

TAHOE DONNER TRAILS 5YIP

A Trails Five-Year Implementation Plan for the Lands of the Tahoe Donner Association

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- Micki Kelly, Kelly Biological Consulting
- Susan Lindstrom, Consulting Archaeologist

SECTION 1

5 Y I P L A N I N T R O D U C T I O N

1.1 5YIPlan Purpose

In early 2013, the Tahoe Donner Association (TDA) adopted a Tahoe Donner (TD) Trails Master Plan prepared by the professional transportation and planning firm Alta Planning+Design. The TD Trails Master Plan provided long-term and general guidance to Tahoe Donner for trails planning, management, maintenance and funding. This TD Trails Master Plan set forth many recommendations for the summer trail system based upon member input provided during its planning process. The scope of work for the TD Trails Master Plan did not include specific solutions for the many implementation issues of the larger system envisioned, only general recommendations and guidelines to be used for more-detailed planning and implementation from year-to-year in the future.

This Trails Five Year Implementation Plan (5YIPlan) is intended to move these broad recommendations and guidelines to a project level, enabling each of the two involved jurisdictions the specificity and level-of-detail needed to move through the formal entitlement and CEQA processes. As such, this 5YIPlan identifies a set of 22 specific projects and the range of design solutions specific to each which are planned to be implemented by the TDA over the next five year period. The large majority of the 22 proposed projects (save a couple of proposed trails) come directly from the TD Trails Master Plan as it provides the basis and identification for the needed improvements and expansion of the Tahoe Donner trail system consistent with their goal of providing a connected and sustainable network of trails available for a wide range of non-motorized users. All of the 22 proposed projects are associated with the summer trail system and exclusive of any public roadway (with the exception of two roadway crossings) or on-street bikeway improvement.

1.2 5YIPlan Area

The lands of the TDA encompass over 7,000 acres in both the Town of Truckee and County of Nevada, including over 4,000 acres of recreation space and 1,300 acres of common area interspersed throughout the 6,200+ residential properties of the community. The entirety of the 22 trail projects included in this 5YIPlan are included within Tahoe Donner-owned lands, but do span across both of these two jurisdictional boundaries as both the Tahoe Donner lands and the associated trail system cross this common boundary. A majority of the proposed projects are located within the County of Nevada, particularly the 'new' trail projects and many associated with Tahoe Donner's 2011 acquisition of 482 acres in the Euer Valley located entirely within the county jurisdictional boundary. Four proposed projects span across the common Town-County jurisdictional boundary as this boundary is overlapping and different than that of the perimeter boundary of the Tahoe Donner-owned lands.

1.3 5YIPlan Projects

This 5YIPlan includes 22 individual projects described and mapped in detail within Section 8 and Appendix 2 of the 5YIPlan. These projects include both the repair, rehabilitation and improvement of existing trails (and 3 rough graded access roads – see below) as well as new trail construction. Two of the 22 projects involve the improvement and/or expansion of trailheads. Inasmuch as the 5YIPlan is specific to trails, three of the proposed projects involve the improvement of existing dirt roadways as they are not only significant contributors to the larger trail system as key connective

components, but also utilized for maintenance and safety access purposes by the TDA. Collectively, the 22 projects of the 5YIPlan represent the trail and trailhead work planned to be initiated by the TDA over the next five years, involving approximately 10 miles of improvement and rehabilitation to existing trails and 12 miles of newly constructed trails intended to improve and link the current trail system. The following Section 8 (and Appendix 5) includes a breakdown of the 22 proposed projects within the Town of Truckee, County of Nevada and, in a few cases, both jurisdictions as well as providing additional background and detail about what they are, where they came from and what they intend to accomplish in support of the larger Tahoe Donner trail system.

It is important to note that under 14 Cal. Code Regs. §15378, the term "project" is a CEQA term of art meaning "the whole of an action," and the term "project" as used in the 5YIP project description does not have the same meaning as the CEQA terminology. As used herein, the term "project" is used to define individual trails and trailheads unless specifically referring to the 5YIP as a whole. The individual trails and trailheads, whether referred to as "project" or similar terminology within the 5YIP, are not separate projects within the meaning of CEQA; rather, the individual trails and trailheads are merely components of the overall project: the 5YIP. In short, every trail and trailhead described herein is part of the 5YIP which is the CEQA "project" which will be analyzed by the Lead Agency.

1.4 5YIPlan Goal

The 5YIPlan has two main objectives: (i) to expand the existing trails system by way of improving internal and external connectivity, and (ii) insure the long-term sustainability and usability of the system by the variety of trail users through the improvement of existing problematic areas. Both objectives share the same overall goal of an improved trail system for both the users and the environment, best captured within the larger vision for the trail system as stated within the Tahoe Donner General Plan;

The Tahoe Donner trail system supports the varied membership use, encourages continual exploration and stewardship of the community and recreation space.

Section 1 of the TD Trails Master Plan includes a more expansive summary of the management, planning, development and maintenance goals of the Tahoe Donner trails system, all of which have been factored and considered for the purpose of consistency with this 5YIPlan. Collectively, the goals of the TD Trails Master Plan represent the overriding goal of this 5YIPlan: providing for an improved and connected trail system resulting in a net improvement of, and benefit to, individual natural resources and the larger environment.

S E C T I O N 2

T E A M I N T R O D U C T I O N

2.1 Consulting Team

The 5YIP consulting team and their respective roles in the development of this 5YIPlan were approved by the TDA Board of Directors in October of 2014. The individual team members were identified and selected based upon their familiarity with Tahoe Donner and the neighboring areas, the larger regional trail system, as well as their respective expertise and knowledge of the associated environmental and permitting issues. This team, with their accompanying area of expertise and scope of work, consists of the following professionals:

- Russ King, King Engineering, Inc. – civil engineering, including trail/road typical sections and details, typical drainage crossings (e.g. culverts, boardwalks, turnpikes), Best Management Practices and operations, rehabilitation and decommissioning treatments, and conceptual trailhead design;
- Dave Shaw & Peter Kulchawik, Balance Hydrologics, Inc. – project mapping and hydrologic/floodplain analysis, including overview map and project specific mapping (topo/aerial, slope delineation, drainages identification), resource sensitivity mapping, hydrologic support for wetlands/floodplains/erosion/decommissioning, floodplain extent identification and general mapping (excluding floodplain modeling), and access road improvement assessment;
- Susan Lindstrom – archaeological resource analysis, including records search, field review and archaeological resource sensitivity area identification and mapping;
- Micki Kelly, Kelly Biological Consulting – biological and wildlife analysis, including biological and wetlands reconnaissance, identification and general mapping (excluding formal delineation), sensitive species and habitat identification and assessment, and outline of the regulatory framework and permitting paths.
- Gavin Ball, Planning Consultant – project management, 5YIPlan composer and agency coordination.

