Summerville Trail Feasibility Study

Tuolumne townsite, California

Prepared for the **Tuolumne Band of Me-Wuk Indians**

In partnership with the **Tuolumne County Transportation Council**

and the **Tuolumne County Public Health Department**

by SIEGFRIED

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1 INTRODUCTION

1.1 PROJECT OVERVIEW AND VISION

The Summerville trail was originally envisioned as a connection between significant destinations in and around Tuolumne townsite. Significantly, these include Summerville High School, Tuolumne townsite, and Black Oak Casino Resort. An approximately two mile route would link the region's largest employment center and one of the largest educational institutions with a significant proportion of the local population. The trail will not only provide safe and healthy transportation options, but will also help mitigate traffic congestion.

Secondarily, the trail would provide recreational opportunities for residents and tourists alike. By considering the user's experience and providing opportunity for interaction with the natural environment, trails provide more than a route from A to B. Trails can provide opportunities for recreation, relaxation, exercise, and enjoyment – all important components in building healthy communities.

The trail would link existing and planned transportation routes throughout Tuolumne County. Connecting separate elements is a critical goal of transportation planning, as projects which increase overall connectivity yield the most gain for any given investment. Connected trail networks are more likely to serve transportation needs, attract recreational users interested in long-distance hiking, exercise, or mountain bike riding, and increase tourism.

Further, this study considers connectivity between two significant tribally owned and operated facilities: (1) the existing Black Oak hotel and casino , and (2) the planned golf course (formerly West Cherry Valley Subdivision). Connectivity for pedestrians, bicyclists, and golf carts or low speed vehicles (LSV's)[1] is discussed.

Three alternative alignments for the trail are proposed adjacent and/or within planned private development, and constructability and operational considerations are provided for each. Key to all of the alternatives is integrating the trail with both the planned golf course and the surrounding community. This step in planning is critical to providing for the needs of local residents, highlighting the beauty and capitalizing on the benefit of existing natural and cultural resources, and supporting economic development of the area.

This study was funded by a Community Transformation Grant administered through the Tuolumne County Public Health Department. Identifying connections, including providing safe routes to schools, is a key objective of the grant, as a connected network of non-vehicular transportation infrastructure as well as proximity and access to recreational areas are significant factors in the health of communities.

1.2 EXISTING CONDITIONS

The project area is bisected by existing roads, primarily Tuolumne Road and North Tuolumne Road. The west end of the project area includes Summerville High School (Summerville Union School District property, APN's 062-630-02, -07 and -15). The High School includes three driveways fronting on Tuolumne Road. Informal interviews indicate that a majority of students drive to school, with very few walking to school along Tuolumne Road, though some

[1] A "golf cart" is a motor vehicle less than 1,300 pounds designed and operated at 15mph or less, as defined by California Vehicle Code (CVC) Section 345. A LSV is a motor vehicle, also known as a Neighborhood Electric Vehicle (NEV), designed and operated at a minimum of 20mph and maximum of 25mph, as defined by CVC Section 385.5.

students are dropped off along Tuolumne Road. This section of the road does not contain any pedestrian improvements or separation from the travel way, resulting in less than ideal conditions for non-motorists.

East of the school are several large parcels, with potentially significant historic resources. These parcels include APN's 062-630-24 and 062-630-20. Around the turn of the century, the West Side Logging company had a substantial logging operation in this area, including a mill, sawdust burner, and narrow gauge railroad (originally the Hetch Hetchy & Yosemite Valley Railroad, it was later absorbed and renamed the West Side Lumber Company Railroad). Logging artifacts, including the landmark kiln, steam donkeys, dam, as well as numerous narrow gauge railroad spurs, support buildings, and apparatus remain.

The areas used for logging operations were cleared, and remain largely so (particularly following this area's use as a base of operations for fire-fighting efforts during the 2013 Rim Fire). Subsequent use included a RV park. Recent entitlement efforts included a golf course and residential subdivision (circa 1992, updated 2006. See "Planning Context"). A residential subdivision is currently being constructed at the west side of Tuolumne townsite along Cherry Valley Blvd. North.

Figure 1: The sawdust burner is a central landmark artifact, and slated to be preserved on an island in the existing logging pond.

Turnback Creek runs through this area from North to South, including a concrete dam and resulting mill pond. The creek is shown as a continuous blue line on USGS Quandrangle maps, indicating it is a perennial stream and a Water Resource of the United States[2]. In general, any disturbance should be limited within 30' of waterways, in addition to any other applicable conditions of the proposed development. Some areas of the project area are densely overgrown with underbrush. Oak Woodlands and Oak Chaparral ecotypes predominate.

Based on anecdotal reports from tribal security, daily patrols are required to prevent trespassing in this area. This is likely due to a combination of lack of prescribed circulation to Summerville High School, lack of allowed access, and current lack of perceived surveillance.

1.3 PLANNING CONTEXT

Documents reviewed and policies incorporated include the Tuolumne County Bikeways and Trails Plan, Tuolumne County Trails: Paths to Health and Prosperity, and the Tuolumne County General Plan Chapter 17: Tuolumne Community Plan.

The original 1992 Development Agreement, the Davis-King & Associates cultural resources studies, or other reports referenced by the above documents were not reviewed as a part of this study.

Tuolumne County Trails Paths to Health and Prosperity

This document identifies several types of trails based on historical and anticipated use. The Sierra Railway Trail and Westside trail are classified as "Heritage Trails," due to their historic alignment, while the proposed Summerville trail would largely be classified as an "Urban trail". This is primarily due to its role in connecting various elements of the community. However, there is ample opportunity for introducing recreational opportunities within the Summerville Trail study area as well.

Tuolumne County Bicycle and Trails Plan

Tuolumne Road was identified as a hazardous area for pedestrians and bicyclists during a community workshop that informed the Tuolumne County Bicycle and Trails Plan (p. 16). Routing alternative "C" specifically addresses this area, and provides an opportunity for future extension west along Tuolumne Road. Extension further west along Tuolumne Road would also allow an additional connection to the Sierra Railway trail as it crosses Tuolumne Road near Soulsbyville Road.

Subdivision and Golf Course Entitlement

A development application was originally submitted in 1992. The property was then purchased by the Tuolumne Band of Me-Wuk Indians, and the development application updated and resubmitted. A Negative Declaration was prepared and accepted. Additional conditions of approval were prepared, which incorporated the original conditions of approval from the 1992 application (2006 Conditions of Approval, General Condition #3). Several of these conditions are applicable to, or may be satisfied by, the proposed Summerville Trail. These conditions are listed in italics with commentary below.

