore repairs include actions separately cleared by CDOT to begin in September to fill voids in the westbound bore.
 - d. Package 1 will begin soon after a decision document is issued and will include preparation of the frontage road to handle the detour and provide some of the new retaining walls. Package 1a is expected to do some prep work in the median to move traffic flow across the east and westbound lanes. Package 2 will begin next spring and will include most of the tunnel excavation. Package 3 will begin about November 2013 to restore the frontage road, complete the frontage road wall fascia and provide the remainder of the impacted project area restoration elements
 - e. Gary Frey asked if we were beginning the project before the NEPA decision document. Randy Jensen replied that the westbound tunnel repair work was being done as a routine maintenance effort and could be built with state money once a Categorical Exclusion was complete. This work is not connected to the Twin Tunnels project.

3. Review progress on previous commitments

Handouts: Twin Tunnels EA and Frontage Road Project ALIVE issues and Task Force Recommendations, and Twin Tunnels EA and Frontage Road Project SWEEP issues and Task Force Recommendations

- a. David Singer explained that the current handout includes a fourth column in the ALIVE and SWEEP recommendations to clarify the specific mitigations and enhancement suggestions that were defined in conversations with the two Task Forces. These tables will be included in Appendix B of the EA. Allan added that we will come back to this group, either via email or at another meeting, with further updates in a fifth column that will define how we are implementing the recommendations in the design /construction phase of the project.
- b. The PLT and Technical Team have vetted a process for review of any additional ideas that the contractor might bring in addition to what had already been addressed in previous EA conversations. The following topics are descriptions of such ideas.

4. Portal to portal access road

Handouts: Blow-up and Cross Sections A-A and B-B, Portal to Portal Access Road Mitigation Concept Plan and Cross Sections, Construction Access Road Riparian Impact Boundary Information and Plan

- a. David and Matt Hogan described the proposed access road location and rationale. It helps us address safety, mobility and constructability. It reduces construction traffic travel distance. It provides an opportunity for emergency responders to avoid the frontage road. It reduces public traffic back-ups by not having to delay mainline traffic to let construction trucks merge into traffic. It improves air quality (i.e., reduces dust entrainment) by reducing the miles travelled by construction vehicles.
- b. David also identified that there are some visual and riparian impacts. There is temporary construction that will impact that area and some vegetation will need to be removed. Matt also mentioned that they looked at a bridge option but that the impacts associated with the construction of a bridge would be similar to the proposed roadway and costs would be greater than the proposed roadway. Brandon added that the erosion log checks would be more wildlife friendly than a silt fence.
- c. Matt anticipated 30-40 vehicles would be using this road per day.
- d. Kevin Shanks described the impacted area to include an upland riparian area and small wetland area. After the access road is removed, the project would have an opportunity to expand the current 6,600 square feet of riparian area and reconstruct the area with

34,000 square feet of riparian area. The concept is also in keeping with the proposals being examined for the reconstruction of the game check area.

- e. Ty Petersburg said he visited the area Tuesday with Jim Eussen, Matt Kondratieff and Paul Winkle. Matt has volunteered to come out in October to create a proposal to redesign the stream channel to enhance an even larger concept redesign in the creek. CDOT's Twin Tunnels project would not do CPW's work in the creek. CDOT would do the riparian restoration so it would be complementary to what CPW might come back to construct in the creek channel itself. The stream work would be a separate project. CPW would certainly work with the rafting companies to project their use of the stream.
- f. Alison Michaels asked whether wildlife will still be able to cross the road. Though it will be challenging at the highest points, most of the road is at grade and easily crossable.
- g. Gary Frey asked if the restored access road would be accessible for recreational users. Kevin said a river access path could be provided. He continued by describing how this project could complement the County's proposed restoration improvements in the game check area.
- h. Holly Huyck suggested that a tie in location behind the sand bar may provide some areas for a fish respite. Ty said that Matt would be looking for these opportunities through the entire area around the tunnels.
- i. Fred Rollenhagen asked if some of the water from the tunnels would be diverted away from the riparian and wetland areas due to new construction and possibly have a negative impact on the wetlands. Holly said that was not going to be the case since the large majority of water flow was directly from precipitation, not groundwater flow.
- j. David reminded everyone that this suggestion would receive a full technical evaluation and it would be included as part of the proposed action presented to the public for review with the EA. Then, if a decision is made to proceed, this suggestion would be added to the final decision document.