The scope of work for each project team member was comprehensive in identifying each of their respective tasks in order to adequately assess and arrange the 5YIPlan and its individual components, including an analytical report from each consultant attached to this 5YIPlan as Appendix 6, field investigation and inventory, and assistance with crafting solutions and protection measures or protocols for any given needed fix or to adequately mitigate any potential project impact. The technical analysis and recommendations by each, and the identification of potential impacts and the intended avoid-minimize-mitigate hierarchical approach discussed in Section 4 of the 5YIPlan, has been applied to each of the 22 proposed projects and the result representing the bulk and heart of the 5YIPlan in creating a comprehensive, connected and sustainable trail system for Tahoe Donner.

2.2 TDA Staff

Two members of the Tahoe Donner staff were and are most engaged and instrumental in the details, descriptions, content and evolution of this 5YIPlan: Forrest Huisman, Director of Capital Projects, and Sean Connelly, Trails Manager. The Trails Manager position is relatively new to Tahoe Donner, created in 2012 by the TDA Board of Directors in recognition of the needed improvements and expansion to the existing system in response to member preferences and the TD Trails Master Plan. Sean Connelly was hired in 2013 as the first Trails Manager and having significant trail design and construction experience with the United States Forest Service in Bend, Oregon. His experience and expertise in the design and construction of sustainable trail has been influential in the development of this 5YIPlan as well as into the future with its year-by-year implementation by him and the seasonal trail crew of the TDA.

2.3 TDA Board & Committees

The 22 proposed projects of the 5YIPlan were developed by the Tahoe Donner staff and a trails-specific sub-committee of the Tahoe Donner General Plan Committee. The initial list of potential trail projects was narrowed and refined over time through this collaborative process and ultimately approved by the TDA Board of Directors concurrent with their authorization to pursue development of this 5YIPlan. The sub-committee was engaged periodically throughout the development of the 5YIPlan and ultimately reviewed and accepted by the sub-committee prior to initiating the formal submittal and review processes with the Town of Truckee and County of Nevada. The TDA Board of Directors also reviewed and formally authorized the submittal of the 5YIPlan to the two involved jurisdictions, commencing with a formal submittal to the County of Nevada to initiate the CEQA process as the Lead Agency under CEQA Guidelines.

SECTION 3

BACKGROUND, INTENT & OBJECTIVES

3.1 TD History & Trail Evolution

The Tahoe Donner subdivision was initially created in the early 1970's. Its 6500+ properties were created in phases, with each phase identifying open space and recreational-use lands managed and owned in fee-title by the HOA. The trail system at the time was only roughly identified and its creation informal, consisting primarily of rough-graded dirt access roads created for utility installation and access as well as fire suppression and maintenance activities. As Tahoe Donner developed and the population grew, many informal trails were established by the hiking, biking and equestrian communities linking key destinations within and adjacent to the TDA boundary. The establishment of this informal system of trails continued for nearly 40 years unchecked and without dedicated management and maintenance. As the Tahoe Donner community continued to expand toward its 25,000 current membership, and with the more recent introduction and popularity of mountain bike use, the importance of planning, managing and maintaining the trail system has risen in importance. The early 2013 creation of the TD Trails Master Plan represented the first real effort to plan for a comprehensive and sustainable trail system and now, with this 5YIPlan effort, moves to more detail and better specificity in both addressing existing trail issues and providing for an expanded and linked trail system.

3.2 Tahoe Donner Membership: Trails a Priority Amenity

Informal survey of the Tahoe Donner membership confirms the local trail system to be the most popular and highest priority amenity. The current system is available and utilized for the range of users and publicly accessible as it connects with many trails and other recreational opportunities and destinations outside of the Tahoe Donner boundaries. The Association-maintained trail system is no different than any other amenity in Tahoe Donner and, as such, is provided the budget and staffing resources to maintain and expand the system over time, including a Trails Manager and trails crew working hand-in-hand with the Forestry Department to maintain existing trails and construct new trail projects. Tahoe Donner's commitment to improving and expanding the trail system by way of this 5YIPlan and the 22 individual projects it contains is wholly representative and responsive to the preferences and priorities of its membership.

3.3 Comprehensive & Longer-Term

This 5YIPlan is intended to provide both a comprehensive assessment of the specific trail system needs (e.g. rehabilitation of existing) and desires (new trail connections) as well as provide the framework and details of these needs and desires to promote its efficient implementation, including the many levels and layers of agency processing and permitting it involves, over its initial five-year life. This 5YIPlan will also serve as the foundation for future trail project proposals by Tahoe Donner recognizing that the 22 projects it contains does not, and reasonably cannot, capture all of the new and rehabilitation trail projects needed or desired as further discussed in Section 9.6.

Beyond being comprehensive for the purpose of efficiency in implementation, this 5YIPlan also seeks to allow for a broader CEQA review in providing a set of proposed trail projects versus the segmented and segregated environmental analysis that occurs, and disfavored by CEQA Guidelines, with a project-by-project approach. The comprehensive and longer-term approach of this

5YIPlan effort is intended to provide and promote the ‘big picture’ analysis of the trail improvements proposed over the next five years to insure protection of the lands and resources it encompasses, while at the same time providing a level of detail and specificity that is adequate to assess, and mitigation when and where necessary, potential impacts.