1992 Conditions of Approval:

- *"Owner shall dedicate 1.58 acres to Tuolumne County or the Tuolumne Park and Recreation District for the purpose of providing park and recreational facilities to serve residents of the subdivision or shall pay fees in lieu of such dedication.*

[2] Any stream or pond crossing or alteration will require a Regional Water Quality Control Board (RWQCB) 401 Certification, a US Army Corp of Engineer's Section 404 permit, and approval by California Department of Fish and Game.

- *"30 foot wide areas proposed for Open Space zoning along the perimeter of the project site"*

2006 Conditions of Approval

61. A total of 400 native oaks shall be planted between or around fairways . . . .

106. The proposed 10 foot wide public trail easement shown on sheet 2 of 9 in the Southwest corner of the project shall be revised to provide access from Box Factory Road to the old sierra Railroad Alignment. The panhandle portion of the Sierra Railroad easements shall be offered as a public easement as well.

107. The applicant shall provide six parallel parking spaces along Box Factory Road for the benefit of public parking for use of the trail.

Tuolumne Community Plan: Additionally, incorporating circulation into the development of the golf course and surrounding area accomplishes multiple goals and objectives, and is consistent with the Tuolumne County General Plan. Specific goals and objectives achieved by the Summerville Trail are:

17.A.b

1. *Create a blended link between the Tuolumne Townsite and the new West Side development. The link should reflect community input and integrate elements of town history, pedestrian use and safety . . . .*

3. *Establish bicycle/pedestrian facility linkages between West Side and the Tuolumne townsite including, but not limited to, facilities along Cherry Valley Boulevard, a connection (or multiple connections) between the West Side railroad grade and town site bicycle and pedestrian facilities.*

17.E.11 Adopt and facilitate construction of routes for alternative modes of transportation throughout the community that link together commercial, residential, school, recreational, public and similar high-use land uses.

17.E.12 Continue to use the Tuolumne Bikeways and Trails Plan to guide construction of new biking, walking and equestrian trails.

17.F.9 Recognize the necessity to manage fire fuels while preserving wildlife habitat values to the maximum extent feasible.

(Trails and Class I bicycle paths provide a fire break and access route for maintaining natural areas adjacent residences.)

1.4 CONNECTIVITY

Other trails

The Sierra Railroad Trail and the Westside Trail offer extended recreational opportunities. Connecting these two trails would provide a route between them and additionally from each into Tuolumne townsite. By connecting these existing or planned elements, a larger network – with potential as a world-class backpacking, bicycling, or hiking destination – may be achieved.

The Sierra Railway Trail from Tuolumne to Standard – approximately 5.8 miles – is identified as a priority project in the Tuolumne County Trails document. This route adjoins the planned golf course at the at the south east corner of the Summerville Trail study area.

The existing Westside Trail begins at the northeast corner of this study area, off Buchannan Road. The trail then extends for approximately 5.5 miles northeast.

Figure 2: Current trailhead of the Westside Trail at Buchannan Road. Not pictured is a small off-street parking area serving the trail.

Safe Routes to School

The expanded trail area provides an important link in the overall community. Access to the school is currently limited to Tuolumne Road, a narrow, two-lane road with few stop signs, and no pedestrian accommodation. By providing a pedestrian route separated from the vehicular travelway, this project will enhance pedestrian safety.

Measuring the impact of pedestrian and bicycle access for existing students is inexact, as students have adapted to the fact that there is currently no access. Providing non-vehicular alternatives is however the first step in promoting a healthy lifestyle incorporating walking and bicycling.

2 PHYSICAL PLAN

2.1 TRAIL NETWORK

This study proposes to expand the existing trail network by adding approximately 3.1 miles of natural surface trail on and near Summerville District property, .7 miles of natural surface trail along the tribally owned old railroad right of way, up to 2 miles of Class 1 bicycle and pedestrian path (at varying locations, depending on the alternative route ultimately selected), and using up to .7 miles of existing or proposed sidewalk.

Black Oak Casino Resort south to Tuolumne Road

Beginning at the north of the study area, a Class I path is proposed adjacent the County right-of-way along North Tuolumne Road, beginning south of the existing Black Oak Casino Resort. This segment will connect Black Oak Casino Resort with Tuolumne townsite, providing an important link between employment and housing. With the cooperation of the Me-Wuk tribe, this segment may be located on tribal lands to provide a more naturalistic experience further away from the roadway.

Doing so would also allow adequate room for golf-cart travel between the hotel and casino. Sharing path access with golf carts (or other low-speed-vehicles (LSV's)[3]) is recommended along this segment to prevent conflicts with high speed traffic along North Tuolumne Road. To facilitate shared use, the paved path should be widened to at least 14' (not including 2' shoulders on both sides). Without access to tribal lands, this segment of the path would be restricted to the County right of way, and may not be possible to construct within the current right of way[4].

As the old Railroad right of way parallels North Tuolumne Road, it provides ample room for a meandering path adjacent the road for approximately 750 linear feet. At that point, the Railroad right of way veers easterly away from the road, becoming separated from the County right of way by a privately owned parcel. At this point, the proposed path again parallels North Tuolumne Road.

Where the existing roadway exceeds two lanes, the path may need to be attached to the roadway, and will return to the roadway in any case at the signalized intersection to cross Tuolumne Road. Just north of the intersection, steep grades adjacent the roadway would make construction of a separated path costly, further supporting the attachment in this location.

County-provided GIS and aerial data indicate an existing 80' ROW with an offset 58' travel-way, providing approximately 14' of construct-able area. Due to significant slopes on this corner and to facilitate golf carts or LSV's, property acquisition will likely be required.

[3] This report considers limited accommodation of golf carts and other LSV's with a top speed of 25mph, only as necessary between the Casino and planned golf course. Further integration of these vehicles to the surrounding roadways is beyond the scope of this study.

[4] Use of the path for motorized vehicles, including golf carts and (LSV's) should be provisionary, pending identification of funding. Federal law prohibits the use of motorized vehicles (including golf carts and LSVs) on federally funded trails and pedestrian walkways, except in limited circumstances (U.S.C. §217(h) (5)). Exceptions can be granted where trails are funded under the Recreational Trails Program and designed for motorized use, and on limited segments of a trail funded under the federal-aid highway program, such as for 90 degree crossings, short doglegs, crossing structures such as bridges, and other exceptional circumstances.

