DRAFT

Environmental Impact Report/
Environmental Impact Statement/
Environmental Impact Statement

Upper Truckee River Restoration and Golf Course Reconfiguration Project

Volume II

Chapters 3 through 9
SCH# 2006082150

Lead Agencies:

California State Parks

Lake Tahoe Environmental Improvement Program

Bureau of Reclamation

August 2010

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3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Organized by environmental resource category, Chapter 3, "Affected Environment and Environmental Consequences," provides an integrated discussion of the affected environment including regulatory and environmental settings and environmental consequences including impacts and mitigation measures to reduce or avoid potentially significant impacts associated with implementation of the alternatives. Section 3.16 discusses cumulative impacts and mitigation measures for all resource areas. The project's relationship to Tahoe Regional Planning Agency (TRPA) environmental carrying capacity thresholds is described in the Chapter 4, "Other Required Sections," Section 4.6, "Consequences for Environmental Threshold Carrying Capacities."

3.1 APPROACH TO THE ENVIRONMENTAL ANALYSIS

3.1.1 CEQA, NEPA, AND TRPA REQUIREMENTS

As described previously in Chapter 2, this is a joint environmental document prepared to serve as an environmental impact report (EIR) under the California Environmental Quality Act (CEQA), environmental impact statement (EIS) under the National Environmental Policy Act (NEPA), and EIS under TRPA's Code of Ordinances and Rules of Procedure. The environmental analysis in Chapter 3 combines the requirements of each of these environmental laws, their relevant regulations, and in the TRPA case, ordinances and rules. Each set of provisions is very similar as to purpose and general content. Terminology and some details about document contents vary between the three sets of environmental requirements. This EIR/EIS/EIS contains elements to satisfy all three.

CEQA

The State CEQA Guidelines explain that an EIR must evaluate environmental impacts associated with the project and identify feasible mitigation for any potentially significant impacts. All phases of a proposed project, including development and operation, are evaluated in the analysis (State CEQA Guidelines Section 15126.2). The EIR must identify significant or potentially significant effects on the environment, which consist of substantial or potentially substantial adverse changes on the physical environment resulting from implementation of the project.

An EIR must also discuss inconsistencies between the proposed project and applicable local and regional plans (State CEQA Guidelines Section 15125[d]).

An EIR must describe any feasible measures that could minimize significant adverse impacts, and the measures are to be fully enforceable through permit conditions, agreements, or other legally binding instruments (State CEQA Guidelines Section 15126.4[a]). Mitigation measures are not required for effects that are found to be less than significant.

NEPA

If a Federal agency determines that a project would significantly affect the human environment, an EIS must be prepared. This does not preclude the identification of significant environmental effects in a NEPA EIS; however, environmental effects need to be discussed in terms of their context and intensity. In addition, while CEQA focuses on significant impacts of a proposed project, NEPA states that both beneficial and adverse impacts should be presented in an EIS. It is permissible for Federal and state lead agencies to use different thresholds for determining the need for mitigation.

Any major Federal action with the potential to cause environmental effects is subject to NEPA compliance. CEQ regulations (40 Code of Federal Regulations [CFR] 1507.3) require that Federal agencies "adopt procedures to

ensure that decisions are made in accordance with the policies and purposes of the Act." It is the responsibility of the agencies to designate major decision points in their programs to ensure that NEPA process is in correspondence. Whenever Reclamation is considering an action, the NEPA process is integrated into the project planning and decision-making processes.

The CEQ regulations for implementing NEPA specify that a Federal agency preparing an EIS must consider the effects of the alternatives on the environment; these include effects on ecological, aesthetic, historical, cultural, and social resources, and economic and health effects. Environmental effects include direct, indirect, and cumulative effects (defined below in Sections 3.1.2 and 3.1.3). An EIS must also discuss possible conflicts with the objectives of Federal, State, regional, and local land use plans, policies, or controls for the area concerned; energy requirements and conservation potential; and urban quality, historic and cultural resources, and the design of the built environment. An EIS must identify relevant, reasonable mitigation measures that are not already included in the project alternatives that could avoid, minimize, rectify, reduce, eliminate or compensate for the project's adverse environmental effects. (40 CFR 1502.14, 1502.16, 1508.8.)

TRPA

TRPA Code of Ordinances states that an EIS shall identify significant environmental impacts of the proposed project, any significant adverse environmental effects which cannot be avoided should the project be implemented and mitigation measures which must be implemented to assure meeting standards of the Lake Tahoe Basin. In assessing the impact of a proposed project on the natural and social environment, the lead agency should evaluate the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity as well as any significant irreversible and irretrievable commitments of resources that would be involved if the proposed project was implemented. The EIS shall also evaluate growth-inducing impact of the proposed project (TRPA Code of Ordinances, Section 5.8.B).

The following discussions present the organization and general assumptions used in the environmental analysis contained in this EIR/EIS/EIS. The reader is referred to the individual technical sections regarding specific assumptions, methodology, and significance criteria used in the analysis.

3.1.2 SECTION CONTENTS AND DEFINITION OF TERMS

The environmental setting, impacts, and mitigation measures have been prepared using NEPA terminology (affected environment, environmental consequences [generally], and mitigation measures). Chapter 3 is organized into the following environmental topic areas:

- Section 3.2, Land Use
- Section 3.3, Hydrology and Flooding
- Section 3.4, Geomorphology and Water Quality
- Section 3.5, Biological Resources (Fisheries and Aquatic Resources, Vegetation and Wildlife)
- Section 3.6, Earth Resources
- Section 3.7, Scenic Resources
- Section 3.8, Recreation
- Section 3.9, Cultural Resources
- Section 3.10, Transportation, Parking, and Circulation
- Section 3.11, Air Quality
- Section 3.12, Noise
- Section 3.13, Public Services and Utilities
- Section 3.14, Human Health and Risk of Upset
- Section 3.15, Population and Housing, Socioeconomics, and Environmental Justice
- Section 3.16, Cumulative Impacts

Sections 3.2 through 3.15 follow the same general format:

"**Affected Environment**" consists of two subsections: Regulatory Setting and Environmental Setting, which include the following information:

- **Regulatory Setting** identifies the plans, policies, laws, and regulations that are relevant to each resource area and describes permits and other approvals necessary to implement the project. As noted above, the EIR/EIS/EIS needs to address possible conflicts between alternatives and the objectives of Federal, State, regional, or local formally adopted land use plans, policies, or controls for the area. Therefore, this subsection summarizes or lists the potentially relevant policies and objectives, such as from the applicable Plan Area Statements and Lake Tahoe Regional Plan

- **Environmental Setting** provides an overview of the existing physical environmental conditions in the area that could be affected by implementation of the alternatives (i.e., the "affected environment") in accordance with State CEQA Guidelines Section 15125 and NEPA regulations (40 CFR 1502.15).

"**Environmental Consequences**" discusses the effects of the project on the environment, in accordance with State CEQA Guidelines Sections 15125 and 15143, NEPA regulations (40 CFR 1502.16) and Section 5.8.B(3) of TRPA's Code of Ordinances, which requires identification of significant unavoidable impacts and with Section 5.8.D of TRPA's Code of Ordinances, which calls for "required findings" in conjunction with the identification of significant unavoidable impacts. The following discussions are included in this subsection:

This section also provides mitigation measures to reduce potentially significant effects of the proposed project to the extent feasible. The mitigation measures are numbered to correspond with the impact addressed by the mitigation measure.

This section also describes whether mitigation measures would reduce project impacts to less-than-significant levels.

- **Methods and Assumptions** describes the methods, process, procedures, and/or assumptions used to formulate and conduct the impact analysis. Where relevant, this section may also include dialogue on any issue that is not discussed in the impacts section (i.e., where no impact would be expected and the reasoning behind this conclusion).

- **Significance Criteria** provides the criteria used in this document to define the level at which an impact would be considered significant in accordance with CEQA, NEPA, and TRPA Code of Ordinances. Significance criteria used in this EIR/EIS/EIS are based on the checklist presented in Appendix G of the State CEQA Guidelines; the TRPA Initial Environmental Checklist, factual or scientific information and data; and regulatory standards of Federal, State, and local agencies. While CEQA requires a determination of impact significance for each impact discussed in an EIR based on significance criteria, NEPA does not require this for an EIS. Under NEPA, preparation of an EIS is triggered if a federal action has the potential to "significantly affect the quality of the human environment," which is based on the context and intensity for each potential impact. The significance thresholds used in this EIS/EIR also encompass the factors taken into account under NEPA to evaluate the context and the intensity of the effects of an action Effects on environmental threshold carrying capacities (thresholds) of the Tahoe Regional Planning Compact were evaluated. The project's effects on thresholds are described in Chapter 4, "Other Required Sections," Section 4.6, "Consequences for Environmental Threshold Carrying Capacities."

- **Project-Related Impacts** are listed numerically and sequentially throughout each section, for each alternative. Project impacts are numbered sequentially for Alternatives 1 through 5 in each section. For example, impacts in Section 3.3 are numbered 3.3-1(Alt. 1), 3.3-2(Alt. 1), and so on for Alternative 1 and impacts in Section 3.3 for Alternative 2 are numbered 3.3-1(Alt. 2), 3.3-2(Alt. 2), and so on. A **bold** font impact statement precedes the discussion of each impact and provides a summary of each impact and its level

of significance. The discussion that follows the impact statement includes the analysis on which a conclusion is based regarding the level of impact. Impact conclusions are made using the significance criteria described above and include consideration of the "context" of the action and the "intensity" (severity) of its effects in accordance with NEPA guidance (40 CFR 1508.27).

The level of impact of the alternatives is determined by comparing estimated effects with baseline conditions. Under CEQA, the existing environmental setting (as defined above) normally represents baseline conditions against which impacts are compared to determine significance. Under NEPA, the No-Action Alternative (expected future conditions without the project) is the baseline against which the effects of alternatives are compared to determine the relative intensity of effects among the alternatives.

Alternative-specific analyses are conducted to evaluate each potential impact on the existing environment. This assessment also specifies why impacts are found to be significant, potentially significant, or less than significant, or why there is no environmental impact. Where after detailed analysis of available scientific information findings are too uncertain to reach an appropriate conclusion a conclusion of "too speculative" was made, only after thorough analysis. The State CEQA Guidelines Section 15145 notes that "If, after thorough investigation, a Lead Agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact." A significant impact is defined for CEQA purposes as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project. A potentially significant impact is one that, if it were to occur, would be considered a significant impact; however, the occurrence of the impact is uncertain. A "potentially significant" impact and "significant" impact are treated the same under CEQA in terms of procedural requirements and the need to identify feasible mitigation. A less-than-significant impact is one that would not result in a substantial adverse change in the physical environment.

Both direct and indirect effects of the alternatives are evaluated for each environmental resource area. Direct effects are those that are caused by the action and occur at the same time and place. Indirect effects are reasonably foreseeable consequences that may occur at a later time or at a distance that is removed from the project area, such as growth-inducing effects and other effects related to changes in land use patterns, population density, or growth rate, and related effects on the physical environment.

Cumulative impacts are discussed in Section 3.16, not within each resource section and the approach is discussed in more detail below.

- **Mitigation Measures** are presented where feasible to avoid, minimize, rectify, reduce, or compensate for significant and potentially significant impacts of the project, in accordance with the State CEQA Guidelines (Section 15126.4) and NEPA regulations (40 CFR 1508.20) and TRPA Code of Ordinances. Each mitigation measure is identified numerically to correspond with the number of the impact being mitigated by the measure. If more than one mitigation measure is identified for an impact they are identified alphabetically. For example, mitigation measures in Section 3.3 are numbered 3.3-1A(Alt. 1), 3.3-1B(Alt. 1), 3.3-2A(Alt. 1), 3.3-2B(Alt. 1), and so on for Alternative 1 and impacts in Section 3.3 for Alternative 2 are numbered 3.3-1(Alt. 2), 3.3-2A(Alt. 2), 3.3-2B(Alt. 2), and so on. There are no mitigation measures proposed when the impact is determined to be "less than significant." Where sufficient feasible mitigation is not available to reduce impacts to a less-than-significant level, the impacts are identified as remaining "significant and unavoidable."

3.1.3 CUMULATIVE IMPACT ANALYSIS

DEFINITION OF CUMULATIVE IMPACTS

Cumulative impacts are defined in the State CEQA Guidelines (Section 15355) as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts."

A cumulative impact occurs from "the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor, but collectively significant, projects taking place over a period of time." Consistent with State CEQA Guidelines Section 15130[a], the discussion in this EIR/EIS/EIS focuses on significant and potentially significant cumulative impacts.

The NEPA regulations define a cumulative impact as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative effects can result from individually minor, but collectively significant, actions over time and differ from indirect impacts (40 CFR 1508.8). They are caused by the incremental increase in total environmental effects, when the evaluated project is added to other past, present, and reasonably foreseeable future actions.

TRPA Code of Ordinances and Rules of Procedure do not include a definition of cumulative impacts. However, TRPA looks to NEPA and CEQA for guidance in assessing cumulative impacts (and thus the analysis contained in this document is sufficient for TRPA purposes).

METHODOLOGY

To identify the projects to be analyzed in the evaluation of cumulative impacts, Section 15130(b) of the State CEQA Guidelines recommends:

- the list approach, which entails listing past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency; or

- the projection approach, which uses a summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document that has been adopted or certified, which described or evaluated regional or area-wide conditions contributing to the cumulative impact.

The approach and geographic scope of the cumulative impact evaluation vary depending on the environmental topic area being analyzed. Section 3.16, "Cumulative Impacts," presents impacts and mitigation measures for each environmental topic area for Alternatives 1-5 (using a combined approach but discussing any differences in impacts or mitigation measures). Each impact begins with a summary of the approach and the geographic area relevant to that environmental topic area. For most environmental topic areas, the list approach is used. The list of potentially relevant projects as well as detailed methodology and relevant planning documents are discussed in detail in Section 3.16, "Cumulative Impacts".

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3.2 LAND USE

This section describes the regulatory background, existing land uses in the study area and vicinity, and impacts of the proposed alternatives on land use. As described in Chapter 1, "Introduction and Statement of Purpose and Need," the proposed alternatives would not have an impact on agricultural resources; therefore, this topic will not be discussed further. Cumulative effects are discussed in Section 3.16, "Cumulative Impacts."

3.2.1 AFFECTED ENVIRONMENT

REGULATORY SETTING

Federal

No Federal plans, policies, regulations, or laws related to land use are applicable to the proposed alternatives under consideration.

State

State Parks

The following Public Resource Code sections are relevant to land use within the within the study area and are listed below:

- **5002.2.(a)** Following classification or reclassification of a unit by the State Park and Recreation Commission, and prior to the development of any new facilities in any previously classified unit, the department shall prepare a general plan or revise any existing plan, as the case may be, for the unit. The general plan shall consist of elements that will evaluate and define the proposed land uses, facilities, concessions, operation of the unit, any environmental impacts, and the management of resources, and shall serve as a guide for the future development, management, and operation of the unit. The general plan constitutes a report on a project for the purposes of Section 21100. The general plan for a unit shall be submitted by the department to the State Park and Recreation Commission for approval.

- **5019.50.** All units that are or shall become a part of the state park system, except those units or parts of units designated by the Legislature as wilderness areas pursuant to Chapter 1.3 (commencing with Section 5093.30), or where subject to any other provision of law, including Section 5019.80 and Article 1 (commencing with Section 36600) of Chapter 7 of Division 27, shall be classified by the State Park and Recreation Commission into one of the categories specified in this article. Classification of state marine reserves, state marine parks, and state marine conservation areas, requires the concurrence of the Fish and Game Commission for restrictions to be placed upon the use of living marine resources.

- **5019.53**. State parks consist of relatively spacious areas of outstanding scenic or natural character, oftentimes also containing significant historical, archaeological, ecological, geological, or other similar values. The purpose of state parks shall be to preserve outstanding natural, scenic, and cultural values, indigenous aquatic and terrestrial fauna and flora, and the most significant examples of ecological regions of California, such as the Sierra Nevada, northeast volcanic, great valley, coastal strip, Klamath-Siskiyou Mountains, southwest mountains and valleys, redwoods, foothills and low coastal mountains, and desert and desert mountains.

  Each state park shall be managed as a composite whole in order to restore, protect, and maintain its native environmental complexes to the extent compatible with the primary purpose for which the park was established.

Improvements undertaken within state parks shall be for the purpose of making the areas available for public enjoyment and education in a manner consistent with the preservation of natural, scenic, cultural, and ecological values for present and future generations. Improvements may be undertaken to provide for recreational activities including, but not limited to, camping, picnicking, sightseeing, nature study, hiking, and horseback riding, so long as those improvements involve no major modification of lands, forests, or waters. Improvements that do not directly enhance the public's enjoyment of the natural, scenic, cultural, or ecological values of the resource, which are attractions in themselves, or which are otherwise available to the public within a reasonable distance outside the park, shall not be undertaken within state parks.

State parks may be established in the terrestrial or nonmarine aquatic (lake or stream) environments of the state.

- **5019.56.** State recreation units consist of areas selected, developed, and operated to provide outdoor recreational opportunities. The units shall be designated by the commission by naming, in accordance with Article 1 (commencing with Section 5001) and this article relating to classification.

  In the planning of improvements to be undertaken within state recreation units, consideration shall be given to compatibility of design with the surrounding scenic and environmental characteristics.

  State recreation units may be established in the terrestrial or nonmarine aquatic (lake or stream) environments of the state and shall be further classified as one of the following types:

  (a) State recreation areas, consisting of areas selected and developed to provide multiple recreational opportunities to meet other than purely local needs. The areas shall be selected for their having terrain capable of withstanding extensive human impact and for their proximity to large population centers, major routes of travel, or proven recreational resources such as manmade or natural bodies of water. Areas containing ecological, geological, scenic, or cultural resources of significant value shall be preserved within state wildernesses, state reserves, state parks, or natural or cultural preserves, or, for those areas situated seaward of the mean high tide line, shall be designated state marine reserves, state marine parks, state marine conservation areas, or state marine cultural preservation areas.

  Improvements may be undertaken to provide for recreational activities, including, but not limited to, camping, picnicking, swimming, hiking, bicycling, horseback riding, boating, waterskiing, diving, winter sports, fishing, and hunting.

  Improvements to provide for urban or indoor formalized recreational activities shall not be undertaken within state recreation areas.

Lake Valley SRA General Plan

The California Parks and Recreation Commission classified Lake Valley State Recreation Area (SRA) in March 1987. This action included continuation of golfing and existing winter recreation activity as a formalized departmental objective (State Parks 1988:14). Section 5002.2 of the Public Resources Code requires State Parks to prepare a general plan or revise any existing plan after the State Park and Recreation Commission has classified or reclassified a unit of the State Park System, and before any new facilities are developed in a previously classified unit. To satisfy this requirement for the unit in which the study area for this project is located, State Parks prepared and adopted the *Lake Valley State Recreation Area General Plan* on May 13, 1988 (State Parks 1988). The general plan provides guidelines for long-term management and development of Lake Valley SRA. Lake Valley SRA and Washoe Meadows SP were purchased as one unit in 1985, but subdivided into two units because of existing golf course.

The Land Use Element of the General Plan determines uses of land within the SRA for providing recreational opportunities and public facilities consistent with the programs and policies identified in the General Plan's

Resource Element. It identifies developed and undeveloped land uses and provides recommendations for future uses within the SRA.

Specifically, the purpose of Lake Valley SRA, as described in the General Plan, is to make available an 18-hole golf course and the scenic Upper Truckee River and its environs for the enjoyment and inspiration of the public. State Parks must balance the objectives of providing optimum recreational opportunities and maintaining the highest standards of environmental protection. According to the General Plan purpose statement, State Parks must define and execute a management program for the unit that perpetuates the unit's declared values, providing for golfing and other compatible summer and winter recreation opportunities while restoring the natural character and ecological values of the Upper Truckee River, protecting its water quality, and protecting and interpreting significant natural, cultural, and scientific values.