S E C T I O N 4

A P P R O A C H & D E T A I L

4.1 Approach: Standards & Sustainability

The trail standards and guidelines of the TD Trails Master Plan are largely taken from the USFS and modified as necessary for the specific needs and conditions of the planned Tahoe Donner trail system. They also were developed to be roughly consistent with the Town’s trail design guidelines as well as incorporate design goals and specifications for sustainability from the International Mountain Biking Association (IMBA) as included in their *Trail Solutions* publication and influential in the development of the 5YIPlan as further discussed in Section 7.2. This 5YIPlan does not reinvent the trail standards and guidelines of the TD Trails Master Plan, only incorporating them into this 5YIPlan and, where necessary to insure sustainable design and construction and/or provide supplemental detail, expand upon these standards by way of the typical details described in Section 7 and included as Appendix 4 of the 5YIPlan.

Designing and constructing sustainable trails in Tahoe Donner is a high and necessary priority. This starts with careful attention to runoff, erosion and sensitive resources for the purpose of creating individual trails, and a larger trail system, that respects the environment and requires little maintenance over time. The creation of a sustainable system of trails is the overriding intent and goal of this 5YIPlan providing the needed balance between insuring environmental protection and providing an enjoyable trail experience for the users. Because sustainability is most reliant upon the consideration and protection of water and water-related resources, this has been made a priority of both the larger 5YIP and specifically for each of the 22 individual trail projects it proposes. The goal of creating sustainable trails, and how this achieved through specific design and construction practices, is further explained in Section 7. The approach of this 5YIPlan in insuring the creation of sustainable trails is also wholly consistent with Town of Truckee and County of Nevada General Plan policy, both of which promote the importance of environmental compatibility when constructing or improving roadways, pathways and trails.

4.2 Project Detail – 30k’ to 10k’

The TD Trails Master Plan, representing a ‘broad-stroke’ planning approach and the related recommendations and guidelines for the existing and future Tahoe Donner trails system, is considered to provide a 30,000’ bird’s eye view of the opportunities and needs for the trail system. Comparable to the Town’s Trails & Bikeways Master Plan, the TD Trails Master Plan provides a good basis for the ultimate trail system envisioned for Tahoe Donner, but its mapping and details less than adequate for the detail and project specificity needed for the entitlement and CEQA processes of the two involved jurisdictions. This 5YIPlan is intended to move this detail from the 30,000’ level of the TD Trails Master Plan to the 10,000’ level of detail for the purpose of adequate and efficient jurisdictional review and environmental analysis. This detail will provide the basis and foundation for subsequent construction-level plans, agency permitting and implementation as further discussed and outlined in Section 9 of this 5YIPlan.

4.3 Overview & Drainage Mapping

By way of aerial photography, the Project Overview Map (attached as Appendix 1) utilizes aerial and topographic LiDAR mapping to identify the locations of each of the 22 trail projects. This 'big picture' map allows the identification of each trail project relative to existing known and obvious physical features, such as roads, structures and waterways, providing a good and accurate picture of the spatial relationships of the proposed projects and the various surrounding conditions. It also contains topographic contours for the purpose of illustrating the general topography of the plan area (and beyond). The Project Overview Map applies a 1" = .25 miles (1320 feet) scale and the topography (tied to the aerial photography) displayed at 50' contour intervals. Neither scale is sufficient to adequately describe the proposed projects, only a broader snap shot of the larger project and identification of the 'projects-within-the-projects' (also known as design solutions or the typical details of Appendix 4) similar to the 30,000' view/scale of the TD Trails Master Plan. This same approach and scaling has been utilized for development of the drainage mapping by Balance Hydrologics attached as Appendix 3 to this 5YIPlan and representing a key evaluative tool relative to water and water-related resources and the associated specific project features that are proposed within each of the individual trail projects. A more expansive explanation of the development and use of the drainage mapping is included in Section 6 of the 5YIPlan as well as the technical report by Balance Hydrologics attached as Appendix 6.

4.4 Project-Level Mapping

The same base mapping data was used to create the site and slope delineation maps for each individual project, but the scale improved/narrowed to 1" = 150' / 600' (dependent upon the length of the individual project) and the contour intervals improved to 10'. The result is more-useable and more-specific aerial and topographic mapping product for each individual project and the 10,000' level of project detail and specificity desired in order to better define and illustrate each of the specific project features and fixes (in the case of existing trails) within each of the 22 trail projects. The trail alignments shown have been located by way of GPS and translated onto the LiDAR mapping for the purpose of illustrating each alignment relative to their respective topographic position and the many physical features visible on these aerial photographs.

The two proposed trailhead projects also utilize LiDAR-based aerial and topographic data, but superimposed upon a more recent high-resolution image for the purpose of clarity, accuracy and use in AutoCadd software. The design for the two trailhead projects are based upon 2' contour intervals with a 1" = 30' scale, providing for better accuracy in the engineered layout and details for these two proposed trailhead improvements.

Individual project site and slope delineation mapping for all 22 proposed projects, including the two proposed trailhead projects (site mapping only), is attached to their respective Project Descriptions included as part of the 5YIPlan as Appendix 2.

SECTION 5

ENTITLEMENTS & CEQA

5.1 Two Jurisdictions – One 5YIPlan

Since the area of the 5YIPlan is situated within both the Town of Truckee and the County of Nevada, this 5YIPlan proposal necessarily involves the entitlement review by both jurisdictions. For the purpose of consistency and compatibility, a formal entitlement application will be submitted to the County of Nevada for the purpose of analyzing the 5YIPlan pursuant to CEQA, with the County of Nevada acting as the Lead Agency. Consistent with CEQA Guideline § 15051, the county will complete the environmental analysis for the 5YIPlan with the Town's input as a Responsible Agency. After the environmental analysis is completed, the county's environmental assessment and resultant document will be utilized by both the county and town in support of their respective entitlement processes for those proposed projects within each jurisdiction's boundary.

5.2 Entitlements Described

The Town and County have similar standards and entitlement processes, but do differ with respect to when, how and by what name/process each is required relative to the specific zoning district, resource standards, physical condition (e.g. steep slopes) or situation (e.g. proximity to resources) of any given project proposal. Appendix 5 outlines the entitlement processes for each jurisdiction required of each proposed trail project, including a small number (4) of projects that stray across their shared jurisdictional boundary. This list of entitlements represents the individual land use approvals required for all of the 22 proposed projects, captured and proposed within this single 5YIPlan proposal.