5. Creek crossing

Handouts: Temporary Stream Crossing Proposal Plan, Information and Section

- a. David and Matt described the creek crossings. The first crossing would facilitate the substructure construction of the new bridge (January –February 2013). The second crossing would facilitate improved access to the bridge structure during demolition to catch and remove demo materials (September – November 2013). Each crossing would remain in place for 2-4 weeks. Concerns include sedimentation to the creek and

impacts to the Blackhawk water intake 500 feet downstream. Brandon said each crossing would be no wider than 50 feet.

- b. Creek flows are less than 150 CFS during the low water time. Brandon said the culverts were designed to accommodate 330 CFS. Mike said November through March were low water (less than 100 cfs) months but October has seen some higher water events. Flows in the January/February timeframe have historically been about 50 cfs.

Ty suggested that there may be ways to accommodate trout in October but it would be easier to do this later in the year, at least after October. Further coordination with the CPW Fisheries biologist (Paul Winkle) will be required.

- c. Brandon added that they would use washed riprap to minimize sediment in the creek. The project team would also use other BMPs to minimize other factors that might cause sediment in the creek.
- d. Rena said the Corps would require that the temporary crossings have a 404 permit – nationwide 14. Attention to spawning and other concerns would need to be addressed but the approval is typically expeditious. Because they are two separate crossings at separate times, the project will need to submit these as two separate permit applications.
- e. Gary asked if this is the bridge is the final PEIS solution for this area. David said this project is only part of the solution and does not include a final decision on corridor design speed or any improvements to westbound lanes. Gina McAfee added that AGS improvements may also come through this area in the future.
- f. The new bridge will be designed to make sure that it spans the creek entirely. This will enable the project to consider the County's desire to continue the bike path under the bridge.

6. Rockfall mitigation

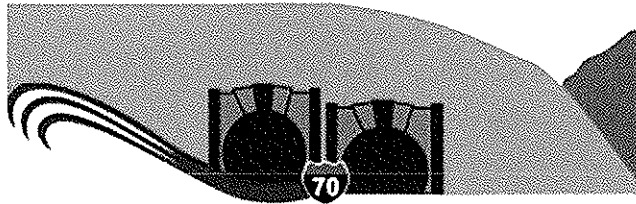
Handouts: Rockfall Mitigation Features Preliminary Concept Plan

- a. Allan said there are two aspects of rockfall mitigation.
- b. First, CDOT's ongoing rockfall mitigation program will address improvements on the north side of the westbound portal exit, shown in orange, and they may try to do that during the westbound tunnel bore repairs to minimize traffic impact.
- c. The other rockfall mitigation work shown in yellow is temporary for construction purposes but could be maintained if the stakeholders prefer to keep it in place.

- d. These locations have taken into account the wildlife patterns.
- e. Ty suggested that the designers of the westbound portal fencing should be designed to keep the bighorn sheep away from the area. Jim Eussen was concerned about lambs getting caught in the mesh. He will provide a spec that's worked well in the Big Thompson Canyon.

7. Next steps

- a. Jason summarized that each of these three actions described will go through a slightly different process. The access road will be provided as part of the EA review and included in the final decision document if appropriate. The creek crossing will go through a permit process, more customary as a construction permit. The rockfall mitigation has been addressed in the EA in a general way but will not be described in this level of detail in the EA.