Lake Valley State Recreation Area River Management Plan—Upper Truckee River

The General Plan called for preparation and implementation of a river management plan the purpose of which would be to restore a more natural channel configuration, to control unnatural bank erosion rates and to restore riparian habitat along the Upper Truckee River. The General Plan also stated that alternative methods of bank stabilization that minimize hard engineering would be given foremost consideration. State Parks landscape architect began preparation of the *Lake Valley State Recreation Area River Management Plan—Upper Truckee* River in the late 1990's. It was a draft internal planning study to provide informal guidelines for the management and development of Lake Valley SRA. At the time of plan preparation, it was assumed that the golf course would remain in its current configuration. The internal draft plan took the approach of combining erosion control and with golf recreation enhancement without reconfiguring the golf course. The river management plan only progressed to a partial internal draft and was never completed or formerly adopted by State Parks or reviewed under CEQA, and the effort was terminated because it did not meet the goals in the general plan to restore the Upper Truckee River. Instead a more detailed river analysis of the upper watershed was conducted by Swanson Hydrology, entitled "Upper Truckee River Upper Reach Environmental Assessment" (2004), as well as the *Upper Truckee River Restoration Project – Riparian Ecosystem Restoration Feasibility Report* (River Run Consulting 2006), which provided the foundation information for developing the river restoration concepts of the proposed project. Consequently, the River Management Plan does not provide direction to current restoration planning efforts at Lake Valley SRA.

Washoe Meadows State Park

According to the unit's purpose statement, adopted in 2000, the purpose of Washoe Meadows SP is to preserve and protect a wet meadow area associated with Angora Creek and the Upper Truckee River at the southwest side of the Tahoe Basin. The unit's associated forest areas sustain Jeffrey pine and an exceptionally large specimen of lodgepole pine (this tree has since died of natural causes). The unit contains 14 Native American occupancy sites and remnants of a historic dairy, and is contiguous to other public lands important for their open-space values and recreational uses. State Parks is responsible for preserving, protecting, restoring, interpreting, and managing the unit's natural, cultural, and aesthetic resources, features, and values, and for making them available to the public for their educational, inspirational, and recreational benefits (State Parks 2000b).

Informal parking, trails, and signage provide initial public access and information to park visitors. Because no new facilities have been proposed or developed within Washoe Meadows, no general plan has been prepared for this unit.

California State Lands Commission

The California State Lands Commission (CSLC) has jurisdiction and management authority over 4.5 million acres of land held in trust for Californians. The commission's jurisdiction includes the beds of navigable rivers, sloughs, and navigable lakes, including the California portion of Lake Tahoe and the Upper Truckee River. The State of California holds these lands for the public-trust purposes of water-related commerce, navigation, fisheries,

environmental preservation, recreation, and open space. Based on its public-trust authority, CSLC reviews and may grant dredging permits and issue land-use leases for activities within its jurisdiction. It does not have a comprehensive use plan for these lands but manages them according to State laws and regulations.

CSLC regulates an established public trust for navigable waterways within California. The public-trust doctrine is the principle that certain resources are preserved for public use, and that the government is required to maintain it for the public's reasonable use. This public-trust easement allows access along the river channel. The use of public-trust lands is generally limited to water-dependent or related activities: commerce, navigation, fisheries, environmental preservation, recreation, and open space.

Tahoe Regional Planning Agency

1987 Regional Plan

TRPA implements its authority to regulate growth and development in the Lake Tahoe region through the *Regional Plan for the Lake Tahoe Basin* (*Regional Plan*). The *Regional Plan* includes several documents relevant to land use: environmental threshold carrying capacities, Goals and Policies, Code of Ordinances, Plan Area Statements, and Water Quality Management Plan. Chapter 5, "Compliance with Applicable Federal Laws and Executive Orders and State Laws and Regulations," of this draft EIR/EIS/EIS provides additional information on TRPA and other agency regulatory and planning processes for the Tahoe Basin.

The 1987 Regional Plan had a 20-year scope and is currently being reviewed and updated through a collaborative effort led by TRPA. These agencies are working together to update several important environmental documents for the Tahoe Basin. These Regional Plan updates will guide land management, resource management, and environmental regulations in the Tahoe Basin over the next 20 years. The Regional Plan update is anticipated to be completed by 2011. For Pathway, TRPA is reevaluating nine environmental threshold carrying capacities (thresholds) it established previously to define the levels of environmental quality desired for the region. New research, science, and collaboration at the community level will contribute to development of the updated report. For the purpose of this evaluation, the 1987 Regional Plan currently in effect will be applied.

Regional Plan Goals and Policies

The Goals and Policies document for the 1987 *Regional Plan* establishes an overall framework for development and environmental conservation in the Lake Tahoe region. TRPA goals and policies are included in six elements: land use, transportation, conservation, recreation, public services and facilities, and implementation (TRPA 2004). The goals and policies relevant to the project are listed in Table 3.2-1, presented at the end of this section, and are discussed in "Environmental Consequences," below.

Code of Ordinances

The TRPA Code of Ordinances establishes standards and regulations for implementation of the *Regional Plan* for the Tahoe Basin. Public agencies and organizations in the basin must comply with TRPA provisions or may establish equivalent or higher requirements in their jurisdictions. The Code of Ordinances is a coordinated series of documents addressing environmental and land use planning issues in the Tahoe Basin, including the Tahoe Regional Planning Compact, environmental threshold carrying capacities, Goals and Policies, the Plan Area Statements and maps, and other TRPA plans and programs. The Code of Ordinances is intended to implement the Goals and Policies while maintaining the environmental thresholds (TRPA 1991).

Plan Area Statements

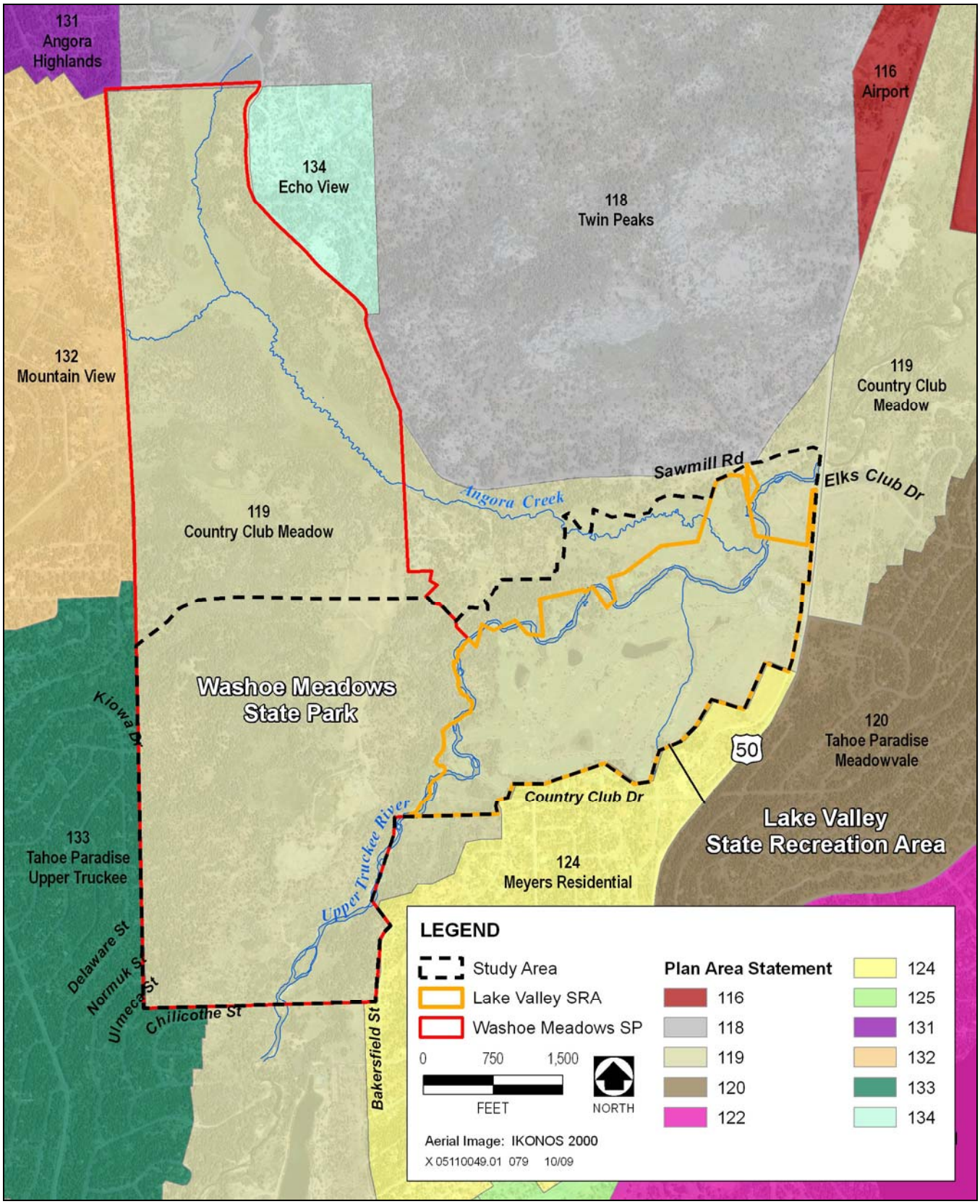
Chapter 13, "Plan Area Statements and Plan Area Maps," of the TRPA Code of Ordinances requires that all projects and activities be consistent with the provisions of a particular area's applicable plan area statement (PAS). The Lake Tahoe region is divided into more than 181 separate plan areas. For each plan area, a

"statement" is made describing how that particular area should be regulated to achieve environmental and land use objectives and providing detailed plans and policies for specific areas of the basin. The written text and maps in the PAS provide specific land use policies and regulations for each planning area. PASs also serve to promote and protect the public health and safety as well as the general welfare and environment. El Dorado County has adopted TRPA PASs, which define land use classification, planning considerations, special policies, and permissible uses of land in the Tahoe Basin. The study area is located within PAS 119 (Country Club Meadow).

Project planning must recognize the PAS requirements and limitations on permissible uses. The following PAS description includes land use classification and management strategy. Permissible uses for this PAS are listed in Table 3.2-2. The establishment of new uses not listed is prohibited within any plan area. Existing uses not listed are considered nonconforming uses within a given plan area.

PAS 119 includes the area from the Upper Truckee River near the airport to the bridge at the bottom of the Echo Summit grade (Exhibit 3.2-1). Developed facilities within PAS 119 include residences, the Lake Tahoe Golf Course, snowmobile courses, and stables. Approximately 80 percent of the existing environment is classified as Stream Environment Zone (SEZ), and the dominant feature of this PAS is the Upper Truckee River. The current land use designation is Recreation with a special designation of Scenic Restoration Area. Allowable recreation uses in PAS 119 include day-use areas, riding and hiking trails, developed campgrounds, outdoor recreation concessions, golf courses, and visitor information centers. Allowable resource management uses in PAS 119 include reforestation, nonstructural fish habitat management, nonstructural wildlife habitat management, prescribed fire management, sensitive plant management, uncommon plant community management, erosion control, runoff control, and SEZ restoration. The planning statement for PAS 119 is "This area should be managed for outdoor recreation and natural resource values to include opportunities for SEZ restoration." Accessory uses related to these allowed land uses may also be permitted pursuant to the definition of accessory uses in Chapter 18 of the TRPA Code of Ordinances, Subsection 18.2 (TRPA 2005). The following special policies of PAS 119 apply to the study area:

- Areas of significant resource value or ecological importance within this Plan Area should be designated as natural areas, and they should be buffered from intensive uses.
- Whenever possible, opportunities for restoration of disturbed SEZs and land coverage removal should be encouraged, including strategies to mitigate the impacts of the golf course.
- A stream channel maintenance program should be implemented to protect the value of the river as a fishery and to minimize the risks of bank erosion.
- Creation of waterfowl habitats in association with restoration efforts of disturbed areas should be encouraged.
- Improved river access for fishing should be provided.
- Intensive uses in this Plan Area that require development of impervious coverage should be discouraged.
- The Upper Truckee River should be designated as a catch-and-release fishery area.



Source: TRPA 2009

Plan Area Statements **Exhibit 3.2-1**

Table 3.2-2 Permissible Uses for Plan Area Statement 119	
GENERAL	
Residential	Domestic animal raising (S), single family dwellings (S) and summer homes (S)
Public Service	Pipelines and power transmission (S), local post office (S), local public health and safety facilities (S), public utility centers (S), transmission and receiving facilities (S), transportation routes (S), and transit stations and terminals (S)
Recreation	Cross country skiing courses (S), day-use areas (A), riding and hiking trails (A), participant sports (S), developed campgrounds (A), outdoor recreation concessions (A), rural sports (S), group facilities (S), golf courses (A), snowmobile courses (S), and visitor information area (A)
Resource Management	Reforestation (A), sanitation salvage cut (A), Management special cut (S), thinning (A), timber stand improvement (S), tree farms (S), early successional stage vegetation management (A), nonstructural fish/wildlife habitat management (A), structural fish/wildlife habitat management (S), farm/ranch accessory structures (s), grazing (S), range pasture management (S), range improvement (S), fire detection and suppression (A), fuels treatment (A), insect and disease suppression (A), prescribed fire management (A), sensitive and uncommon plant community management (A), erosion control (A), runoff control (A), and SEZ restoration (A)
Notes: SEZ = Stream Environment Zone. The list indicates whether the use is allowed (A) or must be considered under the provisions for a special use (S). Existing uses not listed are considered nonconforming uses within this plan area. Source: TRPA 2005	

Environmental Threshold Carrying Capacities

In August 1982, TRPA adopted Resolution No. 82-11, which adopted environmental threshold carrying capacities (thresholds) for the Lake Tahoe region. TRPA threshold criteria have been established for water quality, air quality, scenic resources, soil conservation, fish habitat, vegetation, wildlife habitat, noise, and recreation. Although TRPA does not have an articulated land use threshold, land use objectives are achieved through implementation of TRPA's Code of Ordinances and Goals & Policies, as well as through implementation of specific transportation policies and design review guidelines.

El Dorado County

El Dorado County shares responsibility for regulation of land use policies within its unincorporated portions of the Tahoe Basin. The study area is within El Dorado County; however, the County does not have jurisdiction over use of State lands. The *El Dorado County General Plan* is designed to integrate El Dorado County's regulations with those of TRPA within the Tahoe Basin. This eliminates inconsistencies with the *Regional Plan* (recognizing that TRPA regulations may change over time), and simplifies the regulatory environment in the Tahoe Basin (El Dorado County 2004).

Within the *El Dorado County General Plan*, the following policies are relevant to land use within the project vicinity and are listed below:

GOAL 2.10: Lake Tahoe Basin. To coordinate the county's land use planning efforts in the Tahoe Basin with those of the TRPA.

- **Policy 2.10.1.1:** The County shall apply the standards of the Regional Plan for the Tahoe Basin and the Code of Ordinances and other land use regulations adopted by TRPA in acting on applications for proposed land uses in the Tahoe Basin.

- **Policy 2.10.1.4:** The County shall cooperate with TRPA in the implementation of actions recommended in TRPA's periodic threshold evaluation reports.

- **Policy 2.10.1.5:** The County may impose more stringent regulations where TRPA does not limit the County's authority to do so.

Additionally, Measure LU-O sets forth a timeline for coordination with TRPA and other agencies having land use jurisdiction in the Tahoe Basin to create a comprehensive approach to land use regulation in the basin. This measure specifies actions to be taken including modification of El Dorado County's Zoning Ordinance to be consistent with or adopt as county code, the TRPA Code of Ordinances, and PASs. Also, the measure requires implementation of actions recommended in TRPA's periodic threshold evaluation reports.

City of South Lake Tahoe

The *City of South Lake Tahoe General Plan* was adopted in 1999 and amended in 2002 and 2003. The land use vision described in the general plan specifically addresses the commercial corridor along U.S. 50 adjacent to the study area. The vision is to remove the "strip commercial uses" and reestablish distinct "villages" reminiscent of early South Shore development along the highway (City of South Lake Tahoe 1999). There are no specific City of South Lake Tahoe land use goals and objectives relevant to the study area.

Lake Tahoe Airport Comprehensive Land Use Plan

The *Lake Tahoe Airport Comprehensive Land Use Plan* (CLUP) establishes planning boundaries for the Lake Tahoe Airport and defines compatible types and patterns of future land uses that might occur in the area surround the airport (City of South Lake Tahoe 2007). The purpose of the CLUP is to provide the Lake Tahoe Airport area with compatibility guidelines for height, noise, and safety.

The CLUP designates airport safety zones to the land surrounding the airport to minimize the number of people exposed to aircraft crash hazards. This is accomplished by enforcing land use restrictions in the safety zones. The CLUP designates three safety zones:

- the clear zone, which is near the runway and is the most restrictive;

- the approach/departure zone, which is located under the takeoff and landing slopes for each runway, extends outward for 5,000 feet from Runway 36 (with a width of 500–1,500 feet) and 10,000 feet from Runway 18 (with a width of 1,010–3,500 feet), and is less restrictive than the clear zone; and

- the overflight zone, which is the area overflown by aircraft during the normal traffic pattern, extends in all directions 5,000 feet from the center of each end of each runway, and is the least restrictive.

ENVIRONMENTAL SETTING

The study area is located within Planning Area 119 (Country Club Meadow) (see "Plan Area Statements" in "Regulatory Background," above). Existing adjacent and nearby land uses consist primarily of residential development and publicly owned open space, as described below and shown in Chapter 1, "Introduction and Statement of Purpose and Need," Exhibit 1-2, "Study Area/Property Boundaries."

Lake Valley State Recreation Area

The entire 181 acres of Lake Valley SRA are within the study area. The SRA consists of relatively flat open land surrounded primarily by coniferous forest and residential development. The average elevation of the SRA is 6,280 feet. Of the 181 total acres, approximately 133 acres of the Lake Valley SRA are developed for use as the Lake Tahoe Golf Course. This course is open to the public and is managed by State Parks and operated through a

concession agreement with the American Golf. The 18-hole golf course includes a clubhouse, restaurant, golf shop, and driving range, and hosts tournaments and events. The remaining area of Lake Valley SRA includes a portion of the Upper Truckee River that runs through the golf course and pockets of undeveloped stands of coniferous forests, meadows, and riparian woodlands (State Parks 2000a). The purpose of Lake Valley SRA is to make available to the public for their enjoyment and inspiration the 18-hole golf course, and the scenic Upper Truckee River and its environs. The unit was classified as a SRA to assure continuation of the golfing activity and winter recreation as a formalized departmental objective. Classification as an SRA recognizes the significance of the unit in perpetuating an existing quality public golfing opportunity in the increasingly popular Tahoe basin, where golfing demand far exceeds the opportunities (State Parks 1988:34).

North of the Lake Valley SRA portion of the study area is Sawmill Road, forestland, and residential uses. The areas east and south of Lake Valley SRA include residential uses and U.S. 50. West of Lake Valley SRA is the Washoe Meadows SP. The Upper Truckee River flows along the western boundary of Lake Valley SRA, dividing the SRA from Washoe Meadows SP. In addition, parcels of Conservancy lands are adjacent to the SRA and along the Upper Truckee River to the north.

Washoe Meadows State Park

Washoe Meadows SP occupies 620 acres, the southern half of which is located in the study area. The park is located in the valley at the base of the escarpment leading to Echo Summit. This park includes a variety of resources: wet meadow, Jeffrey pine, lodgepole pine, Native American occupancy sites, and remnants of a historic dairy (State Parks 2000b). Prior to becoming a State Park, past uses included grazing, dairy operation, timber harvest, gravel extraction, and various types of motorized and non-motorized recreation. Inactive aggregate (sand and gravel) quarry sites are located in Washoe Meadows SP along the park's eastern boundary. The quarry sites consist of 3 contiguous lobes, trending north-northeast totaling approximately 17 acres. The quarry sites were developed in the mid-1960s, and it is estimated that the sites produced between 120,000 and 150,000 cubic yards of aggregate (Shasha, pers. comm., 2007).