The County of Nevada also utilizes a set of resource standards intended to, first and foremost, promote the 'avoidance of project impacts to sensitive environmental resources and natural site constraints.' Where impact avoidance is not possible, these resource standards require the 'minimization of impacts in a reasonable fashion that strikes a balance between allowing development of the project site and protecting the resource or avoiding the constraint.' These resource standards are intended to supplement any requirement or mitigation falling-out of the CEQA process, but do provide guidance and clear direction to follow the same avoid-minimize-mitigate hierarchical approach utilized in the formulation of this 5YIPlan as well as the 22 individual projects it proposes. This approach, and its influence on the evolution and improvement of the 22 individual projects contained within this 5YIPlan, is further described in Section 8.4 of this 5YIPlan. Inasmuch as these resource standards are specific to the County of Nevada only, their intent and approach is certainly supported by the Town of Truckee as well as the CEQA process in an effort to reduce any given potential environmental impact to less than significant levels.

The County of Nevada's resource standards are implemented by way of an evaluative tool known as a 'Management Plan'. A Management Plan, professionally prepared and reviewed by the County staff, is required to be prepared when/where impact avoidance is not feasible, providing an analysis and inventory of any given environmental condition as well as outlining recommendations for minimizing project impacts and, where necessary, compensating or mitigating for these project impacts. Five (of the 14) specific resource standard categories are applicable to this 5YIPlan:

Significant Cultural Resources • Floodplains • Rare and Endangered Species and Their Habitat • Steep Slopes/High Erosion Potential • Watercourses, Wetlands and Riparian Areas

This 5YIPlan, and the technical analysis and recommendations prepared in support of it attached as Appendix 6, has been crafted to include the information required of the County of Nevada for each of these resource categories and their respective Management Plans. The approach, type and scope of technical analysis, and the proposed protection measures or protocols of this 5YIPlan are further discussed in the following Section 5.3 as well as Section 6.

SECTION 6

ENVIRONMENTAL ANALYSIS & PROTECTIONS

6.1 Type & Scope of Analysis

Appendix 6 contains the hydrological, biological and archaeological technical reports prepared by each respective professional consultant and project team member. The analysis and recommendations of each technical report seeks to identify their respective resources, their relative sensitivity and potential for any detrimental impact, and protections to insure that any given impact to the environment is addressed and, when and where necessary, mitigated to less than significant levels. Neither this 5YIPlan nor any of the individual technical reports specifies or specifically quantifies impacts to any given resource, only assessing the likelihood of existence and prescribing protections and subsequent courses-of-action needed to insure that implementation of any given project either has 'no impact' (always the preferred approach) or, when an environmental impact may occur, mitigating this impact to a less than significant level as demonstrated and quantified during the construction-level design and permitting necessary for all of the 22 individual projects proposed.

The analysis and recommendations of each respective technical report was not only utilized in the evaluation and evolution of each proposed trail project (see Section 8.4), but also intended for use by each of the two jurisdictions in support of the needed CEQA review process. As discussed in the following Section 6.3, inasmuch as these recommendations are proposed as an integral component of this 5YIPlan proposal, referral to and/or their use with the CEQA assessment and document preparation would be reasonable and expected for the purpose of consistency, ease and comprehensiveness in insuring that needed permit procedures are followed, specific impacts identified and quantified, and mitigation defined and implemented at the construction and permitting level of project implementation.

6.2 Approach & Summary of Each

Each individual technical report contains a summary of their respective resource conditions and setting, an assessment of the 5YIPlan's relationship to their respective resources and recommendations for implementation to insure protection of their respective resources (known as 'protection measures' or 'protocols' as discussed in the following Section 6.3). The idea and approach for each report scope of work was to utilize a reconnaissance level investigation and research in order to frame and present the environmental issues to be considered in trail project development. Each respective report, and the recommendations they contain more specifically, will then be utilized as the 'backbone' for any project-specific resource field assessment that may be necessary in support of project design, permitting and construction. This assessment process, representing an important and necessary component of individual trail implementation and this 5YIPlan, is described in Section 9.4.

6.3 Proposed Protection Measures & Protocols

Each technical analysis and resulting summary report yielded a set of recommended environmental protections specific to its area of expertise. In the case of the hydrological and biological technical analysis, these protections are simply known as 'protection measures'. The set of biological and drainage management protection measures are included within the respective reports prepared by Balance Hydrologics and Kelly Biological Consulting and attached as Appendix 6 to the 5YIPlan.

The historic and archeological resource protection measures are known as 'resource management protocols' (protocols) within the Historical and Archeological Resource Inventory Report by Dr. Lindstrom also attached as Appendix 6 to the 5YIPlan. These protocols outline a series of 'if-then' tasks to be implemented for each of the proposed trail (and trailhead) projects prior to their implementation. Dr. Lindstrom's report represents completion of the first task within the series of recommended protocols (also referred to as 'phases'): pre-field research known as Phase 1a within the report. Initiation and completion of Phase 1b, field reconnaissance, is the necessary next step for all of the proposed projects following the in-the-field flag-staking of the proposed trail alignment by the Tahoe Donner staff. This task, or protocol Phase 1b as it's known within the report, entails the on-the-ground inspection of the GPS'd or flagged trail alignments and immediately surrounding area (assuming a 20' wide disturbance corridor). Subsequent tasks, following the protocols recommended by Dr. Lindstrom including (in order) resource recordation, evaluation and mitigation, are dependent upon the outcome and findings of the prior task, essentially 'building upon information gained from the prior' task/phase and representing the 'if-then' approach of the protocols in systematically determining the needed next steps, if any, based upon the findings of Phase 1b. Collectively, these protocols outline the process needed for the individual trail projects prior to permitting and construction to insure no significant impact to historic or archeological resources resulting from implementation of the 5YIPlan.