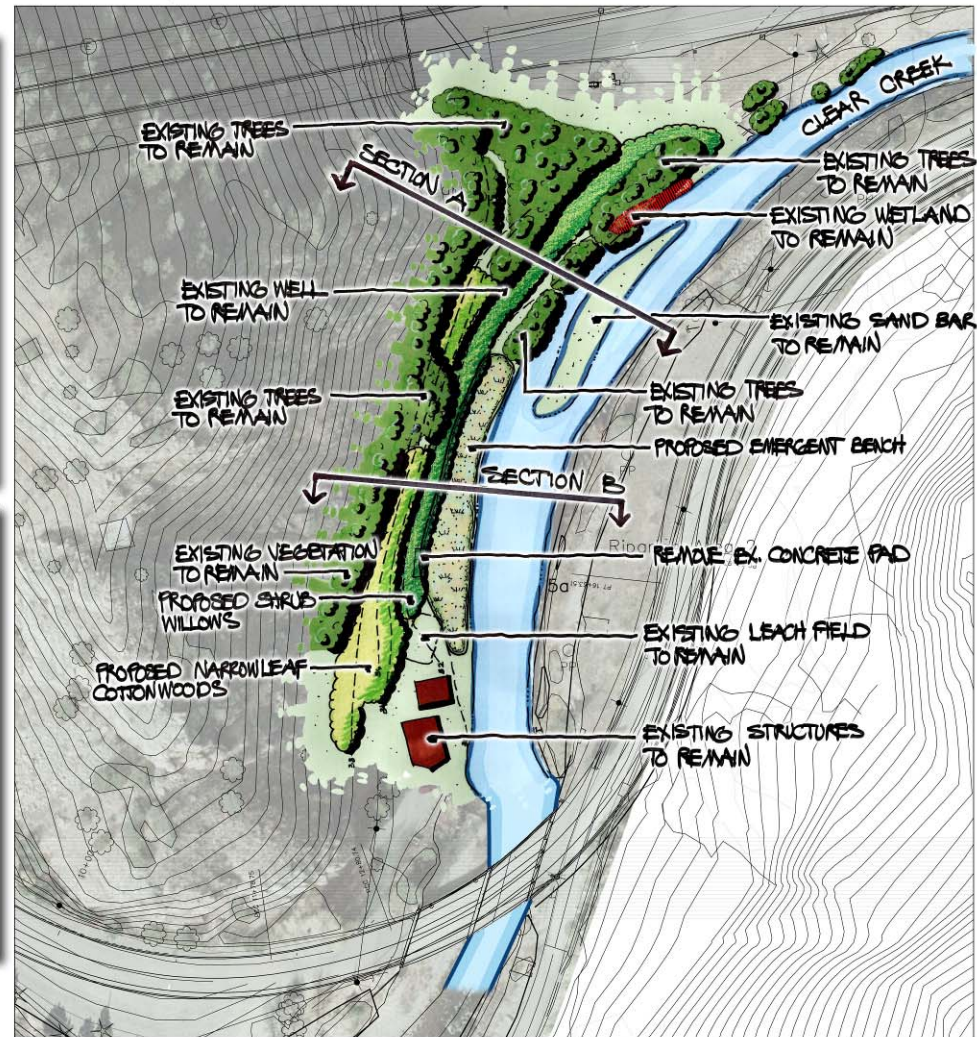
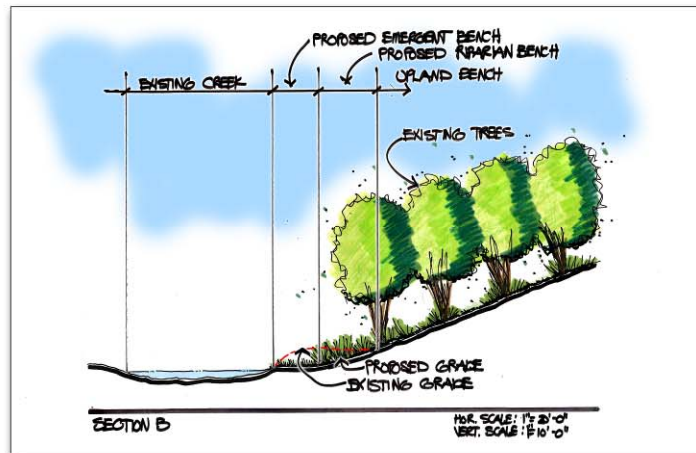
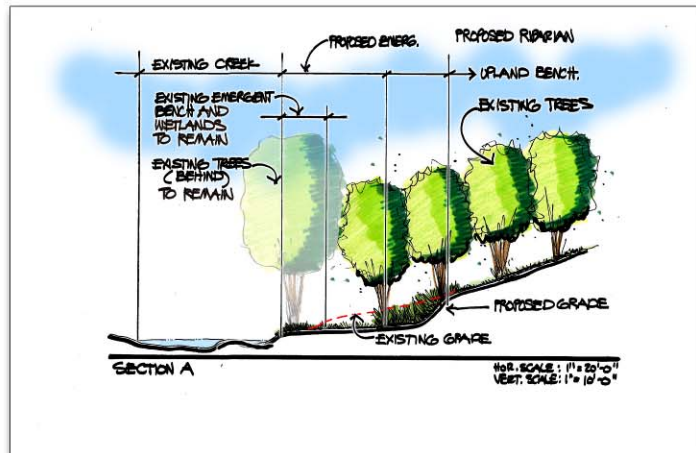
Twin Tunnels Design/Construction
Idaho Springs/Clear Creek County

PROJECT:	I-70 Twin Tunnels Design / Construction Phase
PURPOSE:	SWEEP / ALIVE Task Force Meeting
DATE/TIME HELD:	June 7, 2012 1:00 PM – 4:00 PM

SIGN IN SHEET

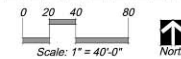
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26.			
27.			

Appendix D: Riparian Mitigation Plan



PORTAL TO PORTAL ACCESS ROAD MITIGATION

Clear Creek County, Colorado



associates inc.
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MAY 31, 2012