The area north of the Washoe Meadows SP portion of the study area is Lake Tahoe Boulevard and forest land. East of Washoe Meadows SP is the Lake Valley SRA, and to the northeast are residential uses. Residential uses, forest land, and Lake Baron lie south of Washoe Meadows SP. In addition, residential uses border the entire west edge of Washoe Meadows SP.

Lake Tahoe Airport

The Lake Tahoe Airport is located approximately 1-mile northeast of the study area along U.S. 50. The Lake Tahoe Airport is owned and operated by the City of South Lake Tahoe. The airport is equipped to serve as a commercial air carrier/general aviation airport, although it does not currently support commercial flights and there is no commercial operator at the airport. The airport has one north-south asphalt runaway, which is 8,544 feet long by 150 feet wide. The Lake Tahoe Airport is adjacent to the Upper Truckee River downstream of the study area. A small portion of the northeast corner of the study area, adjacent to Sawmill Road and U.S. 50 is within the overflight zone (See Section 3.14, "Human Health and Risk of Upset," for additional information on the Lake Tahoe Airport).

Residential Subdivisions

The study area is bordered by two other PASs: PAS 124 (Meyers/Residential) and PAS 133 (Tahoe Paradise–Upper Truckee). Both of these areas have residential land use classifications.

Meyers/Residential

The Meyers/Residential plan area is located in Meyers, California, and is just west of the Meyers commercial area. It includes all residential streets west of U.S. 50, south of the Lake Tahoe Golf Course, and north of the Upper Truckee River/U.S. 50 bridge.

The primary use of this area is residential at a density of one single-family dwelling per parcel of record. An elementary school, Lake Tahoe Environmental Science Magnet School, also exists in this area. The area is 55 percent of built out.

This plan area is immediately east of the study area, and Bakersfield Street runs along the southernmost portion of the eastern boundary of the study area. Country Club Drive runs along the middle of the eastern study area boundary and terminates at the edge of the study area.

Tahoe Paradise–Upper Truckee

The Tahoe Paradise–Upper Truckee planning area consists of the residential subdivisions located west of Meyers along North Upper Truckee Road. This area is residential at a density of one single-family dwelling per parcel of record, and the area is approximately 45 percent of built out.

This area is immediately west and south of the study area. It includes a portion of the North Upper Truckee residential area and includes neighborhoods in the vicinity of Kiowa Drive, Delaware Street, Normuk Street, Ulmeca Street, and Chilicothe Street. Portions of both Kiowa Drive and Delaware Street run parallel to the western boundary of the study area. Normuk and Ulmeca Streets terminate at the western boundary of the study area, and a part of Chilicothe Street runs along the southern boundary of the study area.

3.2.2 ENVIRONMENTAL CONSEQUENCES

SIGNIFICANCE CRITERIA

For this analysis, significance criteria are based on the checklist presented in Appendix G of the State CEQA Guidelines; the TRPA Initial Environmental Checklist; factual information; scientific data; and regulatory standards of Federal, State, and local agencies. In development of mitigation measures for significant impacts of the project, effects on environmental threshold carrying capacities (thresholds) of the Tahoe Regional Planning Compact were considered. The project's effects on thresholds are further described in Chapter 4, Section 4.6, "Consequences for Environmental Threshold Carrying Capacities."

CEQA Criteria

Based on Appendix G of the State CEQA Guidelines, a land use impact is considered significant if implementation of the project would do any of the following:

- physically divide an established community;
- conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect; or
- conflict with any applicable habitat conservation plan or natural community conservation plan.

In addition, Appendix G includes a question regarding loss of forest land or conversion to non-forest use. This topic is addressed in Section 3.5, Biological Resources.

NEPA Criteria

An environmental document prepared to comply with NEPA must consider the context and intensity of the environmental effects that would be caused by or result from the proposed action. Under NEPA, the significance of an effect is used solely to determine whether an EIS must be prepared. The factors that are taken into account under NEPA to determine the significance of an action in terms of the context and the intensity of its effects are encompassed by the CEQA criteria used for this analysis.

TRPA Criteria

Based on TRPA's Initial Environmental Checklist, an alternative would result in a significant impact on land use if it would:

- include uses that are not listed as permissible uses in the applicable Plan Area Statement, adopted community plan, or master plan or
- expand or intensify an existing nonconforming use.

METHODS AND ASSUMPTIONS

The focus of this draft EIR/EIS/EIS analysis is on land use impacts that would result from implementation of any of the proposed alternatives. In addition, the need for an amendment of the Lake Valley SRA General Plan is discussed for each alternative. The general plan amendments proposed for the alternatives are also described in Chapter 2 so that they are considered as part of the project description for purposes of environmental impact analysis under NEPA. After a preferred alternative is identified, the details of the map and text amendments to the general plan would be prepared to reflect the changes discussed in Chapter 2. The proposed amendment would then be submitted with the completed EIR/EIS/EIS to the State Parks and Recreation Commission for consideration of approval at the conclusion of the environmental review process.

Evaluation of potential land use impacts of the project was based on land use reconnaissance conducted in the areas surrounding the study area and a review of the planning documents that pertain to the study area:

- *Lake Valley State Recreation Area General Plan* (State Parks 1988),
- *Regional Plan for the Lake Tahoe Basin* (adopted in 1982) (TRPA 2004),
- PAS 119 (Country Club Meadow) (TRPA 2005), and
- *Lake Valley State Recreation Area River Management Plan* (not formally adopted [State Parks 2000a]).

IMPACTS FOUND TO BE LESS THAN SIGNIFICANT AND NOT DISCUSSED FURTHER

Habitat Conservation Plans/Natural Community Conservation Plans – There are no habitat conservation plans or natural community conservation plans that are applicable to the study area; therefore, this topic will not be discussed further.

Community Plans/Master Plans – There are no community plans or master plans that are applicable to the study area; therefore, this topic will not be discussed further.

Changes in zoning and forest land effects - No environmental impacts would occur related to changes in zoning, including any that could affect forest land. The zoning of the study area is expressed by the Planning Area Statement (PAS), and no changes to the PAS are proposed as part of this project.

IMPACT ANALYSIS AND MITIGATION MEASURES

Alternative 1: No Project/No Action: Existing River and 18-Hole Regulation Golf Course

IMPACT 3.2-1 (Alt. 1) Potential to Physically Divide an Established Community. *Implementation of Alternative 1 would not involve construction of new facilities within the study area, and existing land uses would continue into the future. Over time, existing natural and artificial features and natural processes would not create a new physical division in the study area or within adjacent established communities. Therefore, implementing Alternative 1 would not create a physical division within an established community.* ***No impact*** *would occur.*

In the foreseeable future under Alternative 1, existing natural and artificial features within the study area (e.g., the existing river, golf course, trails) are not expected to create any new physical division within the study area or within an established community in the vicinity of the study area. Implementation of Alternative 1 would not involve construction of new facilities or substantial physical alterations of the study area. The existing roads and trails would remain in their current locations and, presumably, would continue to be used for the purposes for which they are used today. All trails on the western side of the river are casual or volunteer trails. No trails within the study area are officially established or designated trails; instead, they have been formed over time through routine use. The golf bridges would remain closed to public use unrelated to golf because of safety hazards and liability. No new public trails would be constructed. Therefore, there would be no changes to public access, and implementing Alternative 1 would not divide an established community. There would be no impact.

No mitigation is required.

IMPACT 3.2-2 (Alt. 1) Potential Conflict with Land Use Plans, Policies, or Regulations Intended to Protect the Environment. *Alternative 1 would not include any new facilities, new land uses, or any new nonconforming uses in the study area that would conflict with applicable plans, policies, or regulations intended to protect the environment. Therefore, this impact would be* ***less than significant****.*

Under Alternative 1, existing conditions in the study area would continue into the future. The reach of the Upper Truckee River within the study area would not be restored, and the 18-hole regulation golf course would remain as it currently exists. Repairs to the river and golf course would continue on an emergency or as-needed basis, as has occurred in the recent past and would not preclude future restoration. Recreational uses permitted under PAS 119 include riding and hiking trails, outdoor recreation concessions, golf courses, and visitor information centers, and other recreational uses (See Section 3.8, "Recreation"). Resource management uses permitted under PAS 119 include erosion control, runoff control, and SEZ restoration. Existing land uses are consistent with allowable uses under PAS 119, and implementation of Alternative 1 would not alter land uses in the study area. Alternative 1 is the No Project/No Action Alternative where non-conforming uses predate the TRPA *Regional Plan*. Furthermore, several Goals and Policies are related to implementation of a project; therefore, are not relevant to the No Project/No Action Alternative. Alternative 1 would not intensify or expand on any nonconforming uses. In addition, because Alternative 1 would result in continuation of existing land uses where non-conforming uses predate the *Regional Plan*, this alternative would not result in any changes to the consistency of land uses in the study area. Therefore, Alternative 1 would be consistent with the TRPA *Regional Plan* goals and policies, as shown in Table 3.2-1.

Because implementing Alternative 1 would not conflict with applicable plans, policies, and regulations intended to protect the environment, this impact would be less than significant

No mitigation is required.

IMPACT 3.2-3 (Alt. 1) **Potential Conflict with State Parks Plans, Policies, and Regulations.** *Implementation of Alternative 1 would include continuation of existing land uses in the study area into the future. The Lake Valley SRA General Plan calls for restoring the natural character and ecological values of the Upper Truckee River, which would not occur under Alternative 1. However, implementation of Alternative 1 would include emergency spot repair of the river and would be a continuation of existing conditions. Repairs, under this alternative, would be localized stabilization treatments designed to slow erosion and protect infrastructure, but would not restore natural channel morphology or function. Because there would be no changes to existing land uses, this alternative would be consistent with State Parks plans, policies, and regulations. This impact would be* ***less than significant****.*

Under Alternative 1, existing land uses, including the 18-hole golf course and repairs to the river and golf course on an emergency or as-needed basis, would continue into the future. The purpose of the Lake Valley SRA is to make available to the people for their enjoyment and inspiration the 18-hole golf course and the scenic Upper Truckee River and its environs. The Lake Valley SRA General Plan provides that the SRA be used for golfing, along with other compatible summer and winter recreation opportunities, while restoring the natural character and ecological values of the Upper Truckee River (State Parks 1988). According to Public Resources Code Section 5019.53, units classified as state parks "consist of relatively spacious areas of outstanding scenic or natural character, often times also containing important historical, archaeological, ecological, geological, or other similar values. The purpose of state parks shall be to preserve outstanding natural, scenic, and cultural values, indigenous aquatic and terrestrial fauna and flora, and the most significant examples of ecological regions of California." In accordance with Public Resources Code Section 5019.56, state recreation areas "consist of areas selected, developed, and operated to provide outdoor recreational opportunities." SRA's are "selected and developed to provide multiple recreational opportunities to meet other than purely local needs. The areas shall be selected for their having terrain capable of withstanding extensive human impact…"

The purpose of the Lake Valley SRA is to make available to the public an 18-hole golf course and the scenic Upper Truckee River and its environs. The LVSRA General Plan calls for restoration of the Upper Truckee River and provision of an 18-hole regulation golf course. Alternative 1 would not include full geomorphic restoration of the Upper Truckee River within the study area; however, it would continue the existing management approach of protecting water quality, natural resources, and cultural resources to the extent feasible with repairs to existing bank stabilization, infrastructure, and additional spot stabilization in response to erosion, damage, or failures. Amendment of a general plan is not required for this situation, as described in Public Resources Code Section 5002.2(c). The existing 18-hole golf course would remain within the current footprint under Alternative 1; therefore, no changes to the existing boundaries or land uses in Lake Valley SRA or in Washoe Meadows SP would be needed.

No general plan was prepared for the Washoe Meadows SP, because the wet meadow area associated with Angora Creek and the Upper Truckee River is protected and no substantial, permanent facilities have been developed in the unit. Consistency with a general plan is, therefore, not an issue; however, Alternative 1 would be consistent with the purpose statement of Washoe Meadows SP. In addition, implementation of Alternative 1 would not preclude preparation of a general plan for Washoe Meadows SP in the future. State Parks may choose to prepare a general plan for Washoe Meadows SP in the future, if development of substantial, permanent facilities were contemplated; however, this would be a separate action subject to its own environmental review under CEQA.

Because there would be no changes to existing land uses, this alternative would not conflict with State Parks plans, policies, or regulations. This impact would be less than significant.

No mitigation is required.

Alternative 2: River Ecosystem Restoration with Reconfigured 18-Hole Regulation Golf Course

IMPACT 3.2-1 (Alt. 2) **Potential to Physically Divide an Established Community.** *Implementation of Alternative 2 would include relocation of golf course holes within Washoe Meadows SP, which would reduce access to portions of Washoe Meadows SP from adjacent neighborhoods. However, Alternative 2 would include new trails and a pedestrian path through the golf course that would improve connectivity between the east and west sides of the river. In addition, the golf course would be entirely on public land and would not divide an established community. Because connectivity would be maintained and no established communities would be divided, this impact would be* ***less than significant****.*

Under Alternative 2, all five existing golf course bridges and the four golfer/cart path bridges across Angora Creek would be removed, and seven full and two partial golf course holes would be relocated to the west side of the river. Because public access across the existing bridges is prohibited for safety reasons, their removal would not substantially reduce public access by adjacent neighborhoods to proposed golf course areas west of the river. In fact, a new bridge designed to allow both golfer use and safe public access would be included with the reconfigured golf course, so an authorized public access facility would be established. Also, a portion of Lake Valley SRA along east side of river that is now golf course would be opened to public use, increasing access with this portion of the study area.

A new designated trail system would be constructed under Alternative 2 to tie the informal, volunteer recreation trails on the west side of the river to new trails on the east side of the river via a new bridge. The recreation trail would share the new bridge with the golf cart path and would then diverge into separate paths on both sides of the river. There would be two new recreation trails on the east side of the river connecting to the bridge. One would extend to the south and tie into the corner of Country Club Drive and Bakersfield Street, whereas the other would extend along the south side of the river to the east and tie into the new Sawmill Bike Path along U.S. 50 near the golf course clubhouse. A new trail would also be constructed around the north end of the western section of the golf course that would allow access across the new bridge. The recreation trail would share the cart path in the central area of the western holes where a gap in the golf course would provide a corridor for other recreation users to safely pass through the golf course to the river and tie into the gravel road that parallels the river. This gravel road is currently, and would continue to be, used by the South Tahoe Public Utility District as a required maintenance road. This proposed trail configuration would enable public access and use into and within the area. As previously noted, the existing golf course bridges that would be removed are currently closed to public use unrelated to golf because of safety hazards. Also, a forested buffer between 150 and 400 feet wide would remain intact between all existing houses and the relocated golf course holes.

Because Alternative 2 would provide public access through the relocated golf course and improve connectivity between the east and west side of the river, this impact would be less than significant.

No mitigation is required.

IMPACT 3.2-2 (Alt. 2) **Potential Conflict with Land Use Plans, Policies, or Regulations Intended to Protect the Environment.** *Alternative 2 would include a reconfigured 18-hole golf course and restoration of the Upper Truckee River within the study area. These proposed land uses would be consistent with applicable plans, policies, and regulations intended to protect the environment. This impact would be* ***less than significant****.*

Under Alternative 2, the 18-hole golf course would be reconfigured, and the reach of the Upper Truckee River within the study area would be restored. Informal outdoor recreation would continue within the northern portion of Washoe Meadows SP, and snowmobiling would continue to be limited to the driving range at the golf course. Permitted uses under PAS 119 include golfing, outdoor recreation, snowmobiling, and SEZ restoration. Therefore, the land uses proposed under Alternative 2 would be consistent with allowable uses under PAS 119. Because the existing and proposed land uses in the study area are allowable under PAS 119, Alternative 2 would not intensify or expand on any nonconforming uses. In addition, these proposed land uses would be consistent

with the TRPA *Regional Plan* goals and policies, as discussed in Table 3.2-1. Thus, implementing Alternative 2 would not conflict with applicable plans, policies, or regulations intended to protect the environment. Therefore, this impact would be less than significant.

No mitigation is required.

IMPACT 3.2-3 (Alt. 2) **Potential Conflict with State Parks Plans, Policies, and Regulations.** *Reconfiguration of the golf course would relocate seven and two partial golf course holes to Washoe Meadows SP. Golf courses are not consistent with the designation of Washoe Meadows as a state park. However, implementation of Alternative 2 would include changes to the boundaries of Lake Valley SRA and Washoe Meadows SP and an amendment of the Lake Valley SRA General Plan to accommodate reconfiguration of the golf course. This impact would be* ***less than significant****.*

The holes that would be relocated under Alternative 2 would be reconstructed on the west side of the Upper Truckee River within lands currently designated as Washoe Meadows SP. State Recreation Areas and State Parks have different purposes, as defined under Public Resources Code Section 5019, and golf course recreation is better suited to State Recreation Areas rather than State Park designation.

Relocation of the golf course holes would not be consistent with the purpose of Washoe Meadows SP, Alternative 2 would include revising the park unit boundaries, essentially trading land between Washoe Meadows SP and Lake Valley SRA, and realigning the boundaries between the two park units. Revising the park unit boundaries would be supported by appropriate policy changes, such as adopting revised management policies for the Lake Valley SRA. This boundary change would allow the total acreages of the SRA and SP to be similar to existing conditions.

Alternative 2 carries out the primary direction of the current Lake Valley SRA General Plan. It allows for geomorphic restoration of the river and maintains the regulation-length golf course. The general plan text and map amendment would be needed only to modify, where necessary, the application of Lake Valley SRA river protection goals and policies to the reconfigured golf course area. The revised park unit boundaries would remove nearly all the river zone from the Lake Valley SRA and designate it as lands within Washoe Meadows SP, because its primary function would become resources management rather than golf recreation (See Chapter 2, "Project Alternatives," Exhibit 2-5). The only section of river remaining in the Lake Valley SRA would be in the vicinity of the new bridge crossing. The area north of the river along Angora Creek would also be moved from Lake Valley SRA to Washoe Meadows SP. Adjusting the boundaries of the two units and amending the Lake Valley SRA General Plan would require approval by the State Parks and Recreation Commission, including a finding that these actions are consistent with the Public Resources Code. Where golf course footprint is relocated into what is now Washoe Meadows SP, that area would be designated as Lake Valley SRA.

State Parks has not prepared a general plan for Washoe Meadows SP, and the general plan amendment for Lake Valley SRA General Plan would not include plan elements for Washoe Meadows SP. Consistency with a general plan is, therefore, not an issue, because a Washoe Meadows SP plan does not exist. As part of its normal administrative responsibilities (separate from this project), State Parks would prepare interim management guidelines for Washoe Meadows SP, with the revised boundaries, which would provide additional guidance for protection of resources and management of permissible uses for that unit. The management plan would likely include small parking areas, signage, and some trail improvements on higher capability land; however, additional development in the remaining park area would not occur because most of the park is within sensitive, low-capability lands. State Parks may choose to prepare a general plan for Washoe Meadows SP in the future, if development of new facilities were contemplated; however, this would be a separate action subject to its own environmental review under CEQA.

Because the end land uses in the study area would be consistent with the revised unit boundaries and these amendments would require approval by the State Parks and Recreation Commission, implementation of Alternative 2 would be less than significant.

No mitigation is required.

Alternative 3: River Ecosystem Restoration with Reduced Play Golf Course

IMPACT 3.2-1 (Alt. 3) **Potential to Physically Divide an Established Community.** *Implementation of Alternative 3 would include restoration of the river and a reduced play golf course on the east side of the river. Implementing this alternative would not divide an established community. While the five existing golf course bridges over the Upper Truckee River and four of the golf course bridges across Angora Creek would be removed, these bridges do not provide authorized public access for safety reasons. Therefore, authorized public access and connectivity from surrounding communities would not be adversely affected. This impact would be* ***less than significant****.*

Alternative 3 would include restoration of the river and a reduced play golf course on the east side of the river. No golf course holes would be relocated to Washoe Meadows SP. However, all five bridges across the Upper Truckee River and the four golfer/cart path bridges across Angora Creek would be removed. The existing bridges across the unnamed creek would remain, with the northernmost bridge being redesignated as part of the proposed trail system. Under Alternative 3, a pedestrian path would be established along the northern edge of the proposed reduced play golf course. This designated trail would run from a tie-in to the Sawmill bike trail at U.S. 50, just north of the main entrance to the golf course along the river, to the corner of Country Club Drive and Bakersfield Street. No trail work is proposed on the west side of the river under this alternative.