A Phase 1b field reconnaissance and associated report for seven of the projects proposed within this 5YIPlan has been completed by Dr. Lindstrom. These seven select trail and trailhead projects provide a representative sample of the larger set of proposed projects in that it includes both new and rehabilitated trail projects, the two trailhead projects and the roadway improvement projects contained within the 5YIPlan proposal. These seven select projects also are located in the most cultural resource-sensitive area of the 5YIPlan, the Euer Valley, as well as roughly represent the priority projects for TD. The field reconnaissance and report for these seven select 5YIPlan projects is known as the Phase 1b, Addendum 1, to the Phase 1a 'mother' report (attached to this 5YIPlan as Appendix 6), submitted concurrently with this 5YIPlan and providing an example of the subsequent Phase 1b addenda that would ultimately be prepared in support of all 22 proposed projects.

The protection measures and protocols included within each of the three technical reports attached to this 5YIPlan as Appendix 6 are intended to mitigate impacts to any given environmental resource, when and if necessary. As such, all of the recommended protection measures and protocols contained within the three technical reports are incorporated into this 5YIPlan proposal by inclusion and reference and applicable to each individual trail / trailhead project implementation unless modified by either jurisdiction.

SECTION 7

TYPICAL DETAILS & SPECIFICATIONS

7.1 Intro & Description

A set of 23 typical details is attached to the Plan as Appendix 4. These typical details provide a menu of design solutions for any given physical or environmental condition, representing a range of fixes and improvements intended to be applied as appropriate and needed for any given proposed project. These design solutions have been created to address the range of needs for both existing and new trails, crafted specifically for the needs of this 5YIPlan proposal (and the 22 individual projects it contains). In addition to utilizing and supplementing the trail specifications of the TD Trails Master Plan, the typical details have been derived from tried and tested federal, state and local standards and guidelines, representing a melding from the available pool of available design solutions and modified, clarified and expanded as necessary by the project engineering firm, King Engineering Inc. (KEI), for their use and application for this specific 5YIPlan effort. The typical details contained within Appendix 4 are taken from these sources:

- United States Forest Service
- Town of Truckee
- California State Parks
- International Mountain Biking Association
- California Stormwater Quality Association
- Nevada County Resource Conservation District

The collective set of typical details provides a menu of design solutions to apply and utilize for any given condition within any given project as necessary and warranted to insure the creation of sustainable trails and the directly-related objective and benefit of protection to the environment.

7.2 Use & Application

The proposed use and application of any given design solution for any given trail project is referenced with each individual project description and the associated mapping contained as Appendix 2 within the 5YIPlan. Each of the 23 proposed typical details are included in Appendix 4 of the 5YIPlan, many of which also include an explanation of their specific intended use and application for any given physical or environmental condition.

Trail Types

With the single exception associated with the proposed new trail segment of Project 21 (extension of the existing trail across Lausanne Way – see below), all of the proposed trail (exclusive of the three proposed roadway projects) projects are proposed as Type II trails consistent with the specifications for this trail type of Typical Detail 20 taken from the TD Trails Master Plan. Type II trails are true single track trails with a narrow tread width of 12”-36” with slightly varying specifications for trails that are anticipated for ‘equestrian preferred’ versus ‘hiker and mountain biker preferred’ use as delineated and prescribed within the TD Trails Master Plan. The Type III Multi Use trail type included as Typical Detail 21, including the width and grade specifications for this type of trail, is proposed

for the new Project 21 trail segment providing a connection to the planned Trout Creek Recreation Trail. As referenced within this typical detail and further clarified within the TD Trails Master Plan, this trail type can also be utilized for satisfying ADA Guidelines as necessary (see TDTMP, Universal Design, Page 5-4).

Rolling Dips & Dissipaters

The use of rolling dips (known simply as 'dips' within the project mapping) are a common erosion protection feature used throughout many of the proposed projects (see Typical Detail 8). Most often, these rolling dips are associated with the smaller (<10 cfs design flow) ephemeral drainage ways identified (and their approximate flow quantified) by way of the flow accumulation analysis and drainage mapping that resulted from this effort (see Appendix 3). Rolling dips are also proposed within the three existing roadway rehabilitation projects and in all cases (in contrast to trails) proposed to include a rock-lined bottom for the needed durability associated with vehicle use. For the trail-specific projects, rolling dips will include a hardened or lined rock bottom for all crossings or existing conditions where a proposed trail project crosses drainage paths with a calculated 10-year peak flow >2 cfs to minimize erosion. Additionally, for both trail and road projects, rock dissipaters (see Typical Detail 9) will be utilized on the downhill side of rolling dips where warranted due to the flow and velocity of each specific drainage way to prevent channelization (e.g. create dispersed sheet flow) of runoff and the erosion problem this could create. In many instances, and most evident in Project 3 as a new trail traversing the lower portion of a larger hillside and the many associated seasonal drainage paths, rolling dips utilize existing ephemeral drainage courses as a way of utilizing the existing topography and features and at the same maintain these natural drainages.

Culverts & Puncheons

The use of rolling dips, some rock lined and some terminating in rock dissipaters as warranted as described above, is generally the preferred design solution over puncheons, culverts and/or other structural span (see below). However, drainage paths with a calculated 10-year peak flow >10 cfs or which are typically wet or maintaining spring fed year-round water flows (e.g. perennial streams) mandate a different design solution. In these cases, puncheons (see Project 17) and culverts (see Project 1) are utilized as appropriate and, where applied, specifically referenced within the individual project mapping and descriptions. Appendix 4 of the 5YIPlan contains these typical details and further clarity on their intended use and application.

Boardwalks & Bridges

The existing boardwalk of Project 20 (Nature Loop South) is dilapidated and structurally failing as a result of age and rising pond water levels due to beaver activity. This boardwalk is 1 of 3 proposed structural improvements associated with the 22 projects (see the bridge replacement proposal also for Project 20 as well as the new bridge proposal for Project 3). Typical Detail 4 illustrates the boardwalk replacement design concept and specifically the screw (or helical) pile anchor method of construction proposed. Use of screw piles as the anchor and foundation for the boardwalk structure allows the least intrusive and impactful method for construction within environmentally-constrained areas by minimizing the size and volume of supporting structural elements and eliminating any spoils generated from its installation. The piles will be systematically installed by a mini excavator through the use of a hydraulic auger attachment creating upwards of 2500 ft-lbs of torque to 'screw' the piles into the sub-surface until the piles reach adequate depth or refusal as specified by the engineer. Typical Detail 4 illustrates the proposed boardwalk design and Typical Detail 6 illustrates the proposed bridge design.