Connection to the Westside Trail

To facilitate access to the existing Westside trail, the tribally owned portion of the old Railroad right-of-way[5] may be used. This would necessitate pedestrian and bicycle crossing of both North Tuolumne Road and Tuolumne Road[6]. Crossing these roads at the Railroad right of way would require design of special pedestrian crossing warnings due to relatively high traffic speed. The rail bed provides a walkable surface adjacent low-lying area. At a minimum, overgrown brush should be cleared. Due to the narrow width of the existing berm, a natural surface trail only is proposed in this area to limit potential disturbance.

Figure 3: looking west at the existing railroad crossing of Tuolumne Road.

South of Tuolumne Road Intersection

All golf carts (including LSV's and NEV's) may cross Tuolumne Road during daylight by establishment of a Golf Cart Crossing Zone by local jurisdiction ordinance or resolution. (CVC Section 21115.1). To reach the planned golf course after crossing, golf carts may be routed in one of the following options:

1. Along the Class I shared-use path adjacent the south side of Tuolumne Blvd. proposed in Alternative "C" (below);
2. Along a separate Class I shared use path adjacent the west side of Cherry Valley Blvd. North (not shown in the proposed routing exhibits due to site constraints posed by the existing health clinic), or;

[5] Owned by the Tuolumne Economic Development Authority.

[6] An alternative route, albeit without pedestrian amenities, to the Westside Trail would be Carter Street to Tuolumne Road or Buchanan Road. This route may be temporary until adequate pedestrian facilities can be constructed along North Tuolumne Rd. and Tuolumne Rd.

3. Along the existing travel-way of Cherry Valley Boulevard North as a "Golf Cart Route[7]." Because this is a public road and not limited to crossing only, the following conditions apply:

    - permitted golf carts only are allowed. Permitted means only golf carts that possess all Federal Motor Vehicle Safety Standards (FMVSS);
    - a "Golf Cart Transportation Plan" must be established, per Chapter 6, Sections 1950-1961 of the California Streets and Highway Code;
    - a posted speed not greater than 25mph be established (required along all golf cart routes);
    - additional signage is posted as required at street crossings, driveway intersections, etc.;
    - the street will remain relatively low volume (less than 3,000-4,000 vehicles per day);
    - operators maintain a valid California Driver's License or acceptable foreign jurisdiction;
    - operators comply with financial responsibility requirements (CVC Section 16000);
    - all golf carts have a valid permit issued by the local jurisdiction, and;
    - all golf carts are maintained in a safe condition after permitting.

[7] The Cherry Valley Blvd. North travelway and right-of-way is existing and precludes a dedicated 7' wide golf cart lane in each direction, and golf carts must share the vehicle lane in this option. Additionally, further study and design would be needed to accommodate north-bound golf carts crossing North Tuolumne Road to reach the hotel and casino.

Connection to Summerville High School

The path may take one of three proposed alternative routes to reach Summerville High School:

Alternative "A" follows the potential routing developed by Tuolumne County Transportation Council generally along the easterly and southerly boundaries of the planned golf course. This path would continue through the preserved woodland area at the south westerly border of the golf course. This path would ultimately continue into the "panhandle" area, conditioned to be included in a public use easement. From this point, the Class I path would continue to existing Summerville High School improvements through district property.

Alternative "B" uses a portion of existing sidewalks along the westerly side of Cherry Valley Blvd. North, and then proposes a Class I path from Cherry Valley Blvd North around the perimeter of the golf course[8], connecting to the planned Bay Street extension. Along Bay Street, the path may serve as a shared public Class I path and golf cart path (requiring a 14' paved width).

Optionally, if the shared use of the proposed cart path along the extension of Bay Street is not feasible, a sidewalk could be constructed along the opposite (south) side of the street. Note that this (or similar accommodation) will be required to provide an accessible route to the clubhouse and interpretive center in any case.

At the clubhouse, a new separated (fenced from golf club use) Class I path (8' paved width) along the north side of the planned parking lot would continue through the preserved woodland area at the southerly border of the golf course, as in alternative "A."

[8] The path is proposed within the "30' open space buffer" required by the project conditions of approval, and as such, would require no additional area be restricted from golf course development.

Alternative "C" generally aligns a new Class I path with Tuolumne Road. Accommodating the path within both the existing County right of way and the required 30'open space buffer would allow for an ideal separation with the vehicular travel-way, and limit infringement on the golf course.

Barring a shared-use widening of Tuolumne Road, this routing would require an additional pedestrian crossing of Turnback creek. For the purposes of this study, a bridge for pedestrian and light vehicle use with a span of 40', 14' width, 42" guardrail, and with concrete abutments was assumed. This type of bridge may be prefabricated by a number of suppliers, and may consist of a galvanized, or weathering steel structure with concrete deck. This type of shared-use structure would allow golf carts, maintenance vehicles, and irrigation pipelines to be attached.

Figure 4: Example of a shared-use bridge

With regular maintenance and decking replacement as needed, this structure should yield a design life of 50-75 years. To prevent vehicular access, bollards would be used at each end of the bridge.

Connection to Sierra Railroad Trail

Alternatives C and B alone do not connect Summerville High School with the Sierra Railroad Trail. To make this connection, a portion of the proposed Class I path along the westerly boundary of the planned golf course would also be included in these alternatives. Alternative A connects the existing Sierra Railroad Trail to the County's right of way via a proposed Class I trail along the North side of Box Factory Road.

Natural Surface Trails at Summerville High School

A natural surface trail of approximately 3 miles (5km) is feasible through currently un-improved district property, the "panhandle" portion of the golf course development that is required to be dedicated to public use, and a small connection through the wooded area of the golf course development. This natural surface trail (exclusive of the connector to the golf course) would be ideal for cross-country and other exercise. The length also provides a resource for hosting benefit or charity runs for the High School or other organizations.

2.2 TRAIL AND PATH CHARACTER

Natural Surface Trails

All proposed natural surface trails will be approximately 4' wide. This width allows for two people to walk side-by-side or for adequate room to pass. This width also allows efficient construction with specialized trail-building equipment, and is relatively standard for natural surface trail construction. This will also facilitate emergency access via all-terrain-vehicle to all sections of naturally surfaced trails.

Construction of the trail will result in slope disturbance above and below the trail. Disturbed areas will naturally fill in over time, resulting in the desired width. Repeated use of the trail by multiple activities (running, walking, and biking) helps stabilize the trail by compacting all areas of the trail. This is an improvement over single-use trails, on which erosion can be increased due to repeated gouging of a single track.