No golf course holes would be relocated to the west side of the river under this alternative; therefore, implementing Alternative 3 would not reduce access to portions of Washoe Meadows SP from the adjacent neighborhoods. In addition, the nine golf course bridges that would be removed are currently closed to public use unrelated to golf because of safety hazards from golf balls in play.

Because implementing Alternative 3 would not divide an established community and authorized public access would not be reduced, this impact would be less than significant.

No mitigation is required.

IMPACT 3.2-2 (Alt. 3) **Potential Conflict with Land Use Plans, Policies, or Regulations Intended to Protect the Environment.** *Alternative 3 would include a reduced play golf course and restoration of the Upper Truckee River within the study area. These proposed land uses would be consistent with applicable plans, policies, and regulations intended to protect the environment. This impact would be* ***less than significant****.*

This impact would be similar to Impact 3.2-2 (Alt. 2) because the proposed land uses would be consistent with allowable uses under PAS 119 and the TRPA *Regional Plan* goals and policies, as discussed in Table 3.2-1. Implementing Alternative 3 would not intensify or expand any nonconforming uses. This impact would be less than significant.

No mitigation is required.

IMPACT 3.2-3 (Alt. 3) **Potential Conflict with State Parks Plans, Policies, and Regulations.** *Operation of a reduced play golf course under Alternative 3 would not be consistent with the 18-hole regulation golf course identified in the Lake Valley SRA General Plan. However, the Lake Valley SRA General Plan would be amended to allow for a reduced play golf course, which would make the proposed land uses in the study area consistent with the General Plan. This impact would be* ***less than significant****.*

The purpose of the Lake Valley SRA is to make available to the people the 18-hole golf course and the scenic Upper Truckee River and its environs. Alternative 3 would include restoration of the Upper Truckee River within the study area; however, the existing 18-hole golf course would be reconfigured to a 9-hole or 18-hole executive (i.e., short hole length) course, which is not consistent with the goals of the current General Plan. Therefore, the General Plan would be amended to modify, where necessary, the application of Lake Valley SRA recreation goals and policies to the reduced play golf course. Adoption of the Lake Valley SRA General Plan amendment would require approval by the State Parks and Recreation Commission, including a finding that the policy changes are consistent with the Public Resources Code.

Alternative 3 would not involve relocating any golf course holes to the west side of the river; however, this alternative would reduce the size of the golf course footprint and increase the area of restored riparian area. Therefore, changes in the boundaries between Washoe Meadows SP and Lake Valley SRA would be necessary to adjust the SRA boundary to fit the smaller golf course. In keeping with the respective purposes of Washoe Meadows SP and Lake Valley SRA, the boundary of Washoe Meadows SP would be adjusted (in this case, expanded) to encompass all of the restored river and riparian corridor.

State Parks has not prepared a general plan for Washoe Meadows SP, and the general plan amendment would not include plan elements for Washoe Meadows SP. Consistency with a general plan is, therefore, not an issue, because a Washoe Meadows SP plan does not exist. As part of its normal administrative responsibilities (separate from this project), State Parks would prepare interim management guidelines for Washoe Meadows SP, with the revised boundaries, which would provide additional guidance for protection of resources and management of permissible uses for that unit. The management plan would likely include small parking areas, signage, and some trail improvements on higher capability land. State Parks may choose to prepare a general plan for Washoe Meadows SP in the future, if development of new facilities were contemplated; however, this would be a separate action subject to its own environmental review under CEQA.

Because the end land uses in the study area would be consistent with the revised unit boundaries and these amendments would require approval by the State Parks and Recreation Commission, implementation of Alternative 3 would be less than significant.

No mitigation is required.

Alternative 4: River Stabilization with Existing 18-Hole Regulation Golf Course

IMPACT 3.2-1 (Alt. 4) **Potential to Physically Divide an Established Community.** *Implementation of Alternative 4 would include stabilization of the river in place and only minor changes to the existing golf course and bridges. Because the golf course would remain in its current location, there would be no change to authorized access or connectivity from surrounding communities and this alternative would not divide an established community. This impact would be* ***less than significant****.*

This impact would be the similar to Impact 3.2-1 (Alt. 1) because implementing this alternative would not reduce authorized access in the study area and would not divide an established community. Alternative 4 would involve removing two of the golf course bridges; however, the bridges would be replaced with a new bridge, and the bridges do not provide authorized access through the study area. This impact would be less than significant.

No mitigation is required.

IMPACT 3.2-2 (Alt. 4) **Potential Conflict with Land Use Plans, Policies, or Regulations Intended to Protect the Environment.** *Alternative 4 would include stabilization of the river in place and only minor changes to the existing golf course. These proposed land uses would be consistent with applicable plans, policies, and regulations intended to protect the environment. This impact would be* ***less than significant****.*

This impact would be similar to Impact 3.2-2 (Alt. 1) because use associated with the existing golf course and other management practices in the study area would be consistent with allowable uses under PAS 119 and where non-confirming uses are not consistent with the TRPA *Regional Plan* this would be a continuation of existing conditions, which predate the *Regional Plan*. Implementing Alternative 4 would not intensify or expand any nonconforming uses. This impact would be less than significant.

No mitigation is required.

IMPACT 3.2-3 (Alt. 4) Potential Conflict with State Parks Plans, Policies, and Regulations. *Stabilization of the river under Alternative 4 would not provide for restoration of the natural character of the river as identified in the Lake Valley SRA General Plan. However, the Lake Valley SRA General Plan would be amended to modify the river protection goals and policies, which would make the proposed land uses in the study area consistent with the Lake Valley SRA General Plan. This impact would be* ***less than significant****.*

Under Alternative 4, the amendment to the General Plan would modify the river protection goals and policies, because the approach under Alternative 4 would not be consistent with the directives of the General Plan for restoring a more natural channel. The text amendments to the Lake Valley SRA General Plan would modify the management approach for the river to policies that reflect stabilization in place and repair of degradation if it occurs and would eliminate language for river restoration. Because the policies would still reflect the overall purpose of management of natural resources at the SRA, this impact would be less than significant.

Alternative 4 would not involve relocating any golf course holes to the west side of the river or other alterations to Washoe Meadow SP; therefore, no changes in the boundaries between Washoe Meadows SP and Lake Valley SRA would be necessary. State Parks has not prepared a general plan for Washoe Meadows SP, and the general plan amendment for Lake Valley SRA would not include plan elements for Washoe Meadows SP. Consistency with a general plan is, therefore, not an issue, because a Washoe Meadows SP plan does not exist. As part of its normal administrative responsibilities (separate from this project), State Parks would prepare interim management guidelines for Washoe Meadows SP, with the revised boundaries, which would provide additional guidance for protection of resources and management of permissible uses for that unit. The management plan would likely include small parking areas, signage, and some trail improvements on higher capability land. State Parks may choose to prepare a general plan for Washoe Meadows SP in the future, if development of new facilities were contemplated; however, this would be a separate action subject to its own environmental review under CEQA.

No mitigation is required.

Alternative 5: River Ecosystem Restoration with Decommissioned Golf Course

IMPACT 3.2-1 (Alt. 5) Potential to Physically Divide an Established Community. *Implementation of Alternative 5 would include decommissioning the existing golf course and restoring the river. The golf course holes on the east side of the river would be removed, and no golf course holes would be relocated to Washoe Meadows SP under this alternative. Although the golf course, including the existing bridges, would be removed, there would be no change to authorized access or connectivity from surrounding communities. Because connectivity to surrounding communities would not be reduced and no established communities would be divided, this impact would be* ***less than significant****.*

This impact would be the similar to Impact 3.2-1 (Alt. 3) because this alternative would not reduce authorized access in the study area and, therefore, would not divide an established community. However, Alternative 5 would not improve access (as proposed under Alternative 2), because it would not include a bridge with authorized public access or a new pedestrian path as would be established under Alternatives 3 and 5. This impact would be less than significant.

No mitigation is required.

IMPACT 3.2-2 (Alt. 5) **Potential Conflict with Land Use Plans, Policies, or Regulations Intended to Protect the Environment.** *Proposed land uses under Alternative 5 would be consistent with the permissible land uses of the applicable plans, policies, and regulations intended to protect the environment. This impact would be* ***less than significant****.*

This impact would be similar to Impact 3.2-2 (Alt. 3) because the proposed land uses would be consistent with allowable uses under PAS 119 and the TRPA *Regional Plan*. Implementing Alternative 5 would not intensify or expand any nonconforming uses. This impact would be less than significant.

No mitigation is required.

IMPACT 3.2-3 (Alt. 5) **Potential Conflict with State Parks Plans, Policies, and Regulations.** *Implementation of Alternative 5 would include decommissioning the existing golf course and restoring the river. The park unit would be reclassified into a single state park unit with Washoe Meadows SP. . Because Alternative 5 would not involve the development of new facilities, restoration could be implemented without a general plan. This impact would be* ***less than significant****.*

Implementing Alternative 5 would eliminate the existing golf course within Lake Valley SRA. Removal of the golf course and restoration of the area to natural habitat could be implemented without amendments to the general plan, because it would not involve development of any new facilities; however, the primary purpose of the SRA would be eliminated. Consequently, State Parks would revoke the existing Lake Valley SRA General Plan and reclassify the former SRA to become part of a single unit with Washoe Meadows SP. All land of the former SRA would be classified as state park. Maintaining the unit in perpetuity as an ecosystem restoration area with no public access or outdoor recreation use would not be feasible, recognizing the unmet demand for outdoor recreation in the state and the mission of State Parks. In time, some form of planning for and implementation of public access and/or outdoor recreation facilities would need to occur in keeping with the mission of State Parks.

If temporary retention of a 9-hole golf course occurred prior to decommissioning and restoration of the meadow while State Parks restores the river and floodplain and/or considers classification, unit names, future recreation uses, and resource management, the Lake Valley SRA and Washoe Meadows SP boundaries would remain unchanged until a decision was made about the future disposition of the park units. The Public Resources Code does not require amendment of the General Plan to accommodate a nonpermanent use and the golf use is already a part of the general plan, so the temporary use of Lake Valley SRA for a 9-hole golf course could occur under the existing General Plan. No interim management plan would be prepared as part of Alternative 5, because State Parks would complete a more detailed planning process in the future to evaluate alternative uses of the combined units. This would be a separate action subject to its own environmental review under CEQA.

Because retention of a 9-hole golf course would be a temporary use and restoration of Lake Valley SRA would not include any new permanent facilities, designation of this area as a state park would be consistent with State Parks policies and regulations, including the Public Resources Code. This impact would be less than significant.

No mitigation is required.

CONSISTENCY WITH APPLICABLE TRPA GOALS AND POLICIES

Table 3.2-1 identifies Goals and Policies of the TRPA *Regional Plan* applicable to the study area. This table also includes consistency determinations and provides supporting narrative for all alternatives. Alternatives 1 is the No Project/No Action Alternative where many non-conforming uses predate the Regional Plan. Furthermore, several Goals and Policies are related to implementation of a project; therefore, are not relevant to the No Project/No Action Alternative. Alternatives 2 through 5 are action alternatives; therefore, more detailed discussions of how the alternative would be consistent with the Goals and Policies may be provided.

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
Land Use Goal #1: Restore, maintain, and improve the quality of the Lake Tahoe Region for the visitors and residents of the region.						
Policy 1: The primary function of the region shall be as a mountain recreation area with outstanding scenic and natural values.	Y	Y	Y	Y	Y	Under Alternative 1, the No Project/No Action Alternative, the study area would remain in use as a golf course and an outdoor recreation area within Washoe Meadows SP, which would continue to support recreational uses. All of the action alternatives (Alternatives 2–5) would involve providing recreation opportunities and improving the natural values of the Upper Truckee River within the study area. Alternatives 2, 3, and 5 would also involve reducing coverage within the study area and provide a riparian zone buffer between the river and the golf course. All alternatives would be consistent with TRPA scenic guidelines.
Policy 2: The Regional Plan gives a high priority to correcting past deficiencies in land use. The Plan shall encourage a redirection strategy for substantially and adversely altered areas, wherever feasible.	NA	Y	Y	Y	Y	Alternative 1, the No Project/No Action Alternative, would continue to support recreational uses, but would not modify existing land uses, restore the river or improve the natural character of the area. All of the action alternatives (Alternatives 2–5) would include enhancements that would improve effects of past land use of the Upper Truckee River. Alternatives 2, 3, and 5 would include full geomorphic restoration, providing improved habitat and floodplain function, and implementing Alternative 4 would stabilize the bed and banks of the Upper Truckee River, which would decrease ongoing erosion within the study area.
Policy 3: The Plan shall seek to maintain a balance between economic health and the environment.	NA	Y	Y	Y	Y	Under Alternatives 1 and 4, revenues and taxes would remain unchanged, and no economic impact on the community or State Parks would occur. Under Alternative 1, no restoration would occur, and erosive forces would continue. Under Alternative 4, the river would be stabilized in place. Alternatives 2, 3, and 5 would include full geomorphic restoration, providing improved habitat and floodplain function. Under Alternative 2, there would be slight increases in total revenue that would be considered beneficial to the community, and no adverse economic impacts on State Parks would occur. The economic impact of creating a nontraditional golf course (Alternative 3) or decommissioning the Lake Tahoe Golf Course (Alternative 5) would reduce direct visitor spending and tax revenue, including transient occupancy taxes and property taxes, in the South Shore area. However, this would not be sufficient to alter the balance between economic health and the environment.

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
Land Use Goal #2: Direct the amount and location of new land uses in conformance with the environmental threshold carrying capacities and other goals of the Tahoe Regional Planning Compact.						
Policy 2: Specific land use policies shall be implemented through the use of planning area statements for each of the planning areas identified in the map included in the Regional Plan. Areas of similar use and character have been mapped and categorized within one or more of the following five land use classifications: conservation, recreation, residential, commercial and public service, and tourist. These land use classifications shall dictate allowable land uses.	Y	Y	Y	Y	Y	The study area is located in PAS 119 (County Club Meadow). Alternatives 1–5 would be consistent with the permissible uses in this PAS.
Policy 3: The Plan Area Statements shall also identify the management theme for each planning area by designating each area for (1) maximum regulation, (2) development with mitigation, or (3) redirection of development. These designations shall provide additional policy direction for regulating land use.	Y	Y	Y	Y	Y	The study area is designated as a "development with mitigation" area which is for areas that can accommodate additional development with mitigation of impacts where land is capable of withstanding the use. Implementing Alternative 1, 3, 4, or 5 would either maintain or reduce existing development. Implementing Alternative 2 would move some golf course holes west of the river to higher capability lands in Washoe Meadows SP; however, much of this area was previously disturbed by a historical quarry, roads, and trails.
Policy 4: The Plan Area Statements set forth special policy direction to respond to the particular need, problems, and future development of a specific area. Each Planning Area Statement may vary in detail or specificity depending on the nature of the area and the detail or specificity related to local jurisdictional plans.	Y	Y	Y	Y	Y	The study area is located in PAS 119 (County Club Meadow). Alternatives 1–5 would be consistent with the permissible uses in this PAS.
Policy 5: All plan area statements, community plans, or other specific plans adopted by the agency shall specify the total additional development which may be permitted within the region, not to exceed the limitations set forth in A, B, C, D, and E in	Y	Y	Y	Y	Y	None of the alternatives (Alternatives 1 – 5) would include additional residential, commercial, tourist accommodation, or public service development. Therefore, these uses would not be increased under any of the alternatives. In addition, implementation of Alternative 1, 3, 4, or 5 would result in either no change or a decrease in recreation development. Alternative 2 would involve recreation development in the study area; however, this would be reconstruction

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
the Regional Plan. Reconstruction and relocation of existing development are not considered additional development.						of existing recreation development and would not be considered additional development.
Policy 11: Uses of the bodies of water within the region shall be limited to outdoor water-dependent uses required to satisfy the goals and policies of this plan.	Y	Y	Y	Y	Y	The portion of the Upper Truckee River within the study area would continue to be used for informal water-related recreation under all of the alternatives.
Land Use Goal #3: All new development shall conform to the coefficients of allowable land coverage as set forth in "The Land Capability Classification of the Lake Tahoe Basin, California-Nevada, a Guide for Planning, Bailey, 1974."						
Policy 1: Allowed base land coverage for all new projects and activities shall be calculated by applying the Bailey coefficients, as shown below, to the applicable area within the parcel boundary. Land Capability District — Max Allowable Coverage 1a — 1% 1b — 1% 1c — 1% 2 — 1% 3 — 5% 4 — 20% 5 — 25% 6 — 30% 7 — 30%	NA	Y	Y	Y	Y	Existing coverage within the study area exceeds that allowed by applying the Bailey coefficients for LCDs 1b and 1c. This coverage was existing pre-1972 and pre-dates the Regional Plan and is, therefore, considered grandfathered use. However, much of this coverage would be removed and/or relocated to higher capability and previously disturbed lands within the study area under Alternatives 2, 3, and 5. Coverage within higher capability lands would be consistent with that allowed by applying the Bailey Coefficient or as allowed by relocating covering to provide net environmental benefit, consistent with Regional Plan Goals and Policies. Alternative 1 would not include any changes in coverage. Alternative 2, 3, and 5 decrease coverage located in 1b (SEZ) and coverage within other land capabilities is consistent with that allowed on-site. Alternative 4 would have only a minor increase in coverage in 1brelated to the proposed restroom facility; however, this coverage is consistent with that allowed on-site. Banked coverage credit would be used for any coverage exceedences. See section 3.6 "Earth Resources" for additional coverage discussion.
Policy 2: The allowed coverage in Policy 1 may be increased by transfer of land coverage within hydrologically related areas up to the limits as set for the in A, B, C, D, and F of this policy.	NA	Y	Y	Y	Y	See Land Use Goal #3, Policy 1 above.
Policy 3: Rehabilitation, reconstruction, and upgrading of the existing inventory of structures, or other forms of coverage in the Tahoe region, are high priorities of the Regional Plan. To encourage rehabilitation	NA	Y	Y	Y	Y	See Land Use Goal #3, Policy 1 above.

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
and upgrading of structures, the policies listed under this policy shall apply						
Land Use Goal #4: Provide to the greatest possible extent, within the constraints of the environmental threshold carrying capacities, a distribution of land use that ensures the social, environmental, and economic well-being of the region.						
Policy 1: All persons shall have the opportunity to use and enjoy the region's natural resources and amenities.	Y	Y	Y	Y	Y	Under all of the alternatives, the study area would be managed and available for the public to use and enjoy recreation and natural resources. The northern portion of Washoe Meadows SP would remain undeveloped, and informal recreation such as hiking and fishing would continue within Washoe Meadows SP and along much of the river under all alternatives, which would be consistent with Special Policies 6 and 10 of PAS 119.
Policy 2: No person or persons shall develop property so as to endanger the public health, safety, and welfare.	Y	Y	Y	Y	Y	Construction of the action alternatives would likely involve the use of hazardous materials, such as fuels and other materials, but this would be temporary, and all materials would be used in accordance with applicable Federal, State, and local laws, including California Occupational Safety and Health Administration (Cal-OSHA) requirements and manufacturers' instructions. No alternatives would involve constructing any buildings for human occupancy, and no buildings would be demolished as part of any of the alternatives. No alternatives would increase risk of wildland fire, hazards to aviation, or mosquito vector control after mitigation. For these reasons, implementing any of Alternatives 1–5 would not endanger public health, safety, or welfare.
Noise Goal #1: Single-event noise standards shall be attained and maintained.						
Policy 3: Motor vehicles and motorcycles shall comply with the appropriate noise thresholds.	Y	Y	Y	Y	Y	As discussed in Section 3.12, "Noise," construction traffic under all of the alternatives (Alternatives 1—5) would comply with appropriate noise thresholds. None of the alternatives would result increases in noise related to operation.
Policy 4: Off-road vehicle use is prohibited in the Lake Tahoe region except on specified roads, trails or designated areas where the impacts can be mitigated.	Y	Y	Y	Y	Y	Public off-road vehicle use would not be allowed within the study area under any of the alternatives, with the exception of continued snowmobile use on a track within the driving range operated by a concessionaire under Alternatives 1 through 4 or would be eliminated under Alternative 5. State Parks personnel would continue to use snowmobiles and other equipment for management access, as needed, and monitor for unauthorized snowmobile use under all of the alternatives.