Best Management Practices & Stabilization

The typical details of Appendix 4 also include temporary BMP's (e.g. fencing, fiber rolls, erosion control treatments) and other permanent project features intended to stabilize and retain eroding slopes and the associated trail tread (e.g. rock steps, rock retaining wall) that will be incorporated into each individual project design and construction as referenced within the project descriptions and associated project mapping. Appropriate BMP's will be detailed for all projects at their individual construction-level design and development with an emphasis on the importance of the use and application of temporary BMP's for trail projects having a close relationship with any water resource and/or on steeper slopes (exceeding 20%) as described in the use and application clarity provided on Typical Detail 1.

Sustainable Design

The typical details of Appendix 4 that have been borrowed from the IMBA *Trail Solutions* handbook all promote the creation of sustainable trail design and construction and thus an important design component for the new proposed trail projects. The sustainability goal of the *Trails Solutions* handbook and this 5YIPlan emphasizes the importance of runoff and erosion control in the design and layout of new trail projects, including constructing rolling contour trails and incorporating erosion resisting features such as grade reversals, outsloped trails, rolling dips and knicks (Typical Details 17-18), and a range of switchback construction techniques (Typical Details 14-16) included within the typical details and their use dependent upon the steepness of the natural slope associated with any given trail project. The end result is newly constructed trails that minimize erosion, manage runoff by preventing channelization and that require less maintenance over time. IMBA recommended trail sustainability is further promoted by their '*Five Essential Elements of Sustainable Trails*', each of which will be implemented for new trail construction as a refinement and supplement to the typical details (and the standards and guidelines of the Trails Master Plan):

- 1) The Half Rule – trail grades should not exceed half the grade of the side slope it traverses. This avoids fall-line trails and allows runoff across, not down, the trail surface. The half rule is particularly important in gently sloping areas as the erosion potential is often incorrectly assumed to be less of an issue in flatter terrain.
- 2) The Ten Percent Average Guideline – overall trail grades should not exceed an average of 10%. This promotes undulations (also known as grade reversals – see below) in the trail and prevents sustained steeper sections of trail that are more prone to erosion.
- 3) Maximum Sustainable Grade – trail grades in excess of the 10% average (see above) should not exceed 10' in length. This minimizes the linear length of any given trail segment over 10% to minimize runoff down the trail, but must include techniques (see below) to handle this runoff at the toe of this steeper trail segment.
- 4) Grade Reversals – trails should incorporate frequent changes in vertical direction to divide any given trail segment into shorter and smaller individual watersheds to reduce the concentration of runoff to any single release point. The idea and erosive benefit of these smaller segments of trail, created by way of changes in grade, is to force runoff to exit the trail surface (at the low point of the grade reversal) before gaining volume, momentum and erosive power. By manipulating runoff into smaller, more manageable units, runoff can be directed, released and infiltrated at appropriate and managed locations. Grade reversals should be utilized at the recommended 20-50' intervals, dependent upon the associated grade of each individual trail segment.

- 5) Outslope – as much as possible given the variety of topographic conditions and physical features of any given trail area, trails should be outsloped to encourage runoff to sheet across and off the trail. This allows for a less-erosive and dispersed release of runoff from the trail surface as sheet flow (versus funneling or channeling down its center or inside edge) where it can infiltrate naturally. This is standard and necessary modern day trail construction that should be incorporated into all trail construction.

These five elements of sustainable trail design coupled with the larger concept of rolling contour trails and the more-specific techniques of rolling dips, knicks and switchback construction also promoted by way of the IMBA *Trail Solutions* handbook and included within the typical details of Appendix 4, will greatly assist in the effort to minimize the impact of new trail construction (and, in some cases, improvement to existing trails needing improvement for long-term sustainability) upon the natural environment, better blend with the surrounding area and resist erosion through proper design, construction and maintenance. Each of these five elements of sustainable trail design will be utilized and incorporated into each individual and trail-specific layout, design and construction to emphasize and insure the management of runoff and minimization of erosion resulting from trail construction.

7.3 Refined & Project-Specific at Implementation

As 'typical details' offering general design solutions for the wide variety of trail related issues, it will be necessary to refine each solution as they are applied to project-specific design, permitting and construction. In other words, in instances where the typical detail provides a width, length, or size range (culverts as the simplest example), this refinement means the identification of the specific dimensioning and/or sizing within the construction plans that is specific to the given condition within the ranges noted on the typical detail. Similarly and for added examples, as part of the construction plan development process for any given trail project it will be necessary to define the specific areas of grading and compacted gravel to road surfaces, the size and structural detailing for bridges and boardwalks, the finished widths of turnpike installation, and the specific locations of temporary Best Management Practices.

SECTION 8

5 Y I P L A N P R O J E C T S

8.1 22 Projects – New & Existing Trails / Trailheads

The 22 individual projects proposed by way of this 5YIPlan include both new and rehabilitation or improvement to existing trails and trailheads. A few of the rehabilitation and improvement projects are associated with existing rough graded roadways within Tahoe Donner that, although also providing vehicular accessible routes for forestry work, also serve as key trail linkages within the larger system, but most are intended to address needed improvements to existing trail based upon their relative heavy use and the degradation that has occurred over time. A large majority of the trail rehabilitation projects are located within the Town of Truckee jurisdictional boundary which encompasses the built environment of Tahoe Donner.

The new proposed projects are all true trail (versus dirt roadway) projects. Nearly all of these new trail projects are based upon the planning and recommendations of the TD Trails Master Plan as it

identified many needed new trail segments needed to link the existing system for the purpose of creating a connected larger system. A large majority of the new trail projects are located within the County of Nevada jurisdictional boundary and, more specifically, providing either a needed trail segment to or within the Euer Valley. Tahoe Donner's 2011 acquisition of the Euer Valley included not only a commitment for protection of these lands, but also with the intention to provide for recreational use. The new trails within the Euer Valley are intended to provide for this recreational access and use objective, particularly in response to the increasing demand of trails and the need to 'stay in front' of this demand by providing sustainably constructed trails in lieu of 'user-created' trails that often (and have) emerge lacking sustainably-constructed alternatives.