The natural surface trail alignments shown on the proposed routing exhibit are accurate to within 30.' Experienced trail builders or supervision by experienced trail builders is required to create an artful flow and movement of the trail. Meandering the alignment of the trail accomplishes several goals:

- Maximizing experience and views as the user's perspective is directed from vista to scenery, instead of fixed in a straight line.
- Creating a sense of discovery by blocking direct and monotonous sightlines behind gentle curves in the trail.
- Providing a varied experience and avoiding fatigue by engaging climbing and descending muscles in succession.
- Allowing water to naturally drain off the trail surface by jogging the trail downslope at frequent intervals to avoid concentration and erosion.
- Avoiding additional cost and environmental damage by routing the trail around existing trees.

The average slope is also important to the overall user experience. Overall grade should be kept to a minimum – ideally not greater than 2%. Average grade should be less than 7%. Intermittent grades add interest and undulation, as well as providing a sense of effort and enjoyment moving up and down. Intermittent grades are ideally up to 5% but may be steeper on non-accessible routes where an ascent or descent due to steep terrain is unavoidable.

Paved Shared Bicycle/Pedestrian Paths

Shared bicycle and pedestrian paths are proposed in several areas. these are Class I paths (defined by Caltrans as a paved path with a minimum 8' width, exclusive of 2' shoulders to either side, with a striped dividing line to delineate direction of travel). This type of improved path is primarily proposed as it facilitates non-vehicular travel to work or school via bicycle or walking. As opposed to natural surface trails, Class I paths provide better access in inclement weather, faster speeds, and support a higher frequency of use.

A typical minimum section is a single 2" lift of asphaltic concrete, over a 4" section of Caltrans Class II aggregate base over compacted subgrade. The final design should include a structurally engineered section based on information provided by a geotechnical soils report, or use existing county standards. In addition to recreational use, the ultimate section should support periodic use by maintenance vehicles.

Figure 5: Natural surface trails and Class I paths following the same alignment provide increased amenity and user experience, with marginal additional cost when compared to Class I paths alone.

To provide the best user experience, a corridor at least 30' wide allows for tree planting and other vegetation on one or both sides of the path as a buffer between adjacent roadways. A minimum corridor width of 20' is recommended to allow a moderate meander of the overall 12' wide path around obstacles such as roadway signs, telephone poles, utility boxes, etc. In constricted locations, the Class I path can be immediately adjacent to a vertical curb adjacent the vehicular travelway), though this should be avoided. In wider areas, Class I paths may share an alignment with natural surface trails.

As Class I paths are significantly more costly to construct than natural surface trails, it may be advantageous to install the project incrementally. If a natural surface trail is installed initially where a class I path is proposed, the alignment should meander and undulate less frequently, and adequate clearance from vehicular travelways, and other adjacent uses should be maintained to allow eventual expansion in width from 4' to 12.'

2.3 FIRE PROTECTION

During the trail construction process, fuel load reduction should be performed. This means removing accumulated amounts of fuels (wood) from the area adjacent to use areas and structures to be protected. This is a substitute for the natural process of wildfire. Preventing the natural process of wildfire and regeneration allows an accumulation of fuel that must be removed artificially.

During trail construction, dead wood and other litter should be removed from the forest floor within 30' of the trail. Limbing up of existing manzanita stand, pines, and other vegetation in a naturalistic fashion, would moderate the amount of ladder fuels, helping to prevent the rapid spread of fire.

2.4 ACCESSIBILITY

The Americans with Disabilities Act (ADA) prohibits discrimination on the basis of disability, and requires that any new construction or alteration that provides "public accommodation" be accessible to and usable by persons with disabilities. To help interpret this legislation and provide guidance to meet its intent, the Architectural and Transportation Barriers Compliance Board (Access Board) provides accessibility guidelines. Relative to areas of public access, the latest guidance provided by the Access Board are the "Proposed Rights of Way Guidelines," which state that the grade of the pedestrian access walk (sidewalk) that is contained within a street or right of way shall not exceed the general grade established for the adjacent street or right of way (R302.5).

Additionally, the California Building Code contains prescriptive requirements for public facilities. Improvements in or adjacent to the right of way must be constructed to provide a "firm and stable surface" (CBC). In general, slopes should not exceed 5%. Where providing accessible pedestrian facilities in the public right of way is cost prohibitive due to existing conditions, Section 202 of Title 24 (Building Code) allows exemptions.

Though not designated as accessible routes, proposed natural surface trails should meet accessible codes and guidelines for natural areas, including:

- Draft Final Guidelines for Outdoor Developed Areas published by the United States Access Board (as a guideline to meeting the intent of the 1990 Americans with Disabilities Act)
- California State Park Accessibility Guidelines (2009)

2.5 SIGNAGE

A clear and concise signage program is recommended to ensure the best use of the trails. Signage should be consistent, easy to interpret, visible at a distance, and convey information only as needed. Signage can be categorized into three areas based on use: wayfinding (directional), interpretive (informational), and managerial (rules, boundaries, etc.).

Wayfinding signs should be included with the expanded trail network, particularly at key intersections. Wayfinding signage should following these principles:

- Clearly identify and separately name multiple destinations and routes
- At each juncture or intersection, provide one direction to each destination. Provide a physical separation between destinations
- Identify other named trails (Sierra Railroad Trail, Westside railroad trail), schools, Tuolumne townsite, and other key destinations.

Interpretive (Informational) signs may be added to the expanded trail network, and may relate to or be an extension for the planned cultural center. Content may include local history, geography, flora, or fauna.

Ancillary uniform management signs (end of trail, no trespassing, area closed, etc.) are not considered here and should be used as management practices and conditions warrant. Signs should follow common guidelines for text and graphics, such as ANSI (American National Standards Institute).

Figure 6: Examples of management signage at shared-use paths

2.6 ACCESS CONTROL

Controlling access to the proposed golf course development remains important to security, maintenance, and overall management. One option is to entirely segregate the proposed trail areas from the course with a physical barrier. However, an informal analysis of similar settings indicates that this is most often infeasible due to initial construction cost and long-term maintenance.

Patrolling and repairing such a barrier will in all likelihood be impractical, rendering the initial construction costs wasted. Rather, encouraging appropriate behavior through perceived surveillance is the most cost-effective management strategy. The more appropriate uses can be concentrated around the golf course, the higher the deterrent for unwanted behavior will be. Placing residential homes nearby, as well as connecting adjacent trails and sidewalks trails are important to this strategy. By connecting the proposed trails to a larger network, the possibility

of pedestrians or bicyclists is increased, which is important to perceived surveillance.