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
Policy 5: The use of snowmobiles will be restricted to designated areas.	Y	Y	Y	Y	Y	No changes to snowmobile activities would occur under Alternatives 1–4. Snowmobiling would continue to take place during the winter months, would continue to be operated by an independent vendor, and would continue to abide by all necessary operating permits and their conditions. Under Alternative 5, snowmobile operations would cease.
Policy 6: The plan will permit uses only if they are consistent with the noise standards. Sound proofing practices may be required on all structures containing uses that would otherwise adversely impact the prescribed noise levels.	Y	Y	Y	Y	Y	Under all alternatives, noise levels created by project activities would be consistent with applicable noise standards established by the TRPA and El Dorado County. No standards would be exceeded at sensitive receptors, and no new sensitive receptors would be created.
Natural Hazards Goal #1: Risks from natural hazards (e.g., flood, fire, avalanche, earthquake) will be minimized.						
Policy 2: Prohibit construction, grading, and filling of lands within the 100-year floodplain and in the area of wave run-up, except as necessary to implement the goals and policies of the plan. Require all public utilities, transportation facilities, and other necessary public uses located in the 100-year floodplain and area of wave run-up to be constructed or maintained to prevent damage from flooding and to not cause flooding.	NA	Y	Y	Y	Y	The proposed project is not located within the area of wave run-up (i.e., it is not adjacent to Lake Tahoe). Under Alternative 1, existing fill, infrastructure, and public uses within the 100-year floodplain would remain. Expected river dynamics under Alternative 1 would increase the risks of flood damage to public infrastructure crossing under or aligned near the eroding riverbanks. However, State Parks would address bridge replacement and bank failures on an as-needed basis. The action alternatives (Alternatives 2–5) would include temporary grading and construction within the 100-year floodplain, but they would produce long-term improvements in risks from flooding. Alternatives 2, 3, and 5 would involve removing existing fill in the floodplain and decreasing the intensity of public uses within the most sensitive areas within the 100-year floodplain. All of the action alternatives would involve improving the protection of buried utilities under the river and close to the river against flood damage. Where floodplain modifications are proposed mitigation has been put in place to prevent potential damage from and not to cause flooding.
Policy 3: Inform residents and visitors of the wildfire hazard associated with occupancy in the basin, encourage use of fire resistant materials and preventative techniques when constructing structures, especially in the highest fire hazard areas. Manage forest fuels to be consistent with state laws and other	Y	Y	Y	Y	Y	No habitable structures are proposed under any alternative. As mandated by the fire prevention and suppression policy in the *Lake Valley State Recreation Area General Plan*, a wildfire management plan has been implemented for Lake Valley SRA and Washoe Meadows SP. The plan identifies modified fire suppression methods that preserve sensitive unit resources while protecting human lives and property specific to these areas. The Lake Tahoe Golf Course is responsible for general vegetation maintenance and relies on State Parks to

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
goals and policies of this plan.						remove hazardous trees. Crews regularly assemble dead, fallen, and otherwise hazardous vegetation for removal. The wildfire management plan would continue to be implemented under all alternatives.
Water Quality Goal #1: Reduce loads of sediment and algal nutrients to Lake Tahoe; meet sediment and nutrient objectives for tributary streams, surface runoff, and subsurface runoff, and restore 80% of the disturbed lands.						
Policy 2: All persons who own land and all public agencies that manage public lands in the Lake Tahoe region shall put BMPs in place; maintain their BMPs; protect vegetation on their land from unnecessary damage; and restore the disturbed soils on their land.	Y	Y	Y	Y	Y	Existing facilities' best management practices (BMPs) would be maintained under Alternative 1. Spot stabilization would continue to occur along the river where needed. However, golf course uses would also continue to be adjacent to the river. Under all of the action alternatives (Alternatives 2–5), any new or modified facilities would have appropriately designed BMPs installed and maintained. All action alternatives would reduce disturbed soils and protect/improve vegetation along the Upper Truckee River by either geomorphic restoration or stabilization and biotechnical treatments. Additionally, Alternative 2 would include restoration of disturbed soils west of the river.
Policy 3: Application of BMPs to projects shall be required as a condition of approval for all projects.	NA	Y	Y	Y	Y	Alternative 1 is the No Project/No Action Alternative; therefore, no conditional approvals are needed. However, any future management activities under Alternative 1 would comply with potential BMP requirements. All of the action alternatives (Alternatives 2–5) would require implementation of temporary and permanent BMPs as appropriate.
Policy 4: Restore at least 80 percent of the disturbed lands within the region.	NA	Y	Y	NA	Y	Implementation of either Alternative 1 or 4 would not result in restoration of lands within the study area; however, these alternatives would result in continuation of existing land use conditions and would not change the consistency of land uses in the study area related to this policy. Alternative 2 would require disturbance of some existing habitat and some previously disturbed lands; however, it would ultimately result in restoration of 37 acres of SEZ lands that and would be consistent with this policy. Implementation of either Alternative 3 or 5 would include restoration of lands including SEZ and would be consistent with this policy.
Policy 6: The use of fertilizer within the Tahoe region shall be restricted to uses, areas, and practices identified in the handbook of best management practices. Fertilizers shall not be used in or near stream	Y	Y	Y	Y	Y	Existing fertilizer use within the golf course would not be modified under Alternative 1, which includes some areas of intensively managed landscaping immediately adjacent to the Upper Truckee River, Angora Creek, and the unnamed stream. Leaving the golf course adjacent to the river would have a higher risk of water quality degradation than moving the golf course away

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
and drainage channels, or in stream environment zones, including setbacks, and in shorezone areas. Fertilizer use for maintenance of preexisting landscaping shall be minimized in stream environment zones and adjusted or prohibited if found, through evaluation of continuing monitoring results, to be in violation of applicable water quality discharge and receiving water standards.						from the river, but monitoring to date has not documented violation of applicable water quality discharge and receiving water standards. Alternative 4 would retain similar or slightly improved buffer distances between the waterways and the intensively managed landscaping, and fertilizer use would continue to be monitored and evaluated. Under Alternatives 2 and 3, areas fertilized and fertilizer practices would be updated to fit the revised golf course layout, modified turf management categories, and improved irrigation and drainage system. These measures would decrease the risks of water quality degradation, and fertilizer use would continue to be monitored and evaluated. Under Alternative 5, fertilizer use would be discontinued throughout the existing golf course area, but a limited area of landscaping near the clubhouse and parking facility would remain. This would substantially decrease the risks of water quality degradation related to fertilizer use.
Policy 7: Off-road vehicle use is prohibited in the Lake Tahoe region except on specified roads, trails, or designated areas where the impacts can be mitigated.	Y	Y	Y	Y	Y	See noise Goal #1, Policy 4.
Policy 8: Transportation and air quality measures aimed at reducing airborne emissions of oxides of nitrogen in the Tahoe Basin shall be carried out.	Y	Y	Y	Y	Y	As discussed in Section 3.11, "Air Quality," Alternative 1 would not result in temporary or long-term increase in air quality pollutants. In addition, measures would be implemented under Alternative 2, 3, 4, and 5 that would reduce the generation of construction-related emissions of ROG, NO_X, and PM_{10} to a less-than-significant level. None of the alternatives would result in a significant increase in long-term emissions.
Water Quality Goal #2: Reduce or eliminate the addition of other pollutants that affect, or potentially affect, water quality in the Tahoe Basin.						
Policy 1: All persons engaging in public snow disposal operations in the Tahoe region shall dispose of snow in accordance with site management criteria and management standards in the handbook of best management practices.	Y	Y	Y	Y	Y	All alternatives would dispose of snow in accordance with site management criteria and management standards in the handbook of best management practices. Alternatives 1and 3 would continue snow disposal operations as they occur today under existing conditions. Alternatives 2 and 4 would include additional snow removal in the area just north of the golf course entrance proposed to be paved (described in Chapter 2, "Project Alternatives.") and Alternative 5 snow removal activities would either continue as under existing conditions or, if needed, be modified based on proposed land uses to be evaluated under a separate planning process.

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
Policy 3: No person shall discharge solid wastes in the Lake Tahoe region by depositing them on or in the land, except as provided by TRPA Ordinance.	NA	Y	Y	Y	Y	As discussed in Sections 3.13 "Public Services and Utilities" and "Geomorphology and Water Quality" mitigation measures have be put in place under all action alternatives that include consultation with STPUD prior to construction and protection or relocation of existing sewer lines within the study area to avoid potential water quality impacts related to sewage spills. Alternative 1 does not include construction activities and would, therefore, not affect sewer lines.
Policy 6: TRPA shall coorperate with other agencies with jurisdiction in the Lake Tahoe Region in preparation, evaluation, and implementation of toxic and hazardous spill control plans.	Y	Y	Y	Y	Y	Current toxic and hazardous spill control plans are in place and would continue to be used under Alternative 1. If necessary, plans would be updated through consultation with appropriate agencies (e.g., Lahontan RWQCB or El Dorado County).
Policy 9: Evaluate the feasibility and effectiveness of ponding facilities along stream corridors as a strategy for removing instream loads of sediment and nutrients.	NA	Y	Y	Y	Y	Alternative 1 would not include options for treating instream loads of sediment and nutrients by off-channel ponding or settling; however, this alternative would be a continuation of existing conditions and would not result in new actions that would be inconsistent with this policy. Implementing Alternative 2, 3, or 5 would increase the opportunity, frequency, and areas of potential floodplain trapping of sediment and nutrients, including the possible incorporation of recontoured existing ponds. The stabilization of the river for Alternative 4 would also reduce sediment loads; however, after consideration of the feasibility of increasing effective off-stream ponding, it would be impractical because the golf course would remain adjacent to the river channel.
Community Design Goal #1: Ensure preservation and enhancement of the natural features and qualities of the region, provide public access to scenic views, and enhance the quality of the built environment.						
Policy 1: The scenic quality ratings established by the environmental thresholds shall be maintained or improved.	Y	Y	Y	Y	Y	As discussed in Section 3.7, "Scenic Resources," Alternatives 1–5 would comply with scenic quality standards for TRPA, including TRPA's Scenic Resource Thresholds identified in TRPA's Code of Ordinances and TRPA's Design Review Guidelines.
Policy 2: Restoration programs based on incentives will be implemented in those areas designated in need of scenic restoration to achieve the recommended rating.	Y	Y	Y	Y	Y	The study area is designated as a Scenic Restoration Area. As discussed in Section 3.7, "Scenic Resources," Alternatives 1, 3, and 4 would not modify the scenic quality of the study area. Alternative 2 would include mitigation measures to protect the scenic quality of the study area and Alternative 5 would improve the scenic quality of the study area by removing the golf

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
						course.
Community Design Goal #2: Regional building and community design criteria shall be established to ensure attainment of the scenic thresholds, maintenance of desired community character, compatibility of land uses, and coordinated project review.						
Policy 1: Regional design review shall include site design, building height, bulk and scale, landscaping, lighting, and signing to be used in evaluating projects throughout the region. This review may entail additional requirements or special requirements not listed above.	NA	Y	Y	Y	Y	As discussed in Section 3.7, "Scenic Resources," Alternatives 1–5 would comply with scenic quality standards for TRPA, including TRPA's Scenic Resource Thresholds identified in TRPA's Code of Ordinances and TRPA's Design Review Guidelines. While Alternative 1 is consistent with scenic standards, it would not include any review or special requirements.
Transportation Objective 4: Develop and encourage the use of pedestrian and bicycle facilities as a safe and viable alternative to automobile use.						
Policy A: There shall be a high priority on constructing pedestrian and bicycle facilities in urbanized areas of the Region and where reductions in congestion will result.	Y	Y	Y	Y	Y	Implementing Alternative 1, 4, or 5 would not result in any permanent changes to pedestrian and bicycle facilities; however, volunteer trails in Washoe Meadows SP and the existing segment of separated bicycle trail along the Lake Valley SRA frontage on U.S. 50 provide substantial pedestrian and bicycle opportunities. Alternative 2 includes new designated trails that tie the informal dispersed recreation trails on the west side of the river to new trails on the east side of the river via the new bridge. Alternatives 2 and 3 include two designated trails on the east side of the river. The first would tie into the new Sawmill Bike Path, and the second would extend to the south and tie into the corner of Country Club Drive and Bakersfield Street.
Policy B: Pedestrian and bicycle facilities shall be constructed, or upgraded, and maintained along major travel routes.	Y	Y	Y	Y	Y	See Transportation Objective #4, Policy B. Furthermore, as discussed in Section 3.10, "Traffic," implementing any of Alternatives 2–5 that could affect existing trails due to construction truck traffic would include mitigation to correct damage to the trails.
Policy E: Bicycle and pedestrian linkages shall be provided between residential and non-residential areas.	Y	Y	Y	Y	Y	See Noise Goal #1, Policy 4.

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
Vegetation Goal #1: Provide for a wide mix and increased diversity of plant communities in the Tahoe Basin.						
Policy 1: Forest management practices shall be allowed when consistent with acceptable strategies for the maintenance of forest health and diversity, prevention of fire, protection of water quality, and enhancement of wildlife habitats.	Y	Y	Y	Y	Y	As discussed in Section 3.5, "Biological Resources," Alternatives 1–5 would comply with vegetation standards for TRPA, including TRPA's thresholds for vegetation identified in TRPA's Code of Ordinances, and with TRPA's Design Review Guidelines. Forest management practices will be consistent with acceptable strategies for the maintenance of forest health and diversity, prevention of fire, protection of water quality, and enhancement of wildlife habitats.
Policy 2: Opportunities to improve the age structure of the pine and fir plant communities shall be encouraged when consistent with other environmental considerations.	Y	Y	Y	Y	Y	As mandated by the fire prevention and suppression policy in the *Lake Valley State Recreation Area General Plan*, a wildfire management plan has been implemented for Lake Valley SRA and Washoe Meadows SP. The plan identifies modified fire suppression methods that preserve sensitive unit resources while protecting human lives and property specific to these areas. The Lake Tahoe Golf Course is responsible for general vegetation maintenance and relies on State Parks to remove hazardous trees. Crews regularly assemble dead, fallen, and otherwise hazardous vegetation for removal. The wildfire management plan would continue to be implemented under all alternatives.
Policy 4: Edge zones between adjacent plant communities will be maximized and treated for their special value relative to plant diversity and wildlife habitat.	Y	Y	Y	Y	Y	Alternative 1 would not result in any improvements in valuable plant communities and wildlife habitat; however, State Parks would continue to manage the study area as occurs under existing conditions, with fuels management and spot treatments along the river. Existing fuels management practices would improve edge zones between adjacent plant communities, especially in locations where meadow encroachment has occurred. Golf course landscaping would continue to be located adjacent to the Upper Truckee River. However, this alternative would be a continuation of existing conditions and would not result in new conditions that would be inconsistent with this policy. Alternatives 2, 3, and 5 would remove golf landscape from areas adjacent to the Upper Truckee River improving plant diversity and wildlife habitat. Alternative 4 would stabilize the river in place and add biotechnical treatments along the river's edge also improving plant and wildlife diversity; however to a lesser extent than Alternatives 2, 3, and 5.
Policy 5: Permanent disturbance or unnecessary alteration of natural vegetation associated with development activities shall not exceed the approved boundaries [or	NA	Y	Y	Y	Y	Under Alternative 1, no new disturbance is proposed; however, vegetation disturbance along the river banks will continue to occur. Under each of the alternatives, permanent disturbance or unnecessary alteration of natural vegetation associated with development activities shall be minimized. Under

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
footprints] of the building, driveway, or parking structures, or that which is necessary to reduce the risk of fire or erosion.						Alternative 2, much of the area proposed to become golf course west of the river is on previously disturbed lands where implementation of this alternative can reduce erosion sources within this area. Mitigation Measures 3.5-5 and 3.5-7 are actions to minimize and mitigate short-term disturbance of natural vegetation.
Policy 8: Revegetation of disturbed sites shall require the use of species approved by the agency. TRPA shall prepare specific policies designed to avoid the unnecessary use of landscaping which requires long-term irrigation and fertilizer use.	Y	Y	Y	Y	Y	Implementing Alternative 1 would not result in the creation of any new disturbed areas. Uses of irrigation and fertilizer would not be modified under Alternative 1 or 4. Existing fertilizer use is limited to critical areas and monitoring results have not identified water quality issues related to these uses. Under Alternatives 2–5, revegetation of restored area would involve use of salvage materials (sod and willow clumps), when available, and plant species native to the area. Alternative 2 would involve essentially swapping more sensitive areas adjacent to the river where golf landscape currently exists for higher capability previously disturbed lands for golf development. Furthermore, irrigation and drainage would be upgraded and additional BMPs and buffer areas installed. Fertilizer use would be similar to use under existing conditions, except buffer areas would decrease the potential for water quality impacts related to fertilizer use. Implementing Alternative 3 would decrease golf landscape adjacent to the river, similar to Alternative 2, and decrease irrigation and fertilizer use. Under Alternative 5, fertilizer use would be discontinued throughout the existing golf course area, but a limited area of landscaping near the clubhouse and parking facility would remain.
Policy 9: All proposed actions shall consider the cumulative impact of vegetation removal with respect to plant diversity and abundance, wildlife habitat and movement, soil productivity and stability, and water quality and quantity.	Y	Y	Y	Y	Y	Section 3.16, "Cumulative," considers the cumulative impacts of vegetation removal with respect to plant diversity and abundance, wildlife habitat and movement, soil productivity and stability, and water quality and quantity for Alternatives 1–5.
Vegetation Goal #2: Provide for the maintenance and restoration of such unique eco-systems as wetlands, meadows, and other riparian vegetation.						
Policy 1: Riparian plant communities shall be managed for the beneficial uses of passive recreation, groundwater recharge, and	Y	Y	Y	Y	Y	Alternative 1 could involve continued riparian degradation to occur where bank erosion takes place; however, emergency streambank repairs would be implemented to the extent feasible and existing riparian habitat would be

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
nutrient catchment, and as wildlife habitats.						managed for beneficial uses, consistent with the State Parks mission. Groundwater recharge, nutrient catchment, and wildlife habitats would continue to be limited by steep erosive banks along the Upper Truckee River. Alternatives 1, 3, and 5 would improve those functions described above by establishing a more geomorphically functioning channel that allows for improved, groundwater recharge, nutrient catchment, and wildlife habitats. By taking most golf course uses away from the river will also allow for improved access to the river for passive recreational uses. Alternative 4 will decrease existing bank erosion by stabilization of the banks and somewhat improve wildlife habitat conditions by the addition of biotechnical treatments; however, groundwater recharge will still be somewhat limited by the disconnected floodplain and golf course uses will continue to be adjacent to the Upper Truckee River.
Policy 2: Riparian plant communities shall be restored or expanded whenever and wherever possible.	NA	Y	Y	Y	Y	Under Alternative 1, the riparian area would continue to exist in its current degraded state; however, this alternative would be a continuation of existing conditions and would not result in new conditions that would be inconsistent with this policy. Under any of Alternatives 2–5, riparian plant communities would be restored and expanded.
Vegetation Goal #3: Conserve threatened, endangered, and sensitive plant species and uncommon plant communities of the Lake Tahoe basin.						
Policy 1: Uncommon plant communities shall be identified and protected for their natural values.	Y	Y	Y	Y	Y	No construction is proposed under Alternative 1. However, if spot treatments need to occur along the banks of the Upper Truckee River State Parks will protect uncommon plant communities, as current management practices do. Alternatives 2–5 include preconstruction surveys for special-status plant species and Alternative 2, which is the only alternative that proposes activity in the vicinity of the fen in Washoe Meadows SP, specifies measures to avoid and minimize impacts on this resource.
Policy 2: The population sites and critical habitat of all sensitive plant species in the Lake Tahoe basin shall be identified and preserved.	Y	Y	Y	Y	Y	Sensitive plant species may occur on the project site, based on assessment of existing habitats. Pre-construction surveys would be conducted prior to any disturbance to confirm absence of sensitive plant species. If occurrences of sensitive plant species were found, those individuals would be clearly identified and avoided during construction or other appropriate actions to compensate for the effect would be implemented.