Sixteen of the proposed projects are located solely within the County of Nevada. Six of the proposed projects are located solely within the Town of Truckee. Four of the proposed projects are located within both jurisdictions as they span their common boundary, although each of these four trail projects are primarily located within the County of Nevada. 5YIPlan Appendix 5 contains a listing of the trail projects within each, or both, of the two jurisdictions as well as any applicable entitlement need associated with a potential impact with, or proximity association to, any of the proposed 22 projects relative to the requirements of each respective jurisdiction.

8.2 Selection of Projects

The 22 projects proposed have been identified by the Tahoe Donner staff, and approved by the TDA Board of Directors, as those being needed and beneficial to enhance the existing trail system over the next five years. The selected/identified projects seek a balance in new trail construction with needed improvements to the existing system utilizing a basic criteria (in no particular order of importance) of 1) enhancing the user experience and opportunities, 2) protecting user safety, and 3) improving or addressing environmental resource issues. The 22 proposed projects do not represent every planned new trail nor encompass every existing trail needing improvement within the existing system. The 22 projects do represent a balanced set of new and rehabilitated trail projects with Tahoe Donner that can be reasonably implemented over the next five years by the TDA. As an older and incrementally developed trail system spanning over 7,000 acres of Association lands, it is recognized that additional needs and opportunities exist for the existing system for improvement and rehabilitation. As a five-year implementation plan, it is simply not possible to identify and address all existing needs or opportunities, only the identification of the most needed areas of improvement and expansion using the three basic criteria above to guide the project selection process. Similar to the balanced new/existing project approach associated with this 5YIPlan, subsequent proposals by the TDA will also incorporate both new and existing trail projects with the goal of ultimately, but incrementally, addressing those projects outside of this initial five year period be it on a project-by-project basis or multi-year implementation plan similar to that now proposed.

8.3 Project Descriptions – Introduction & Summary

The 22 individual project descriptions and their associated maps contained within Appendix 2 of the Plan are intended to be specific and comprehensive in describing not only the existing physical condition, but also the range of specific improvements, or design solutions known as the typical details of Appendix 4, proposed for each project. Each project description contains the following information:

- Name (either current or 'to-be-known-as')
- Description (general description of the project and intent relative to the larger trail system)

- Location (town/county/both; project location relative to known features or boundaries)
- Project Type (new trail or rehabilitation / improvement to existing)
- Trail Type (trail or roadway)
- Topography & Grade (the surrounding topographic condition and approximate grade(s) of project)
- Length (approximate linear length of the project; 'size/area' shown for the two trailhead projects)
- Constraints & Resources (known constraints and resources associated with the immediate project area)
- Opportunities & Areas of Import (opportunities for improvement and important aspects to be considered at implementation)
- Project Specifics (the number, type and/or approximate length of the design solutions proposed)
- Construction (type of construction; staging areas and access routes associated with heavy or mechanized equipment)
- Typical Details & Specifications (reference to the range of applicable design solutions contained in Appendix 4)

Each of the 22 project descriptions have a direct relationship with their respective mapping or, in the case of the two proposed trailhead projects, their respective site plan. The information provided within each project description is derived from and linked to their associated site and slope delineation mapping in providing a written summary of the project and project details shown, their relative physical and environmental conditions, and illustrating their specific existing conditions by way of the included photographs with their locations, reference numbers and directions shown on the site mapping.

8.4 Evolution & Improvement

The location, alignment and routing of the individual trail projects proposed within this 5YIPlan were initially mapped by the Tahoe Donner staff, representing a 'first cut' of the desired routes and linkages for the larger system. This effort did factor known and obvious physical features, resources and constraints, but could not and did not involve the beneficial refinement of each project alignment relative to the more-specific resources and constraint identification known through the technical analysis and mapping resources completed in support of this 5YIPlan. By utilizing and applying the technical analysis and mapping efforts described in Section 4 and Section 6 of the 5YIPlan, many of the individual projects evolved and improved as each responded and adjusted to the information that was better known.

This evolution is most clearly reflected in the incorporated adjustments to many of the proposed new trail project alignments in response to the slope delineation mapping. This mapping provided a topographic-based delineation of the various slope thresholds, allowing for the adjustment of many initial trail alignments, and as important any necessary switchbacks, to better avoid steeper slopes. Similarly, the Drainage Map attached to the 5YIPlan as Appendix 3 was utilized to adjust many of the proposed new trail projects to better avoid the many drainage paths typical of a mountainous area like Tahoe Donner. The result was an improvement to these new trail alignments as they were adjusted to better respect these constraints and the benefit to erosion and water quality protection (and to other related resources).

The ability to adjustment any of the proposed trail alignments relative to cultural resources was limited due to the lack of past documented investigation and the resources that this would have identified. The research and investigation of cultural resources summarized within the Lindstrom report attached as Appendix 6 to the 5YIPlan did provide the locations of known resources and their respective locations within the project area, but not to a level of known accuracy that would warrant or necessitate any proposed trail realignment. The exception is the GPS'd accuracy and field reconnaissance by Dr. Lindstrom for the seven select projects as discussed in above Section 6.3 (and the related, concurrently-submitted Phase 1b report for these seven projects). As such, some proposed trail alignments have been adjusted in a pro-active effort to avoid presumed significant cultural resources (as an example, Project 3 around/up-hill of the spring house structure), however final alignments will be dependent upon the results of the historic investigation protocols recommended by Dr. Lindstrom to insure no significant impact upon historic or archeological resources and utilizing the same avoid-minimize-mitigate hierarchical approach relied upon for all proposed trails of this 5YIPlan and each respective environmental resource.

S E C T I O N 9

IMPLEMENTATION: PERMITTING & CONSTRUCTION

9.1 Agency Permitting Overview

Pursuit of resource agency permitting for the individual trail projects, or a grouped set of projects as discussed in the following Section 9.3, is the next step following acceptance of the 5YIPlan and completion of the associated CEQA process. Project-specific local agency permitting will also be necessary. Construction permitting needs will vary widely as the physical environmental setting and resource conditions vary widely from project-to-project and area-to-area, particularly the type, extent and project interaction with water resources as the most common and typical permitting need 'trigger' for the resource agencies. Three resource agencies will necessarily be most involved in project permitting needs dependent upon any given projects interaction with water resources:

- State Regional Water Quality Control Board
- California Department of Fish & Wildlife
- US Army Corps of Engineers

An overview of the regulatory framework has been included within the hydrologic and biological reports attached as Appendix 6 to the 5YIPlan, including a description of the jurisdictional authority of each resource agency, their specific permitting 'trigger(s)'. The process to assess and identify project-by-project resource permitting needs is included in the following Section 9.4. Similarly, construction permitting by either of the two involved local agencies, and in the cases of the few projects that span their common jurisdictional boundary both local agencies, will vary dependent upon the amount of cut/fill involved in any given trail project.