However, delineation of boundaries and expected behavior is important to managing and enforcing behavior. Separation of public (trail/path) vs. private (golf course) boundaries can be achieved through split rail fencing, agrarian style fencing, or similar means, without requiring encircling the entire perimeter. Signage and particularly symbols are also crucial to managing behavior. An iconic symbol – the sawdust burner, or Black Oak Casino Resort logo, for example – may be appropriated to symbolize the golf course, and can be an inconspicuous yet effective reminder.

Initial discussions with the school district staff identified concerns with providing access to Summerville High School while school is in session. The school is currently an open campus, in that the perimeter is unfenced. However, a gated closure of the proposed ultimate class I trail is provided at the boundary of the school property. This does not prevent any determined person from entering, but provides the means to clearly require permission to enter should the district find the need to do so. On both sides of the school district boundary, paths are provided to allow a continuous loop on either side of the gate.

Access control fencing can also be combined with safety. In limited areas, typically the first 200-300 feet immediately right of a tee, fencing may be necessary to provide protection from errant shots.

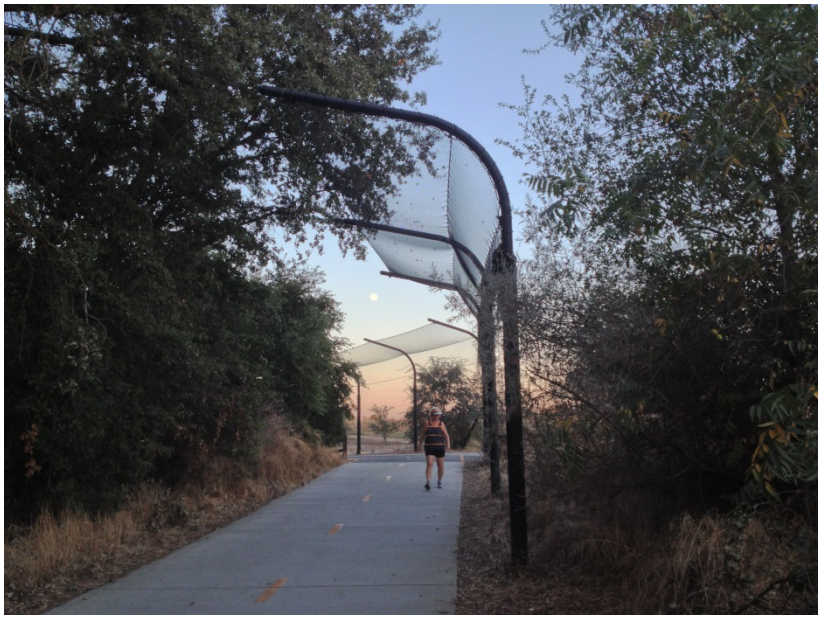

Figure 7: Example of high-net fencing along a bend in a Class I path adjacent a tee box.

3 POTENTIAL COSTS

3.1 PROJECTED INITIAL COSTS

The following table summarizes anticipated rough-order-of magnitude construction costs by alternative. Costs are reported in 2013 dollars and are extrapolated from similar projects. Note that it is impossible to determine project costs without further data, including detailed information on existing conditions. Therefore, these costs should be viewed as a rough order of magnitude estimate only.

Construction Costs

					ROUTING ALT. "A"		ROUTING ALT. "B"		ROUTING ALT. "C"	
ITEM NO.		ITEM DESCRIPTION	UNIT	UNIT COST	EST. QTY.	ITEM COST	EST. QTY.	ITEM COST	EST. QTY.	ITEM COST
SITE PREPARATION AND GRADING										
1		MOBILIZATION	LS	2,000.00	LUMP SUM	2,000	LUMP SUM	2,000	LUMP SUM	2,000
2		TRAFFIC CONTROL	LS	6,000.00	LUMP SUM	6,000	LUMP SUM	6,000	LUMP SUM	6,000
3		CONSTRUCTION STAKING	LS	4,000.00	LUMP SUM	4,000	LUMP SUM	4,000	LUMP SUM	4,000
4		CONSTRUCTION AREA SIGNS	LS	1,000.00	LUMP SUM	1,000	LUMP SUM	1,000	LUMP SUM	1,000
5		TREE REMOVAL/REPLANTING	LS	6,000.00	LUMP SUM	6,000	LUMP SUM	6,000	LUMP SUM	6,000
6		CLEARING AND GRUBBING	LS	12,000.00	LUMP SUM	12,000	LUMP SUM	12,000	LUMP SUM	12,000
7		DEMO PAVING	LS	10,000.00	LUMP SUM	10,000	LUMP SUM	10,000	LUMP SUM	10,000
8		GRADING	LS	80,000.00	LUMP SUM	80,000	LUMP SUM	80,000	LUMP SUM	80,000
SUBTOTAL - SITE PREPARATION AND GRADING						**121,000**		**121,000**		**121,000**

SITE CONSTUCTION										
9		CONSTRUCT NATURAL SURFACE TRAIL (MODERATE SLOPE)	LF	2.50	15840	39,600	15840	39,600	15840	39,600
10		CONSTRUCT NATURAL SURFACE TRAIL (EXISTING BED)	LF	1.00	3168	3,168	3168	3,168	3168	3,168
11		CONSTRUCT NATURAL SURFACE TRAIL (BRUSH MASTICATION/REMOVAL)	LF	0.65	19,008	12,356	19,008	12,356	19,008	12,356
12		MISC. STEEL: ACCESS GATES/BOLLARDS	LS	10,000.00	LUMP SUM	10,000	LUMP SUM	10,000	LUMP SUM	10,000
13		RETAINING WALL ALLOWANCE (GABION/SEG. BLOCK)	LS	80,000.00	LUMP SUM	80,000	LUMP SUM	80,000	LUMP SUM	80,000
14		PEDESTRIAN BRIDGE (ASSUME 14' X 40' SPAN)	SF	165.00	0	0	0	0	560	92,400
15		PEDESTRIAN BRIDGE ABUTMENTS	LS	15,000.00	0	0	0	0	LUMP SUM	15,000
16		STORM DRAINAGE STRUCTURES	LS	32,000.00	LUMP SUM	32,000	LUMP SUM	32,000	LUMP SUM	32,000
17		STORM DRAINAGE LINES	LS	48,000.00	LUMP SUM	48,000	LUMP SUM	48,000	LUMP SUM	48,000
18		SIGNAGE ALLOWANCE	LS	8,000.00	LUMP SUM	8,000	LUMP SUM	8,000	LUMP SUM	8,000
19		RAMP/CROSSWALK MODIFICATION AT TUOLUMNE ROAD	LS	12,000.00	LUMP SUM	12,000	LUMP SUM	12,000	LUMP SUM	12,000
20		ENTRANCE FROM SIDEWALK/RD. TO CLASS I PATHS	EA	4,000.00	3	12,000	5	20,000	3	12,000
21		DRIVEWAY CROSSING AT CLASS I PATHS	EA	2,000.00	0	0	0	0	3	6,000
22		CLASS I TRAIL - 8' WITH 2' SHOULDERS	LF	70.00	5500	385,000	4249	297,430	3610	252,700
23		CLASS I TRAIL - 14' WITH 2' SHOULDERS	LF	100.00	3301	330,100	5370	537,000	4941	494,100
SUBTOTAL - SITE CONSTRUCTION						**972,224**		**1,099,554**		**1,117,324**