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
Wildlife Goal #1: Maintain suitable habitats for all indigenous species of wildlife without preference to game or nongame species through maintenance of habitat diversity.						
Policy 1: All proposed actions shall consider impacts to wildlife.	NA	Y	Y	Y	Y	No action would occur under Alternative 1. Potential direct, indirect, and cumulative impacts on common and sensitive wildlife resources related to implementation of Alternatives 1–5 were evaluated. Mitigation measures are proposed where necessary to reduce potential impacts to less-than-significant levels.
Policy 2: Riparian vegetation shall be protected and managed for wildlife.	Y	Y	Y	Y	Y	Alternative 1 would allow for continued riparian degradation to occur. Wildlife habitats would continue to be limited by steep erosive banks along the Upper Truckee River however, emergency streambank repairs would be implemented to the extent feasible and existing riparian habitat would be managed for beneficial uses, consistent with the State Parks mission. Alternatives 1, 3, and 5 would improve wildlife habitat by establishing a more geomorphically functioning channel and improve riparian corridor. By taking most golf course uses away from the river will also allow for improved access to the river. Alternative 4 will decrease existing bank erosion by stabilization of the banks and somewhat improve wildlife habitat conditions by the addition of biotechnical treatments; however, the corridor will still be somewhat limited by the golf course uses adjacent to the Upper Truckee River.
Wildlife Goal #2: Preserve, enhance, and, where feasible, expand habitats essential for threatened, endangered, rare, or sensitive species found in the basin						
Policy 1: Endangered, threatened, rare, and special interest species shall be protected and buffered against conflicting land uses.	Y	Y	Y	Y	Y	Under Alternative 1, the river restoration and golf course reconfiguration would not be implemented, and habitat for special-status plant and wildlife species would remain the same as the existing conditions. Golf course would continue to exist adjacent to the Upper Truckee River and existing riparian vegetation would continue to be limited by steep erosive banks. Under any of Alternatives 2–5, special-status wildlife species would be protected during construction activities by implementing mitigation measures as described in Section 3.5, “Biological Resources.” These measures require preconstruction surveys and protection of active breeding sites of special-status wildlife species that could be affected during construction. Over the long term, ecosystem response to river and floodplain restoration under any of Alternatives 2–5 is expected to improve habitat quality and functions for riparian and aquatic wildlife, including waterfowl and special-status species such as yellow warbler, willow flycatcher. River and floodplain restoration would also increase the size and enhance functions of TRPA-designated

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
						wildlife habitats of special significance (i.e., wetlands, meadows, and riparian areas). This would be a beneficial effect on common and special-status wildlife associated with riparian, wetland, and aquatic habitat and wildlife habitats of special significance. Under Alternative 2, relocating golf course holes would remove and fragment upland habitat and slightly increase disturbance levels west of the Upper Truckee River. The bridge access and new trail at the north end of the new reconfigured golf course could facilitate increased access of Washoe Meadows SP to the west and affect common wildlife species. However, golf course reconfiguration and trail development proposed under Alternative 2 are not expected to substantially affect breeding productivity or population viability of any common or special-status wildlife or cause a change in species diversity locally or regionally. Furthermore, much of this area was previously disturbed by quarry uses, voluntary trails, and access roads.
Fisheries Goal #1: Improve aquatic habitat essential for the growth, reproduction, and perpetuation of existing and threatened fish resources in the Lake Tahoe basin.						
Policy 2: Unnatural blockages and other impediments to fish movement will be prohibited and removed wherever appropriate.	Y	Y	Y	Y	Y	None of the alternatives would involve creating unnatural blockages or other impediments to fish movement and none currently exist within the study area.
Policy 5: Habitat improvement projects are acceptable practices in streams and lakes.	NA	Y	Y	Y	Y	Under Alternative 1, the No Project/No Action Alternative, the habitat conditions in the Upper Truckee River in the study area would continue to be affected by periodic treatments applied to eroding banks to prevent loss of areas managed as golf course and to maintain the stability of structures (e.g., bridges), or bridges may be replaced if needed. The condition of aquatic habitats would remain similar relative to the existing, degraded condition. Implementing any of the action alternatives (Alternatives 2–5) would improve fish habitat conditions in the Upper Truckee River within the study area.
Soils Goal #1: Minimize soil erosion and the loss of soil productivity.						
Policy 1: Allowable impervious land coverage shall be consistent with the threshold for impervious land coverage.	Y	Y	Y	Y	Y	See Land Use Goal #3, Policy 1.

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
Policy 2: No new land coverage or other permanent disturbance shall be permitted in land capability districts 1-3 except for those uses noted in A, B, and C, under this policy.	NA	Y	Y	Y	Y	See Land Use Goal #3, Policy 1.
Policy 6: Grading, filling, clearing of vegetation (that disturbs soil), or other disturbances of the soil are prohibited during inclement weather and for the resulting period when the site is covered with snow or is in a saturated, muddy, or unstable condition, special regulations and construction techniques will apply to all construction activities occurring from October 15 to May 1.	Y	Y	Y	Y	Y	All of the alternatives would comply with seasonal and weather restrictions on any construction activities.
Policy 7: All existing natural functioning SEZs shall be retained as such and disturbed SEZs shall be restored whenever possible.	Y	Y	Y	Y	Y	Alternative 1 could involve continued SEZ degradation to occur where bank erosion takes place; however, emergency streambank repairs would be implemented to the extent feasible and existing riparian habitat would be managed for beneficial uses, consistent with the State Parks mission. Implementing Alternative 4 would not expand or improve the existing SEZ, but it would preserve the existing status and minimize further degradation to the extent feasible. Implementing Alternative 2, 3, or 5 would restore previously disturbed SEZ.
Scenic Goal #1: Maintain and restore the scenic qualities of the natural appearing landscape.						
Policy 1: All proposed development shall examine impacts to the identified landscape view from roadways, bicycle paths, public recreation areas, and Lake Tahoe.	NA	Y	Y	Y	Y	Section 3.7, "Scenic Resources," analyzes the project's effects on scenic resources, including views from roadways, bicycle paths, and public recreation areas. Implementing Alternative 1, 3, 4, or 5 would result in less-than-significant impacts on the scenic quality and views from U.S. 50, public recreation areas, bicycle paths, and the surrounding area. In addition, Alternative 2, with implementation of mitigation measures would result in less-than-significant impacts on the scenic quality and views from U.S. 50, public recreation areas, bicycle paths, and the surrounding area.
Policy 2: Any development proposed in areas targeted for scenic restoration or within a unit highly sensitive to change shall	NA	Y	Y	Y	Y	Section 3.7, "Scenic Resources," analyzes the project's effects on scenic resources, including views from roadways. Implementing Alternative 1, 3, 4, or 5 would result in less-than-significant impacts on the scenic quality and views

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
demonstrate the effect of the project on the 1982 Travel Route Ratings of the Scenic Thresholds.						from U.S. 50 and would not degrade Roadway Travel Unit 36B. In addition, Alternative 2, with implementation of mitigation measures would result in less-than-significant impacts on the scenic quality and views from U.S. 50 and would not degrade Roadway Travel Unit 36B.
Policy 3: The factors or conditions that contribute to scenic degradation in identified areas need to be recognized and appropriately considered in restoration programs to improve scenic quality.	NA	Y	Y	Y	Y	See Scenic Goal #1, Policy 1 above.
Open Space Goal #1: Manage areas of open space to promote conservation of vegetation and protection of watersheds.						
Policy 1: Management practices in open space that provide for the long term health and protection of the resource(s) shall be permitted when consistent with the other goals and policies of this plan.	N	Y	Y	Y	Y	Under Alternative 1, continued channel instability would continue the degraded function of the river within the study area. State Parks would continue to repair the river by periodic treatments applied to eroding banks to prevent loss of areas managed as golf course and to maintain the stability of structures (e.g., bridges), or bridges may be replaced if needed. The condition of aquatic habitats and geomorphic functions would remain similar relative to the existing, degraded condition. Implementing Alternative 4 would not expand or improve the existing SEZ or geomorphic function, but it would preserve the existing status and prevent further degradation. Fish habitat would improve slightly. The golf course would continue to be located adjacent to the river, and the floodplain function would not improve. Implementing Alternative 2, 3, or 5 would restore previously disturbed SEZ, improve floodplain function, and increase habitat by implementing geomorphic restoration of the Upper Truckee River. Implementing Alternative 2 would include golf course use west of the river; however, much of this area was previously disturbed by quarries, volunteer trails, and access roads.
Stream Environment Zone Goal #1: Provide for the long-term preservation and restoration of stream environment zones.						
Policy 1: Restore all disturbed stream environment zone lands in undeveloped, unsubdivided lands, and restore 25 percent of the SEZ lands that have been disturbed, developed, or subdivided.	NA	Y	Y	Y	Y	Under Alternative 1, no restoration of the disturbed SEZ would occur; however, emergency streambank repairs would be implemented to the extent feasible. There would be no change in existing conditions that would cause inconsistencies with this policy. Implementing Alternative 4 would not expand or improve the existing SEZ,

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
						but it would preserve the existing status and prevent further degradation. Further restoration would not be feasible while maintaining the current the golf course design. Implementing Alternative 2, 3, or 5 would restore previously disturbed SEZ. See Chapter 2, "Project Alternatives," for acreage information.
Policy 2: SEZ lands shall be protected and managed for their natural values.	Y	Y	Y	Y	Y	Alternative 1 could involve continued SEZ degradation to occur where bank erosion takes place; however, emergency streambank repairs would be implemented to the extent feasible and existing riparian habitat would be managed for beneficial uses, including natural values, consistent with the State Parks mission. Implementing Alternative 4 would not expand or improve the existing SEZ, but it would preserve the existing status and prevent further degradation. The golf course landscape would continue to be located adjacent to the river, within primarily SEZ under both alternatives. Implementing Alternative 2, 3, or 5 would restore previously disturbed SEZ. See Chapter 2, "Project Alternatives," for acreage information.
Policy 4: Golf courses in stream environment zones shall be encouraged to retrofit course design in combination with fertilizer application standards (see water quality subelement, Goal #1, Policy 5) to prevent release of nutrients to adjoining ground and surface waters.	Y	Y	Y	Y	NA	Under Alternative 1 and 4, the course design would continue as it is today; however, the existing operation includes fertilizer management to protect water quality. Alternatives 2 and 3 would involve retrofitting course design to increase streamside buffers and reduce the area of golf course within SEZ. Current approved fertilizer practices would continue under Alternatives 1 - 4. Under Alternative 5, golf course uses would be discontinued.
Policy 5: No new land coverage or other permanent land disturbance shall be permitted in stream environment zones except for those uses as noted in A, B, C, D and E under this policy.	Y	Y	Y	Y	Y	See Land Use Goal #3, Policy 1.
Policy 6: Replacement of existing coverage in stream environment zones may be permitted where the project will reduce impacts on stream environment zones and will not impede restoration efforts.	NA	Y	Y	Y	Y	See Land Use Goal #3, Policy 1.

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
Cultural Goal #1: Identify and preserve sites of historical, cultural, and architectural significance within the region.						
Policy 1: Historical or culturally significant landmarks in the Basin shall be identified and protected from indiscriminate damage or alteration.	Y	Y	Y	Y	Y	Section 3.9, "Cultural Resources," analyzes the project's effects on recorded and presently undocumented cultural resources potentially stemming from proposed golf course construction and operation. Implementation of mitigation measures would result in impacts on cultural sites, features, and artifacts and on human remains being reduced to less than significant under all of the proposed alternatives.
Policy 2: Sites and structures designated as historically, culturally, or archaeologically significant shall be given special incentives and exemptions to promote the preservation and restoration of such structures and sites.	Y	Y	Y	Y	Y	Section 3.9, "Cultural Resources," analyzes the project's effects on recorded and presently undocumented cultural resources potentially stemming from proposed golf course construction and operation. Implementation of mitigation measures would result in impacts on cultural sites, features, and artifacts and on human remains being reduced to less than significant under all of the proposed alternatives.
Dispersed Recreation Goal #1: Encourage opportunities for dispersed recreation when consistent with environmental values and protection of the natural resources.						
Policy 1: Low density recreational experiences shall be provided along undeveloped shorelines and other natural areas, consistent with the tolerance capabilities and character of such areas.	Y	Y	Y	Y	Y	Implementing any of the alternatives would provide for low-density recreation within the study area and along the Upper Truckee River. The northern portion of Washoe Meadows SP would remain undeveloped, and informal recreation would continue within Washoe Meadows SP and along the river under all alternatives.
Policy 3: Trail systems for hiking and horseback riding shall be expanded to accommodate projected demands and provide a link with major regional or interstate trails.	NA	Y	Y	Y	Y	Informal trails would be maintained within Washoe Meadows SP under all alternatives. In addition, Alternatives 2 and 3 would include construction of additional trails that would connect to the Sawmill Bike Trail and the corner of Country Club Drive and Bakersfield Street. No officially designated trails would be removed as part of any of the alternatives.
Policy 4: Existing trails that are either underutilized or located in environmentally sensitive areas shall be relocated to enhance their use and to protect natural resources.	Y	Y	Y	Y	Y	Under Alternatives 2 and 3, informal trails located adjacent to the river would be relocated and managed as designated trails. Under Alternatives 1, 4, and 5, informal trails would continue to be used along the river and where volunteer trails cause water quality concerns these trails will be restored as occurred under existing management practices.
Policy 5: Off-road vehicle use is prohibited in the Lake Tahoe region except on specified roads, trails, or designated areas where the	Y	Y	Y	Y	Y	See noise Goal #1, Policy 4.

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
impacts can be mitigated.						
Dispersed Recreation Goal #2: Provide high-quality recreational opportunities.						
Policy 1: Wilderness and other undeveloped and unroaded areas shall be managed for low-density use.	Y	Y	Y	Y	Y	Implementing Alternative 1, 3, 4 or 5 would maintain or increase the area of Washoe Meadows SP available for low-density use. Under Alternative 2, areas available for low-density use would be traded between Washoe Meadows SP and Lake Valley SRA. Much of the area traded by relocating the golf course is previously disturbed higher capability land. Furthermore, other more sensitive areas previously occupied by the golf course would become available for low-density use.
Policy 2: Separate use areas shall be established for the dispersed winter activities of snowmobiling, cross-country skiing and snowshoeing when conflicts of use exist.	Y	Y	Y	Y	Y	Under Alternatives 1–4, snowmobiling would continue to be allowed on the driving range portion of the golf course and would continue to be separate from the areas used for snowshoeing and cross-country skiing. Under Alternative 5, the snowmobiling track would be eliminated with the golf course. Snowshoeing and cross-country skiing would continue to be allowed on an informal basis throughout the study area.
Developed Recreation Goal #2: Provide for the appropriate type, location, and rate of development of outdoor recreational uses.						
Policy 1: Expansion of recreational facilities and opportunities should be in response to demand.	Y	Y	Y	Y	Y	Existing recreation facilities would not be expanded, Alternative 2 would include reconfiguring the existing golf course; however, the golf course would remain as an 18-hole regulation course. PAOTS are currently not allocated to the Lake Tahoe Golf Course. PAOTS would likely be allocated to the Lake Tahoe Golf Course as part of the approval process under all alternatives.
Policy 2: Bicycle trails shall be expanded to provide alternatives for travel in conjunction with transportation systems.	Y	Y	Y	Y	Y	See Transportation Objective #4, Policy B.
Policy 7: Development of day-use facilities shall be encouraged in or near established urban areas, whenever practical.	Y	Y	Y	Y	Y	The study area is in proximity to several urban areas. Golf courses are considered a day-use facility. Golfing opportunities would continue to be available within the study area under Alternative 1, 2, 3, or 4. Golfing opportunities in the study area would be eliminated under Alternative 5; however, other day-use opportunities (e.g., hiking, biking, and cross country skiing) would continue within the study area. PAOTS would likely be allocated to the Lake Tahoe Golf Course as part of the approval process under all alternatives.
Developed Recreation Goal #3: Protect natural resources from overuse and rectify incompatibility between uses.						

Table 3.2-1
Consistency with Relevant Land Use Plans and Policies

Plans and Policies	Consistency					Discussion
TRPA Goals and Policies	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
Policy 1: Recreation development in the Tahoe basin shall be consistent with the special resources of the area.	Y	Y	Y	Y	Y	Recreational uses under all of the alternatives would be consistent with the SRA and SP designations of the two park units and resources of the area. No new recreational uses are proposed under any of the alternatives.
Policy 2: Regulate intensity, timing, type, and location of use to protect resources and separate incompatible uses.	Y	Y	Y	Y	Y	See Dispersed Recreation Goal 2, Policies 1 and 2.
Developed Recreation Goal #4: Provide for the efficient use of outdoor recreation resources.						
Policy 2: Seasonal facilities should provide opportunities for alternative uses in the off-season, wherever appropriate.	Y	Y	Y	Y	Y	Recreation opportunities in the study area would be provided year-round under all of the alternatives. Spring/summer/fall recreation opportunities, such as hiking, biking, and fishing, would be available under all alternatives. In addition, winter recreation opportunities such as snowshoeing and cross country skiing would be available under all alternatives. Additional recreation opportunities such as golfing and snowmobiling (on a managed track within the driving range) would be available under Alternative 1, 2, 3, or 4.
Institutional Goal #1: Coordinate all planning and development review activities with the affected jurisdictions and agencies.						
Policy 1: All projects proposed in the region [other than those to be reviewed and approved under the special provisions of the Compact relating to gaming] shall obtain the review and approval of the Agency.	NA	Y	Y	Y	Y	All alternatives will be reviewed.
Policy 2: No project may be approved unless it is found to comply with the Regional Plan and with any ordinances, rules, and regulations enacted to effectuate the Regional Plan.	NA	Y	Y	Y	Y	Alternative 1 does not change the relationship of the study area to the Regional Plan. The action alternatives reflect implementation of Regional Plan provisions, ordinances, rules and regulations.

Note: NA = not applicable.
Sources: TRPA 1996; TRPA 2004; Consistency analysis conducted by EDAW (now AECOM) in 2009

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3.3 HYDROLOGY AND FLOODING

This section summarizes existing hydrologic conditions in the study area, presents the regulatory guidance for hydrologic resources, and evaluates potential adverse environmental effects related to hydrology associated with project implementation.

The examination of hydrology is based on information from (1) the review of academic research and available information published by Federal, State, and local agencies, primarily the *Upper Truckee River Upper Reach Environmental Assessment Report* (Swanson Hydrology + Geomorphology [SH&G] 2004a), the *Upper Truckee River Upper Reach Reclamation Project Amendment Report* (SH&G 2004b), and the *Riparian Ecosystem Restoration Feasibility Report* associated with the Upper Truckee River Restoration Project (River Run Consulting 2006); and (2) the preliminary engineering schematic conceptual design prepared for the alternatives.

For a discussion of geomorphology and water quality issues, please refer to Section 3.4, "Geomorphology and Water Quality." Cumulative hydrology and flooding impacts are addressed in Section 3.16, "Cumulative Impacts." Consistency with TRPA goals and policies is presented in Section 3.2, "Land Use," Table 3.2-1. The project's effects on thresholds are described in Section 4.6, "Consequences for Environmental Threshold Carrying Capacities."