9.2 Issues of Import

Inclusion of the hydrological, biological and cultural reports as part of this 5YIPlan effort was intended to provide for an assessment of these resources as representative of the most important, and most likely to exist and be potentially impacted, resources to respect and protect during implementation of the individual trail projects proposed. More specifically, it is the intent that each and every proposed trail project consider any potential impact to water quality and quantity, wetland and riparian areas, plants and animals, cultural resource and other similar resources considered to be important resources commonly existing within Tahoe Donner. Avoidance and minimization of temporary impacts associated with construction of any given trail project is equally important and addressed with the incorporation of project and area-specific (e.g. steepness of slopes, proximity to water or water-related resources) Best Management Practices (BMP's) into the construction plans and adequate use and application of BMP's on the ground, including those contained within the typical details of Appendix 4 attached to the 5YIPlan.

9.3 Project Prioritization & Grouping

The year-to-year identification of the specific trail projects to be implemented will first and foremost be dictated by member demand, the cost:benefit relationship, and funding/resource availability as identified by the Board and staff. This 5YIPlan does not prioritize the year-to-year implementation of the 22 proposed projects. Because the wide variety of trail projects will require various levels of project-level permitting, and some will require more-detailed analysis and/or field work, the time and effort required for any given trail project permitting will also be influential in identifying yearly projects. Prioritization should also factor the ability to group yearly proposed trail projects within a single permit application for any of the responsible agencies for the purpose of time and cost efficiency in their development and processing. This 'grouping' permitting concept has been referenced by the agencies and the parameters and limits of this approach to be clarified within this process and the final 5YIPlan.

It is difficult to identify the specific process and associated cost for project-level permitting of any given trail project within the 5YIPlan. The variables of the type and extent of impacts, the differing agency permitting paths and the grouping concept collectively make it impossible to put a permitting cost to each trail project. It is known that a single land use permit and CEQA process for these trail projects, and the 10,000' level of project-specificity we seek through this effort, will provide for a significantly simpler, easier and known permitting paths for the agencies. This translates to cost and time efficiency in permitting and implementing a select set of trail projects as identified by Tahoe Donner year-by-year with the benefit of having the necessary local land use permit approvals and completed CEQA processes in-hand for the next five years.

9.4 Ground-Level Detail, Analysis, Design & Permitting

It is understood and expected by the project team, the TDA and the TD staff that 'drilling down' to construction-level detail, the identification and quantification of any given project impact, project-specific plan development and the associated agency permitting as described above is a necessary next step for the implementation of the individual trail projects. This 'ground-level' detail includes the formal delineation of wetlands, biological habitat investigation, floodplain mapping, surveying and the field investigation protocol for cultural resources.

The type and extent of this ground-level detail and analysis is the first step following the identification of the specific project to be pursued and field staking of the trail (in the case of new or realigned trail projects). Each trail project will involve this biological, hydrological and cultural ground-level field review by a qualified professional to determine if, and to what extent, the proposed project will

impact their respective resources and identify the steps necessary to identify or located the resource, determine impact and quantify impacts as warranted. If no resource is found to exist or the project determined to have no potential for impact due to avoidance, written confirmation from the qualified professional will be provided to accompany the local construction permit process.

If any resource is found to exist within the project or the project determined to have the potential for an impact to any given resource, the qualified professional will identify and initiate the next steps necessary to either avoid the impact (the first priority) or identify the impact, quantify the impact and outline the needed mitigation to be made part of the project permitting package to the appropriate agency(s). In this way, the ground-level or 'drilling down' assessment on a project-by-project basis and specific to the conditions for each individual project will be assessed, evaluated and, where necessary, mitigated to insure no significant impact to the range of environmental resources.

9.5 Maintenance Commitment

The Tahoe Donner Association supports an in-house maintenance staff and resources housed at a recently-constructed building at the end of Teton Way (in the County of Nevada) dedicated for this purpose. This maintenance crew is responsible for a range of maintenance duties throughout the Association lands, including trail construction and maintenance. The maintenance department both shares this facility and related duties with the Forestry Department, providing ease and efficiency in pursuing and completing the range of maintenance projects. Both departments maintain a dedicated and long-term budget, including specific allocation for trail construction and maintenance. The maintenance crew is seasonally five individuals strong and, where necessary due to the scope or complexity of any given situation, supported by outside contractors as approved by the management or TDA Board (dependent upon the size/cost of the work).

9.6 Year 6 & Beyond

This 5YIPlan has been crafted and developed to provide an implementation path and blueprint for the 22 individual trail projects it contains, but also provides the same for future individual or a similar grouped set of projects by the Tahoe Donner Association beyond the initial five year life of the 5YIPlan. Any necessary local entitlement process(es) and the associated CEQA clearance(s) will again have to be pursued and approved by the respective jurisdiction, and the various technical analysis reports updated or expanded as necessary, but the fundamental approach and many of the details and design solutions now proposed can be utilized as appropriate for subsequent trail projects in Tahoe Donner. In this way, this 5YIPlan, and specifically the technical analysis and typical details that went into its development, has a useful life beyond the initial five year period it encompasses.

A P P E N D I X 1

P R O J E C T O V E R V I E W M A P

A P P E N D I X 2

P R O J E C T D E S C R I P T I O N S & M A P P I N G

A P P E N D I X 3

D R A I N A G E M A P

A P P E N D I X 4

T Y P I C A L D E T A I L S & S P E C I F I C A T I O N S

A P P E N D I X 5

E N T I T L E M E N T M A T R I X

A P P E N D I X 6

T E C H N I C A L R E P O R T S