Other Costs

ITEM NO.	ITEM DESCRIPTION	UNIT	UNIT COST ($)	ROUTING ALT. "A" EST. QTY.	ROUTING ALT. "A" ITEM COST ($)	ROUTING ALT. "B" EST. QTY.	ROUTING ALT. "B" ITEM COST ($)	ROUTING ALT. "C" EST. QTY.	ROUTING ALT. "C" ITEM COST ($)
OTHER COSTS									
25	CONTINGENCY (30%)	LS	LUMP SUM		481,100		562,600		533,400
26	SURVEY, TRAFFIC STUDY, ENVIRONMENTAL ASSESMENT	LS	LUMP SUM		128,300		150,100		142,300
27	DESIGN FEES	LS	LUMP SUM		160,400		187,600		177,800
28	ADMINISTRATIVE FEES (5%)	LS	LUMP SUM		80,200		93,800		88,900
29	SWPPP NOI FEE (1%)	LS	LUMP SUM		16,100		18,800		17,800
30	SWPPP PREP/MONITORING (2.5%)	LS	LUMP SUM		40,100		46,900		44,500
TOTAL OTHER COSTS					**906,200**		**1,059,800**		**1,004,700**

Assumptions and Exclusions

1. Costs for right-of-way takes or easements are excluded.
2. Permitting costs are excluded.
3. Alternative B assumes Class I construction along the north side of Bay Avenue
4. Existing crosswalk and signal at Tuolumne Road are assumed to be used for golf cart crossing. Modifications to existing traffic signals, striping, lanes, etc. are excluded.
5. Environmental protection, monitoring, mitigation, or associated costs are not included
6. Crossings of waterways at Bay Avenue extension are assumed to be included in roadway construction and are excluded here (Alternative B).

3.2 PROJECTED MAINTENANCE COSTS

Assumed maintenance costs are summarized below. Costs are provided based on an annualized basis (total costs/30 year design life) and reported in 2013 dollars. Actual maintenance practices should be based on specific conditions experienced. Costs are generalized and assume a typical standard of care for publicly maintained projects.

MAINTENANCE (30 YEAR PERIOD)											
1		MONTHLY MONITORING/BRUSH TRIMMING/MINOR MAINTENANCE	LS	LUMP SUM		227,528		234,221		225,483
2		REGRADING/COMPACTING (EVERY 10 YEARS)	LS	LUMP SUM		57,024		57,024		57,024
3		DECK RESURFACING (BRIDGE, EVERY 10 YEARS)	SF	30	0	0	0	0	560	50,400
4		CLASS I PATH MAINTENANCE	SF	10	8,801	88,010	9,619	96,190	8,551	85,510
SUBTOTAL (MAINTENANCE OVER 30 YEARS)						**372,562**		**387,435**		**418,417**
TOTAL (MAINTENANCE, ANNUALLY)						**$32,000**		**$33,000**		**$35,000**

4 COMMUNITY OUTREACH

After initial drafts of this feasibility study were circulated for review, comments from both Tuolumne County Transportation Council and the Tuolumne Band of Miwok Indians (Tribal Planning) were received and incorporated, resulting in the final document dated October, 2013.

Subsequently, representatives from TCTC presented the feasibility study to the Summerville High School Union District Board meeting. Discussion seemed to favor alternative "C," but was not definitive, as no decision was requested. Comments from TEDA were also received, including a preference for alternative "C".

To confirm what appeared to be a growing consensus toward alternative "C" as the "locally preferred alternative," a public outreach process was undertaken. This involved two one-on-one meetings (one with members Summerville Union High School District Board, and another with the Tribal Council), and a public community meeting.

4.1 ONE-ON-ONE MEETINGS

The purpose of the two one-on-one meetings was to vet the feasibility study and to preview information to be presented at the community outreach meeting to ensure that any concerns held by key stakeholders (in both cases, landowners) were understood and resolved.

During the one-on-one meeting with the Summerville Board on March 18th, 2014, board members noted that though Alternative "C" was closest to the road (not ideal), it was the most direct and therefore most likely to be used route to the High School. Access to the school, as well as the ability to clearly state when access was and was not allowed, was again discussed. Examples of similar conditions were reviewed, where access cannot be prevented, but is clearly prohibited, with no additional concern.

The project was presented to the Tribal Council on May 22, 2014. For this meeting, graphics of the trail alternatives were revised to separate each alternative into separate exhibits, and additional graphics of the Class I trail were prepared, which are now appended to this study. During this meeting, feedback from tribal council members was generally positive. One member expressed concern about the apparent undue emphasis placed on golf carts in generating the alternatives. This elicited discussion about what other individuals should be consulted on the subject, including Resort staff responsible for guests and golf operations. Generally, council members supported connectivity. Alternative "C" was noted as the least likely to conflict with other proposed development.

4.2 COMMUNITY MEETING

On June 19th, a public community meeting was held to review the proposed alternatives and solicit comment. Approximately 20 community members attended, including two TEDA representatives.

Following a presentation of the alternative routes proposed, a paired weighting exercise survey was conducted to ascertain the relative priority of various trail attributes among the community. This survey identified the following top three priorities: (1) Maximize views and the natural experience, (2) Provide a direct and short route, and (3) Provide a direct connection to the town site. A graph of the full survey results is shown on the next page.

During general discussion, community members voiced their desires for children's safety and accessibility into the town's circulation while incorporating, preserving, and learning about nature. A relatively strong contingent of walkers voiced a preference for continued access to natural areas of the West Side parcel, currently allowed with a permit issued by the Tribe.

Community members also expressed some interest into incorporating other modes of transportation such as horses, but showed concern over the use of motorized vehicles such as dirt bikes and all-terrain vehicles on the trail. During the meeting, TEDA representatives expressed concern about the trail's potential to impact ongoing development, and it was noted that the trail alignment was preliminary and would be sensitive to the tribe's needs and preferences.