3.3.1 AFFECTED ENVIRONMENT

REGULATORY SETTING

Federal

Clean Water Act

The principal Federal regulations affecting the project's hydrology issues are those in the Clean Water Act (CWA) that regulate discharges into waters of the United States, including a range of potential point and nonpoint sources of water-transported pollutants, and the discharge of fill into waters such as wetlands and intermittent stream channels. The purpose of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters through prevention and elimination of pollution.

The law requires that a CWA Section 404 permit be obtained from the U.S. Army Corps of Engineers (USACE) for any dredged or fill materials discharged into wetlands or waters of the United States. A National Pollutant Discharge Elimination System permit is required through the appropriate regional water quality control board (RWQCB) (CWA Section 401) and is described in more detail in Section 3.4, "Geomorphology and Water Quality." A water quality certificate is also required from the appropriate RWQCB (CWA Section 401), as described below, and all projects must be consistent with the State Non-point Source Pollution Management Program (CWA Section 319). Projects effecting waterbodies identified as impaired would also need to comply with Section 303(d) of the CWA. Waterbodies subject to Section 303(d) of the CWA are discussed further in Section 3.4, "Geomorphology and Water Quality."

Floodplain Regulations

Executive Order 11988 for Floodplain Management directs all Federal agencies to evaluate potential effects of any actions they may take in the floodplain and to avoid all adverse impacts associated with modifications to floodplains. It also directs Federal agencies to avoid floodplain development whenever there is a practicable alternative and to restore and preserve the natural and beneficial values served by the floodplains (U.S. Environmental Protection Agency [EPA] 2008).

The lands within the floodplain adjacent to the Upper Truckee River and Angora Creek are regulated as part of the National Flood Insurance Program (NFIP). Areas of special flood hazard are identified by the Federal Emergency Management Agency (FEMA), which issues regulatory floodplain maps (Flood Insurance Rate Maps [FIRMs]). The NFIP mandates that development cannot occur within the regulatory floodplain (typically the 100-year floodplain) if that development results in a material (more than 1 foot) increase in flood elevation. In addition, no development is allowed in delineated floodways within regulatory floodplains.

Any proposed project located within the regulatory floodplain must meet FEMA management and El Dorado County (County) floodplain management requirements and have a revised FIRM developed and submitted for approval.

If a floodplain is altered, a FIRM revision would be initiated by the issuance of a conditional letter of map revision (CLOMR) for the project. A CLOMR is FEMA's opinion that a project, upon construction, would affect the hydrologic or hydraulic characteristics of a flooding source and, thus, result in the modification of the existing regulatory floodway, the effective base flood elevations, or special flood hazard areas. The CLOMR does not revise an effective FIRM. Rather, it indicates whether the floodplain modifications, if built as proposed, would be recognized by FEMA as requiring a revision of the applicable FIRMs. If not, no further action is required. If the FIRM needs to be revised, a request would be made to FEMA to do so, after the proposed floodplain modifications have been completed. The FIRM would be revised to reflect modifications in special flood hazard areas. If the modifications meet FEMA's requirements, FEMA would issue a final letter of map revision.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act requires the State of California to establish water quality objectives and standards to protect water quality for beneficial uses. The State Water Resources Control Board (SWRCB) comprises nine RWQCBs that are responsible for preserving California's water quality. The RWQCBs issue waste discharge permits, take enforcement action against violators, and monitor water quality. SWRCB and the RWQCBs jointly administer most of the CWA regulations in coordination with the U.S. Environmental Protection Agency and USACE.

The study area is under the jurisdiction of the Lahontan RWQCB for the protection of surface water and groundwater quality from degradation by point and nonpoint sources of pollution. Designated beneficial uses and water quality objectives for the surface water and groundwater bodies in the study area are identified in the *Water Quality Control Plan for the Lahontan Region*, as amended (Basin Plan) (Lahontan RWQCB 1995:2-1–2-54) (see Section 3.4, "Geomorphology and Water Quality," for further discussion).

The Basin Plan identifies discharge prohibitions to protect 100-year floodplains. These prohibitions are separate from the prohibitions for protection of Stream Environment Zones (SEZs) identified by the TRPA. Not all 100-year floodplains are automatically considered SEZs. When a 100-year floodplain is considered a SEZ, the SEZ exemption criteria apply. In cases where the floodplain is not also an SEZ, the Lahontan RWQCB may grant exceptions to the 100-year floodplain discharge prohibitions for Lake Tahoe and its tributaries. Exemptions for this project could be granted under the following two circumstances (Lahontan RWQCB 1995:4.1-5–4.1-6):

1. Exemptions granted for projects which require access across floodplains to otherwise buildable sites if: (a) there is no reasonable alternative which avoids or reduces the extent of encroachment in the floodplain, and (b) the impacts on the floodplain are minimized.

2. Exemptions granted for erosion control projects, habitat restoration projects, SEZ restoration projects, and similar projects provided that the project is necessary for environmental protection and there is no reasonable alternative which avoids or reduces the extent of encroachment in the floodplain.

The Basin Plan also states that all public utilities, transportation facilities, and other necessary public uses located in the 100-year floodplain must be constructed and maintained to prevent damage from flooding and to avoid causing flooding.

TRPA Thresholds and Other Requirements

1987 Regional Plan

TRPA, a bi-state agency of California and Nevada, was created in 1969 and charged with attaining and maintaining environmental thresholds to prevent further degradation and improve the quality of Lake Tahoe and the surrounding basin. The TRPA *Regional Plan* is a compilation of documents and policies adopted in 1987, including the TRPA Goals and Policies, Code of Ordinances, Water Quality Management Plan, Plan Area Statements, and Scenic Quality Improvement Plan.

There is currently a collaborative effort among TRPA, the U.S. Forest Service, the Lahontan RWQCB, and the Nevada Division of Environmental Protection, called Pathway, to update the 1987 *Regional Plan* and each agency's respective management plan in 2011. The plan will be used to guide environmental regulations and resource management in the Tahoe Basin for the next 20 years.

Regional Plan Goals and Policies

The TRPA Goals and Policies document presents the overall approach to meeting the environmental thresholds. The TRPA Code of Ordinances regulates project construction activities under Chapter 25, particularly in relation to temporary (Code 25.2.A), and permanent (Code 25.2.B) best management practices (BMPs). Temporary BMPs, in accordance with TRPA's *Handbook of Best Management Practices* and as required in Chapter 62 of TRPA's Code of Ordinances, shall be implemented on construction sites and maintained throughout the construction period. Permanent BMPs may be required within the parcel and/or entire project area, although BMP retrofit requirements for the project area (pursuant to Subsection 25.2.B (2) may fall under a TRPA exemption (Code 25.3), for the following categories of projects:

(c) SEZ restoration.

"SEZ" is defined by TRPA as the major and minor streams, intermittent streams, drainageways, meadows and marshes, primary and secondary riparian vegetation, and other areas of water influence zones within the Tahoe Basin that provide natural treatment and conveyance of surface runoff (TRPA 2004:28). Standard BMP requirements applicable to this project deal mainly with drainage conveyance. Drainage conveyances through a parcel shall be designed for at least a 10-year, 24-hour storm. Drainage conveyances through a SEZ shall be designed for a minimum 50-year storm.

Code of Ordinances

The TRPA Code of Ordinances also addresses floodplain management. According to Chapter 28, "Natural Hazard Standards," of the Code of Ordinances, TRPA shall review additional development in 100-year floodplains, as defined by the FIRM, and regulate public utilities, transportation facilities, and other necessary public uses located in the floodplains. TRPA has set a prohibition against any development, grading, and filling of lands within the 100-year floodplain, with certain exceptions that include specific public outdoor recreation facilities and water quality control facilities. Some projects qualify for an exemption as a water quality control project. TRPA may permit erosion control projects, habitat restoration projects, wetland rehabilitation projects, SEZ restoration projects and similar projects within a 100-year floodplain. To be permissible by TRPA, a restoration project within the floodplain must be necessary for environmental protection, be the only reasonable alternative to reduce the extent of encroachment, and fully mitigate all impacts (see page 28-3 of the Code of Ordinances).

TRPA's plan area statements (PASs) outline land use classifications, special policies, planning considerations, permissible uses, and maximum allowances for the Tahoe Basin. The study area is within PAS 119 (Country Club Meadow), which is classified as recreation land use. It is to be managed for outdoor recreation and natural resource values, including SEZ restoration opportunities. The Country Club Meadow PAS designates special policies and permissible uses regarding hydrology and flooding. The following policies are relevant to the proposed project: (a) natural areas should be buffered from intensive uses; (b) restoration of SEZ and land coverage removal should be encouraged, including strategies to mitigate golf course impacts; (c) a stream channel maintenance program should be implemented; and (d) development of impervious coverage should be discouraged. Appropriate permissible uses pursuant to Chapter 18 of the TRPA Code of Ordinances, "Permissible Uses," include runoff control and SEZ restoration among the allowed recreation, public service, and resource management uses (TRPA 2005).

Environmental Threshold Carrying Capacities

In August 1982, TRPA adopted Resolution No. 82-11, establishing environmental threshold carrying capacities (thresholds) for the region for nine resource topics (water quality, air quality, scenic resources, soil conservation, fish habitat, vegetation, wildlife habitat, noise, and recreation). TRPA defines environmental thresholds as environmental standards necessary to maintain the significant resources in the region (TRPA 2002:1-1). These Tahoe Basin goals and standards indirectly define the capacity of the region to accommodate additional land development. TRPA established thresholds for water quality as a means to measure changes in the environmental health of Lake Tahoe and its contributing watershed. TRPA reevaluates threshold conditions and status every 5 years. The most recent evaluation of attainment status was conducted in 2006 (TRPA 2007:ES-3). Proposed changes to thresholds are being evaluated for adoption. Meanwhile, thresholds adopted in 1987 remain in effect and are used in this analysis.

The TRPA thresholds that deal with hydrology and flooding are those for soil conservation. TRPA has two soil conservation threshold standards:

- SC-1: Impervious Coverage Threshold Standard
    - Impervious cover shall comply with the Land Capability Classification of the Lake Tahoe Basin, California-Nevada, A Guide for Planning (Bailey 1974). (TRPA 2002:4-7). It has a "non attainment, but near attainment" status.
- SC-2: Naturally Functioning SEZ Threshold Standard
    - Preserve naturally functioning SEZs in their natural condition; restore 25 percent of SEZ lands identified as disturbed, developed, or subdivided to obtain a five percent total increase in the area of naturally functioning SEZ lands. (TRPA 2002:4-8). It has a "non attainment" status.

El Dorado County

The El Dorado County Grading, Erosion and Sediment Control Ordinance (Chapter 15.14) (El Dorado County 2007a) and the Tahoe Basin Special Conditions section of the *County Grading Design Manual* (Volume III [El Dorado County 2007b]) are applicable in the project vicinity, although State-owned land is not subject to local government ordinances.

Federal floodplain regulations are implemented by El Dorado County through County Ordinance Chapter 17.25, "Flood Damage Prevention," which controls the alteration of natural floodplains, stream channels, and natural protective barriers, including filling, dredging, and other development that may increase flood damage or divert floodwaters, thereby increasing flood hazards in other areas. The County appoints a community development director or authorized representative to oversee development permit applications within the floodplain and recently drafted a flood damage prevention ordinance, not yet adopted (El Dorado County 2008).

ENVIRONMENTAL SETTING

Hydrology

The study area is within the Upper Truckee River watershed, near the confluence of Angora Creek. Hydrologic characteristics of the area result from, and are distinguished by, several environmental parameters, including watershed-wide characteristics and climatic conditions, streamflow magnitudes and patterns, runoff from local natural and urbanized drainages, direct precipitation at the site, and groundwater elevations and gradients. Regional and watershed-scale factors of influence on hydrology also include geology, glacial history, geomorphology and soils, which are discussed in other relevant sections of this document.

Surface Water

Watersheds

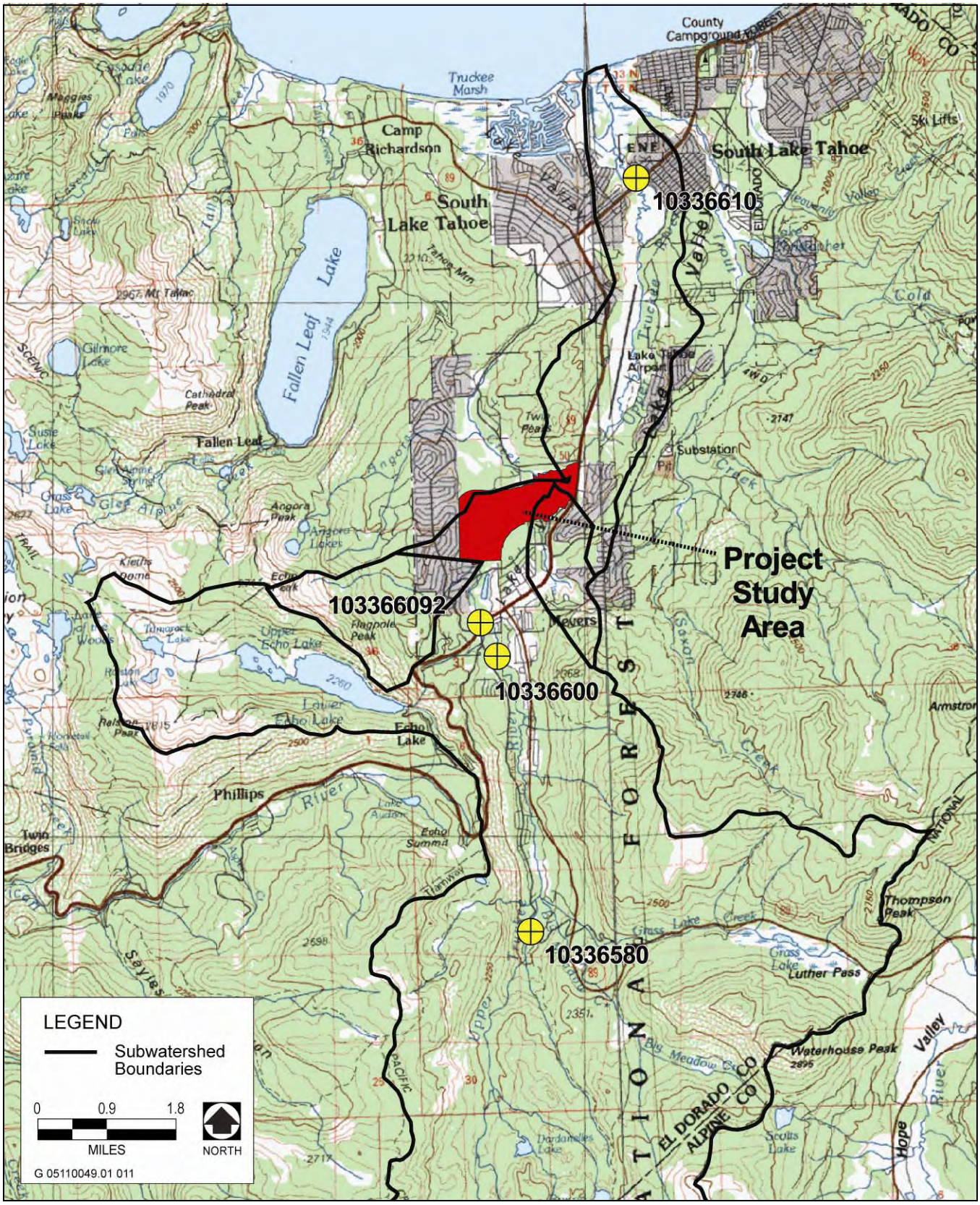
The Upper Truckee River is the largest tributary to Lake Tahoe, with a watershed that covers roughly 56 square miles. Exhibit 3.3-1 shows the watershed boundary and the U.S. Geological Survey (USGS) stream gauge locations on the river, discussed under the "Streamflow" section below. Angora Creek, which enters the Upper Truckee River in the study area, occupies approximately 6 square miles (SH&G 2004a:II-1–II-2). The Upper Truckee River headwaters are in undeveloped wilderness at elevations just over 10,000 feet along the El Dorado and Alpine County boundary. The 15-mile-long river flows northward through mountainous terrain, starting from the headwaters near Carson Pass and dropping down into a relatively narrow glacial valley with residential neighborhoods (Christmas Valley). Near the community of Meyers, Echo Creek enters from the west, and the river continues to flow through residential areas, adjacent to old quarries, and along the Lake Tahoe Golf Course, where it is joined by an unnamed creek from the southeast and Angora Creek from the west in the broad section of the Upper Truckee River watershed referred to as "Lake Valley." Downstream of the study area, the Upper Truckee River flows past the Lake Tahoe Airport and through former grazing lands, then passes through the commercial and residential corridor and north of U.S. 50. The Upper Truckee River then discharges to Lake Tahoe on the east side of the Tahoe Keys development in South Lake Tahoe. Lake Tahoe has a median lake elevation of 6,225.5 feet.

Surface Water Features of the Study Area

The surface water features in the study area include approximately 12,000 feet along the Upper Truckee River (for detailed Upper Truckee River reaches and stationing information, see Table 2-1); Angora Creek; an unnamed creek; some small seasonal drainages, as well as several golf course drainage swales and irrigation ponds; and, a stormwater treatment basin (Exhibit 3.3-2).

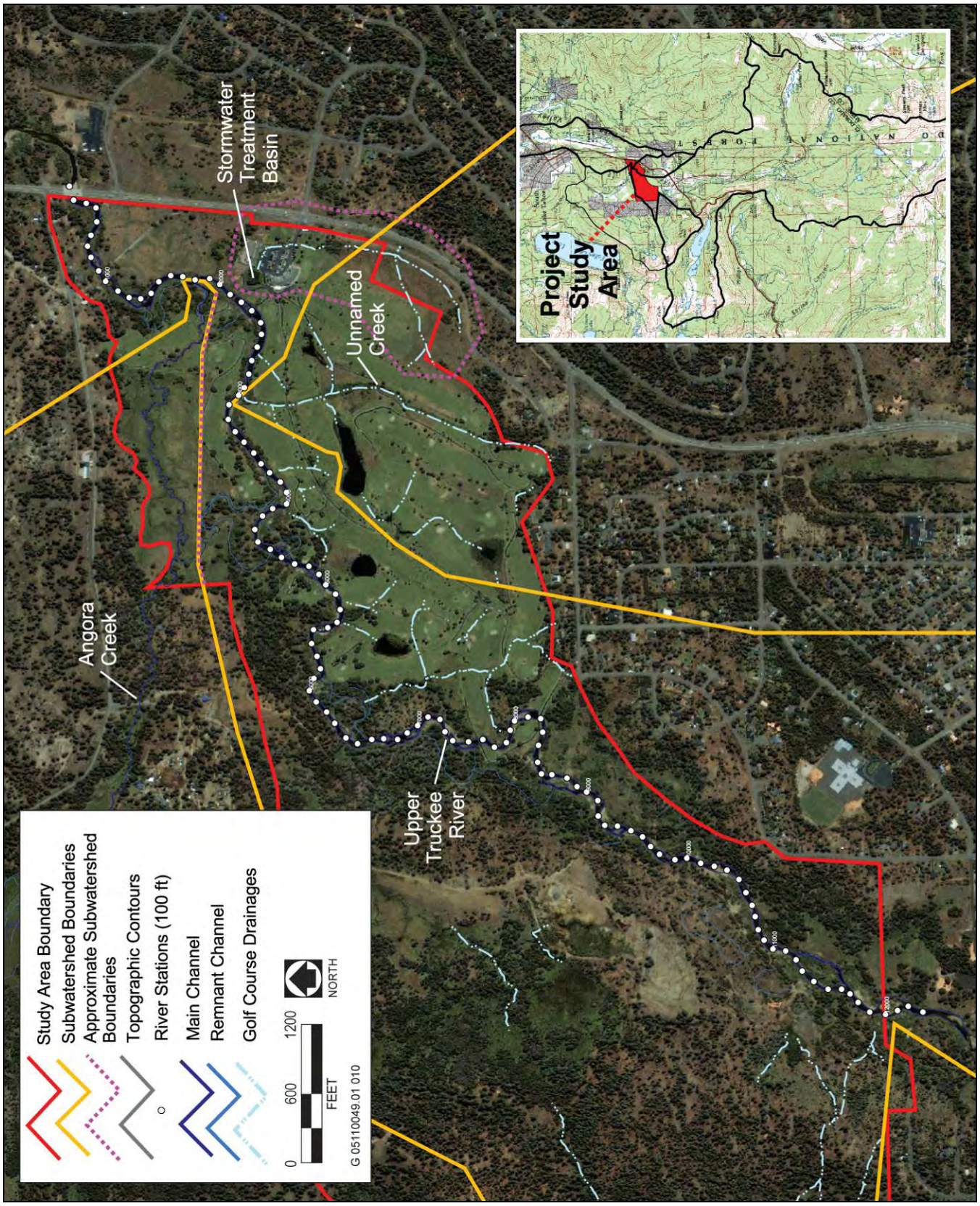
The study area section of the Upper Truckee River is located between the U.S. 50 crossing at Meyers and the U.S. 50 crossing at Elks Club Drive. Upstream of the study area, below the U.S. 50 crossing at Meyers, the Upper Truckee River noticeably changes from a confined, boulder-dominated channel to a wider, boulder-free alluvial river within a broader valley floor (SH&G 2004a:II-2). The Upper Truckee River flows through Washoe Meadows SP and Lake Valley SRA in the study area, with three distinctive reaches. The upper 1/3 is somewhat incised in glacial outwash with a narrower valley and forested floodplain. It goes through a transition reach to the lower ½ of the area which is characterized by a broader low gradient former meadow. The Lake Tahoe Golf Course surrounds much of the river in the study area. The river corridor is largely on public land, which includes USFS lands upstream and State lands in the study area (SH&G 2004a: II-2). There are some private parcels north of the river at the downstream end of the golf course between the river and Sawmill Road.