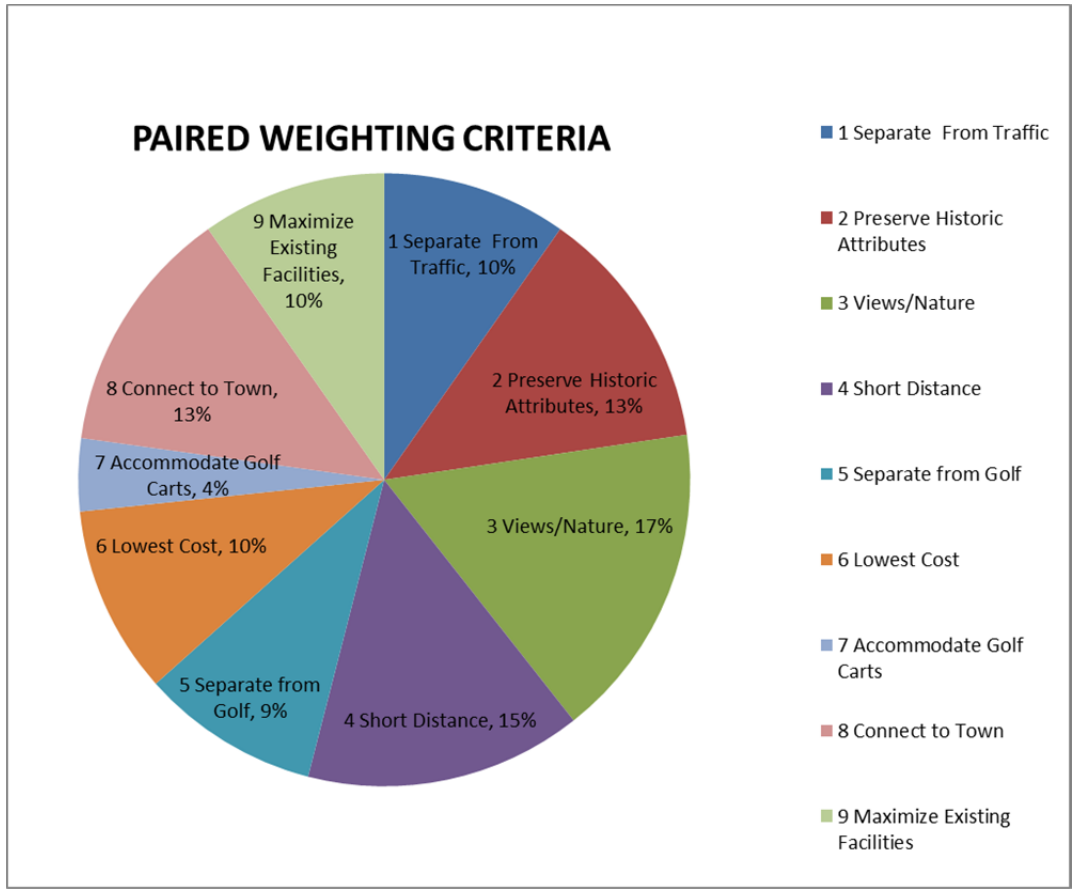

Figure 8: Community Meeting - Survey Results

Figure 9: Community Meeting - Photos

5 NEXT STEPS

5.1 DESIGN

Development of improved (paved) paths and trails will require full design. Background information such as-built plans for existing improvements (roadways, site development plans, etc.), as well as traffic studies, a detailed boundary survey, topographic survey, jurisdictional delineation, and geotechnical investigation will be needed.

Using this information, 30% improvement plans can be produced that define the limits of the project in sufficient detail to analyze the environmental impact (if any) and progress with environmental permitting. These plans may also serve to coordinate planning efforts with adjacent and future projects. Detailed design to account for existing conditions, other improvements, and extensive coordination with Tuolumne Community Resources Agency (CRA) as the permitting agencies will be required.

Ongoing coordination with the Tuolumne Band of Me-Wuk Indians, as well as the Summerville Union High School District will also be crucial. This plan has been reviewed by representatives from both, with no significant concerns. This document, especially the safe routes to school component, is also consistent with the Tuolumne Rancheria Community based Transportation Plan currently being developed by the tribe.

5.2 ENVIRONMENTAL PERMITTING

Much of the project area has been analyzed by two prior California Environmental Quality Act (CEQA) Initial Study/Mitigated Negative Declaration documents in 1992[9] and 2006[10], which serve as baseline documentation for future environmental analyses and permitting activities.

A Natural Environmental Study will be required to assess the project's potential to impact fish, wildlife and their habitats, as well as determining if wetlands or endangered species impacts will require additional analyses and permitting under state and federal water quality and species protection regulations.

Cultural resources evaluations should be conducted in close coordination with the Tuolumne Band of Me-Wuk Indians and include:

- an updated records search from the Central California Information Center of the California Historical Resources Information System;
- review of the Carlo De Ferrari Archive for historic mining information;
- survey and inventory of cultural resources that may occur within and adjacent to the trail alignments and supporting facilities;
- preparation of site records (if necessary), and;
- preparation of technical reports.

These activities will ensure that project impacts to cultural resources are avoided or minimized.

The Summerville Trail Project will require the preparation of a CEQA Initial Study and Mitigated Negative Declaration or

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[9] *Loveless & Cox General Plan Amendment Initial Study*. Tuolumne County Planning Department, October 28, 1992, Sonora, CA.

[10] *Westside/Cherry Valley Golf Club Initial Study*, Environmental Science Associates, October 2006, Sacramento, CA.

Environmental Impact Report. If federal funding is used for trail development, a National Environmental Policy Act (NEPA) Categorical Exclusion[11] will be required. These documents will be based on the technical studies described above and other project-specific information. We recommend that the project description of the CEQA document be structured to allow discrete project segments to be identified to allow portions of the project to be constructed as funding is incrementally obtained.

5.3 PHASING

Ultimate phasing of the project will be determined based on secured funding. However, the following segments are suggested as an incremental approach to construction that will allow an immediate impact to continue momentum and support, demonstrate success, and achieve measureable results.

Once environmental permitting is completed, natural surface portions of the trail may be constructed quickly using field-fit alignments. This would allow project partners to move forward quickly to sustain progress towards build-out.

Natural surface trails at Summerville High School: As a separate element, these trails may be constructed at any time. Coordination with the Golf course development will be needed to ensure connection at the appropriate time (after fencing and signage is installed) to prevent unauthorized access and to allow enforcement.

Connector to the Westside Trail: natural surface trails and pedestrian safety improvements extending east from North Tuolumne Road would provide continuity and connection to the existing Westside trail and ultimately allow connection to the Sierra Railroad Trail.

Black Oak Casino Resort to North Tuolumne Road: construction of this segment would connect Black Oak Casino Resort to existing improvements in the Tuolumne townsite area, including sidewalks, and pedestrian crossings of North Tuolumne Road and Tuolumne Road.

5.4 FUNDING

Funding for construction may be available through a variety of federal, state, and local sources:

- The “Moving Ahead for Progress in the 21rst Century” (MAP-21) reauthorized the Recreational Trails Program (RTP) and administered by the Federal Highway Administration (FHWA) for fiscal years 2013 and 2014;
- State-legislated Safe Routes to School Program (SR2S) administered by Caltrans (AB57);
- other grant opportunities (Healthy communities, etc.);
- local fundraising efforts, including campaigns, donations for benches and other amenities;
- volunteer efforts or low-cost labor including California Conservation Corps, and;
- private grants (i.e. IMBA, REI[12])

Additional funding may become available through the Active Transportation Program in the proposed 2013-2014 California state budget. This program would consolidate Federal and State Safe Routes to School programs.

[11] As administered by the State of California Department of Parks and Recreation, or Caltrans, on behalf of the Federal Highways Administration (NEPA Lead Agency)

[12] For example, see: http://www.imba.com/resources/grants, and http://www.rei.com/stewardship/community/non-profit-partnerships-and-grants.html

Note that Federal sources, in general, will require a "decision" document (such as a NEPA Categorical Exclusion) prior to funding.

5.5 RISK MANAGEMENT

There are inherent risks with any outdoor activity that can never be fully prevented, but that can be minimized. Risk Management is a systemized approach to minimizing risk – including prevention of injuries and damage in the first place, and providing defensibility in court. Following is a general synopsis of relevant public use laws which should not be relied on or interpreted as legal advice[13].

The California Recreational Use Statute (California Civil Code §846) protects private property owners from claims arising from recreational use. This statute limits the liability of private owners from incidents arising from recreational use, free from charge, through the user's own volition. Complementary law similarly protects public landowners (Government Code 831.4).

To maintain immunity of liability under these laws, landowners need to provide notice of known dangerous conditions, structures, or activities. Signage generally serves this purpose. Charging a fee or inviting users onto the land (other than promotional literature) also waives immunity under these laws. Therefore, invited, organized, or sponsored events should include a waiver of liability, additional insurance, or other measures.

Trails and paths are proposed on lands with varied ownership. To further limit liability, on non-county owned lands, a trail easement may specify the county as managing agency and/or include an indemnification agreement. Trails located near existing county rights-of-way may be deeded as right-of-way extensions.

5.6 ECONOMIC BENEFITS

Performing an economic benefit projection of trails to a community is an inexact process at best. However, the *least* accurate model is to assume there's no increased value to the local economy from the addition of a significant trail system. A significant body of research points to consistent community benefits including increased property values, decreased time-on-market for real estate transactions, and increased economic activity from direct and ancillary spending.

These studies are typically conducted long after the trail is constructed, using prior economic data as a historical baseline. Additional benefits to the community are anticipated to be savings in time and transportation costs, lowered accident rates, decreased congestion, and by providing direct and permitted routes between destinations, lower patrol and policing costs.

To anticipate *direct* economic benefit to the overall community, we can look at monetary gains in the form of tax revenue from real estate transactions based on increased property values adjacent improved trail networks. The value of real estate within .25, .5 and 1 mile radius from natural trails and pathways is expected to rise. This is based on numerous post-occupancy studies if similar projects, and assigned market premiums for similar or lesser benefits in new home valuations. We believe it is reasonable to assume a 1% to 4% increase in value as a result of these trails depending on distance. This increase in real estate value will only be realized as revenue to the County as the real estate is sold and the taxable value is re-appraised based on the sale price. However, the value will be directly realized by property owners.

Numerous other benefits are anticipated but are not immediately quantifiable. These include ancillary spending from non-overnight visitors, increased community health, providing positive outdoor activities for all ages, lower health care costs and secondary effects from increased physical activity, increased human connections and

[13] Many publicly available sources detail existing laws. For example, see:
http://www.americantrails.org/resources/safety/LiabilityCA.html

relationships, less vagrancy due to more eyes on the property and positive activity, community pride, lowered youth delinquency, and the potential to reduce accidents and injuries by providing safe routes to schools, and safe exercise venues for track, cross country, and other team exercises. Connected community trails have been demonstrated to improve health, quality of life, and community interaction. These benefits, though qualitative, have been demonstrated in numerous studies of similar projects and should not be ignored.[14]

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[14] Evidence of the positive impact of trails on communities and individuals is almost universal in academic studies. For three examples, see:

Evaluation of The Burke-Gilman Trail's Effect on Property Values and Crime. May 1987 www.broward.org/Greenways/Documents/burkegilman.pdf (referenced September 2013); found that a nearby 12 mile trail had no impact on crime and was frequently used as a selling point in real estate transactions.

Schenectady County Department of Planning. The Mohawk-Hudson Bike-Hike Trail: Its Impact on Adjoining Residential Properties. Schenectady, New York, 1997; www.cdtcmpo.org/**bike/residential** .pdf (referenced September 2013). A survey of residents adjacent a 35-mile mixed use trail showed that 86% or higher use the trail, were satisfied or neutral about the trail as a neighbor, felt that the trail increased or had no effect on their ability to sell their homes, and felt the trail did not pose a risk to their own or their family's safety.

Moore, Roger L., et al. The Impacts of Rail-Trails: A Study of Users and Nearby Property Owners from Three Trails. Washington, DC: National Park Service, 1992, http://www.brucefreemanrailtrail.org/pdf/1_Exec_summ__contents.pdf (referenced September 2013); a study of three trails shows that users of the trail were demographically similar to residents, having no motor vehicles was an asset to the real and perceived safety and use of the trail, users reported no serious complaints, and all three trails provided significant economic benefit to their communities.

6 APPENDIX

6.1 OVERALL EXHIBITS

Existing Conditions

Ownership

Proposed Routing – Alternative ‘A’

Proposed Routing – Alternative ‘B’

Proposed Routing – Alternative ‘C’

Representative Photos, Existing & Proposed Conditions

Summerville Trail – Proposed Sections (Class I)

6.2 DESIGN DETAILS

Natural Surface Trails – Typical Sections

Natural Surface Trails – Undulation and Meander

Access Control Gate