In most of the study area, the Upper Truckee River channel and present active floodplain (i.e., areas inundated by the 1.5- to 5-year peak streamflow events) is generally less than 200 feet wide and bounded by low, abandoned floodplain terraces and high, former glacial outwash terraces. The channel is entrenched within outwash terraces in the upper half of the study area and transitions to a broader floodplain meadow in the downstream half (River Run Consulting 2006:12). The channel is incised, with limited connection to the historic floodplain. Analysis of



Source: USGS 7.5-Minute Quadrangle Maps and USGS Surface Water Stations

Upper Truckee River Watershed and Stream Gauge Locations **Exhibit 3.3-1**



Source: VM Consulting 2009, with data from State Parks

Surface Hydrology and Watershed Boundaries of the Study Area **Exhibit 3.3-2**

historic photographs and topography suggests that the historic channel pattern in this area was more meandering than the current channel pattern (SH&G 2004a:III-41). There are remnants of high-amplitude, long-wavelength meanders on the floodplain, some visible in the forested areas along the river, others obscured by subsequent topographic modification for the golf course. A few of the old meander features have abrupt cutoffs that may have resulted from channel avulsion caused by debris jams or from incision caused by land use practices, including purposeful channel straightening by human intervention (River Run Consulting 2006:12). Additional information about the existing and historic stream condition and function is provided in Section 3.4, "Geomorphology and Water Quality."

Angora Creek drains a 5.9-square-mile subwatershed of the Upper Truckee River originating from Angora Lakes and flows through residential areas and large meadows before entering the river along its west bank at the downstream end of the golf course near river station (RS) 1800. The most downstream reach of Angora Creek is within the study area, dominated by a floodplain shared with the floodplain/terrace on the north side of the Upper Truckee River. More than 8,000 feet of the lower reaches of Angora Creek have been previously restored, including about 2,500 feet within the study area (SH&G 2004a:II-2).

The unnamed creek that enters the east bank of the Upper Truckee River near RS 3000 within the study area drains a small (0.81-square-mile) subwatershed (Exhibit 3.3-3). The unnamed tributary's headwaters are in the Tahoe Paradise Golf Course in Meyers. It flows along and under U.S. 50 and through the East San Bernardino residential neighborhood in the form of a channelized ditch (SH&G 2004a: II-2). The unnamed creek receives the bulk of its runoff from commercial and residential areas, including runoff directly from the golf course turf grasses and U.S. 50. The upstream section within Tahoe Paradise Golf Course has been channelized and has had much of its riparian vegetation removed (SH&G 2004a: III-56). The portion of the unnamed creek within the study area is a shallow, straightened channel through the golf course, with several small bridges for golf cart access.

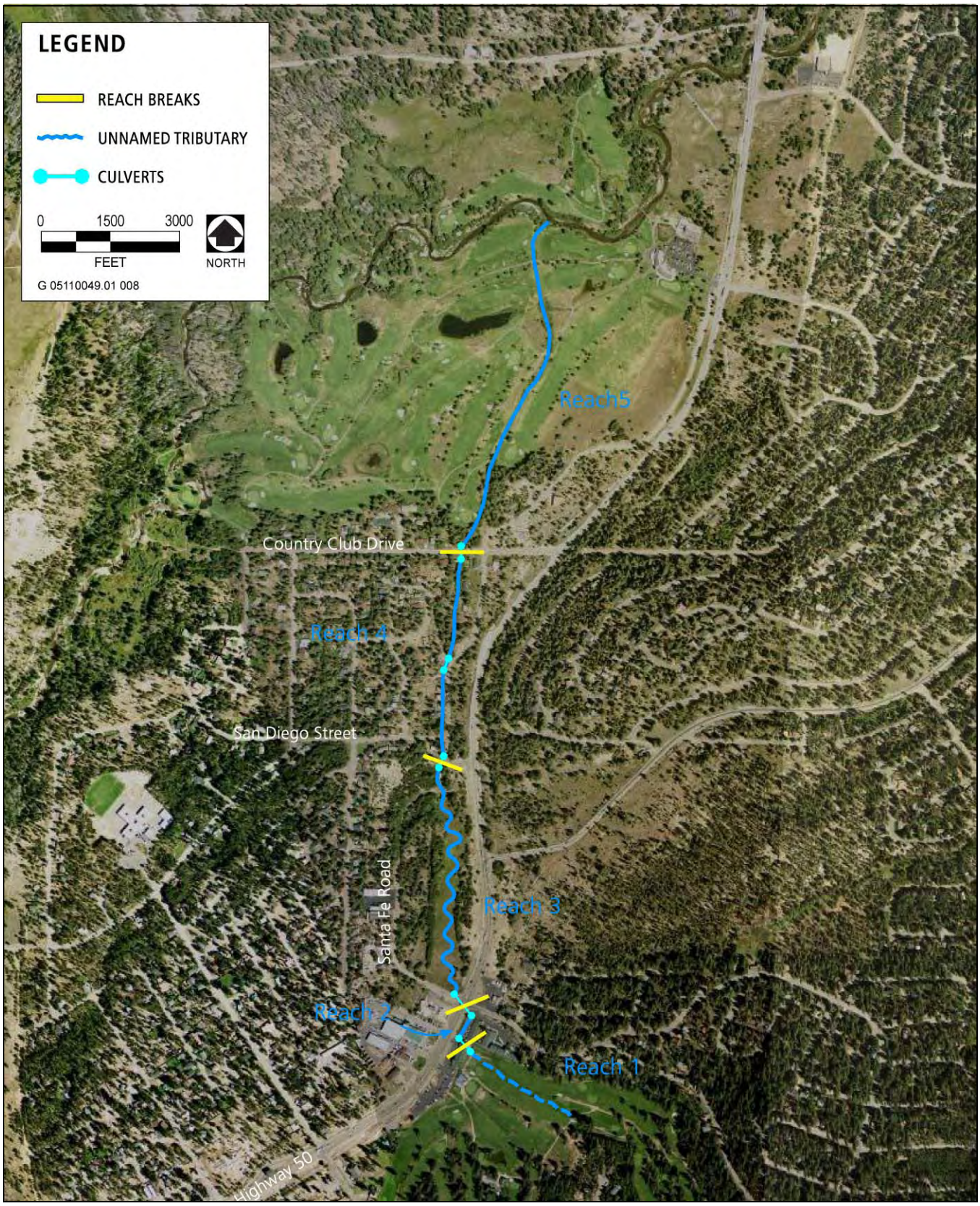
Other surface water features east of the Upper Truckee River within the study area are constructed ponds, including five golf course ponds and one stormwater treatment basin (Exhibit 3.3-2). The three larger golf course ponds were created during course construction when the sites were used as borrow sites for constructing the course topography (Stanowski, pers. comm., 2008). The largest pond (between the 9th and 18th fairways) is used to store irrigation water pumped from the river or groundwater wells. The smaller ponds were constructed and/or modified over the years to improve drainage within the course (Stanowski, pers. comm., 2008). The stormwater treatment basin located near the Lake Tahoe Golf Course maintenance yard was constructed in the 1980s in compliance with Lahontan RWQCB Orders No. 6-89-9 and No. 6-00-48, to capture and treat stormwater from the parking lot and some off-site roadside ditches.

West of the Upper Truckee River, additional surface water features include a few small ephemeral drainages (some that are spring fed) and the pond areas within the former quarry site, created by excavation that has intercepted groundwater.

Streamflow

The Tahoe Basin's climate is typified by cool, dry summers and cold, wet winters. Average annual precipitation ranges from 23 inches on the north end of the Upper Truckee River watershed (at Lake Tahoe) to 49 inches just south of Meyers (DWR 2004:1). The bulk of precipitation occurs as snow during winter and early spring, November through April (SH&G 2004a:III-1). There are periods of rainfall at either end of the winter season and during summer thunderstorms that may occasionally be intense (up to 1 inch of rain in a few hours). Infrequently, large, warm rainstorms during the winter months, dubbed "Pineapple Express" storms, bring large volumes of water and melt preexisting snowpack, producing extreme streamflows and flooding (SH&G 2004a:III-1).

The seasonal snowmelt process creates annual streamflow peaks in late spring to early summer (May or June). The snowpack at lower elevations can melt completely and generate runoff in the urban areas and valley floors near the lake, before the snow at the headwaters melts. The minimum streamflows occur during late summer and fall.



Source: SH&G 2004a, Figure 5.1

Reaches of the Unnamed Creek **Exhibit 3.3-3**

The dominant streamflow influence in the study area is the Upper Truckee River, which is recorded by USGS at four locations in the watershed (Exhibit 3.3-1). The gauges most relevant to the study area include USGS gauge #10336600, which operated from 1960 to 1986 just downstream of the U.S. 50 crossing at Meyers above Echo Creek, and the active USGS gauge #103366092, which is just below Echo Creek and has been operational since 1990 (Table 3.3-1).

Table 3.3-1
U.S. Geological Survey Streamflow Stations within the Upper Truckee River Watershed

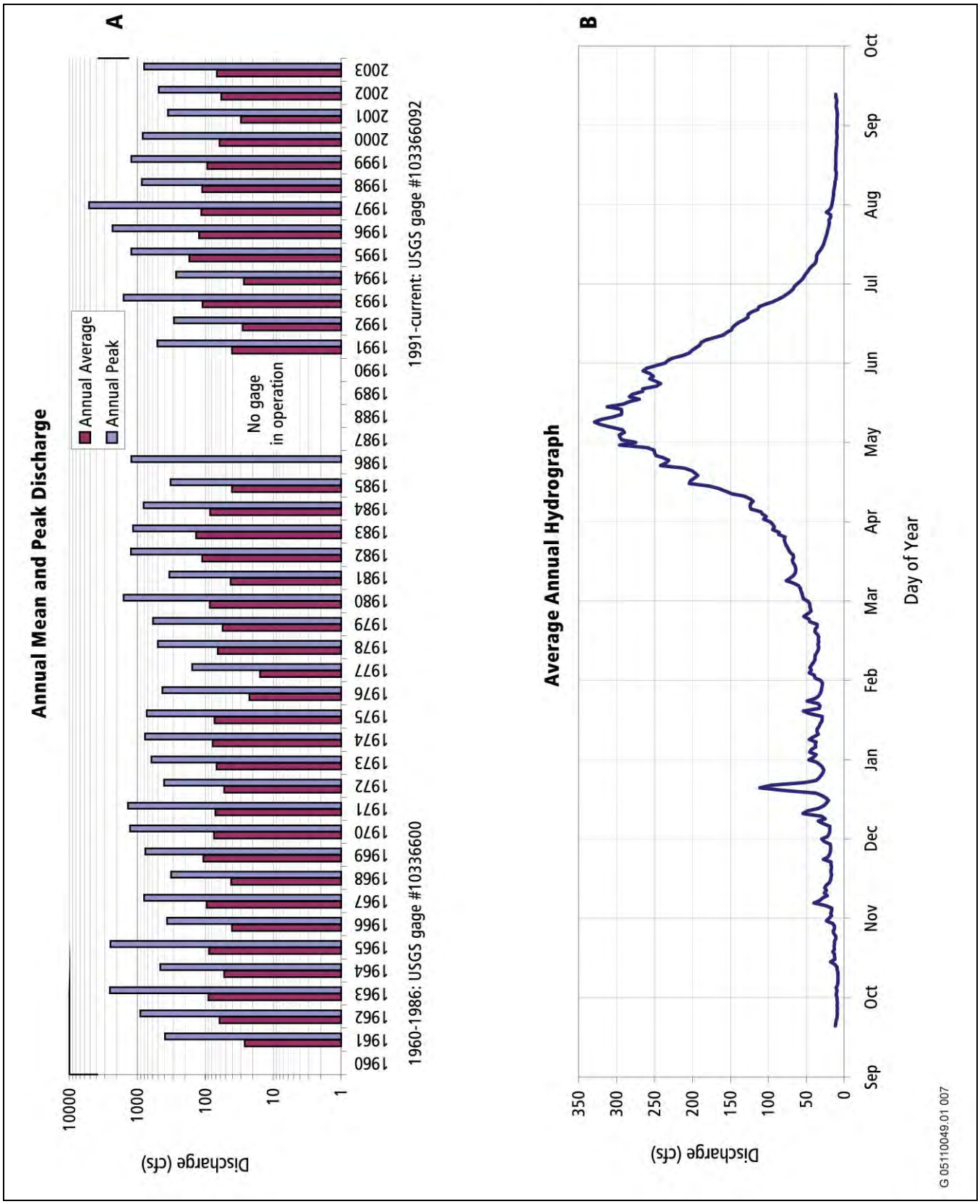
Station Name	USGS Gauge	Period of Record (Water Years)	Contributing Drainage Area (Square Miles)	Percent of Basin Gauged
Upper Truckee River at U.S. 50 above Meyers	103366092	1990 to present	39.2	68.8
Upper Truckee River near Meyers	10336600	1961–1986	33.2	58.6

Sources: Rowe and Allander 2000, USGS 2008

The average annual streamflow (i.e., discharge) for the Upper Truckee River at the gauges near Meyers (#103366092 and #10336600) is 72 cubic feet per second (cfs) over the 38 years of record (SH&G 2004a:III-2). Average annual streamflow varied from approximately 10 to 20 cfs in dry years (e.g., 1976, 1977, 1992) to more than 100 cfs in wet years (e.g., 1982, 1983, 1995, 1996) (Exhibit 3.3-4). The seasonal pattern of Upper Truckee River streamflow (i.e., hydrograph) for the same 38 years of record features a snowmelt runoff peak in the late spring through early summer (May through June) (Exhibit 3.3-4). The average daily streamflow during the snowmelt season generally remains more than 100 cfs and rises to more than 300 cfs. The seasonal maximum in average daily flows during snowmelt varies from year to year, ranging between 300 and 1,000 cfs (River Run Consulting 2006:9). Summer and early fall base flows (July through November) are minimal as a result of low precipitation and high evapotranspiration during that period. Both the Upper Truckee River and Angora Creek display large annual and seasonal variation in flow rates typical of unregulated alpine rivers receiving the bulk of their runoff from snowmelt.

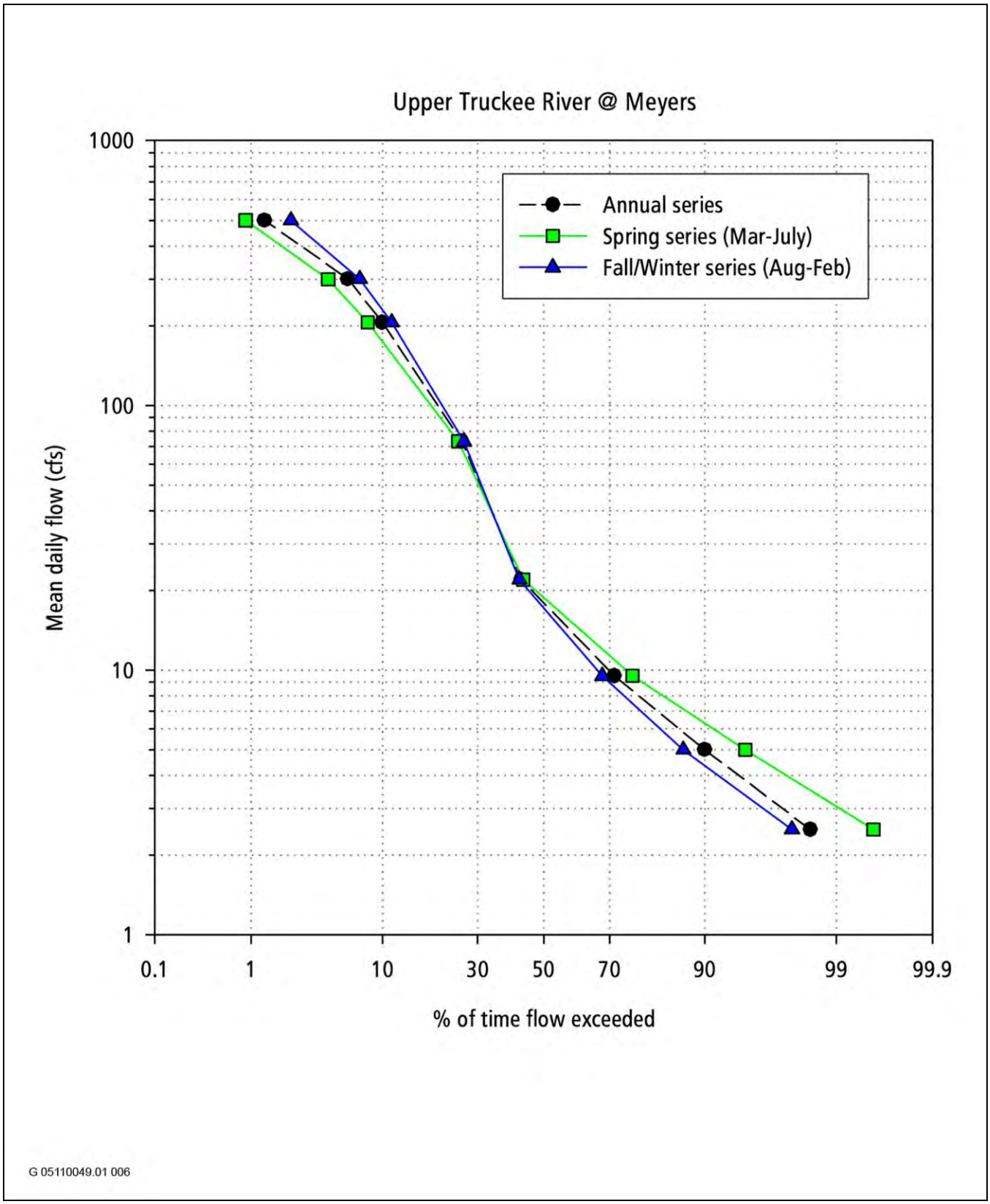
Mean daily streamflow on the Upper Truckee River has also been described using statistics for the period of record (SH&G 2004a:III-2). Flow duration curves indicate the percentage of time that a particular flow is equaled or exceeded (Exhibit 3.3-5). The minimum flows would be those exceeded nearly 100 percent of the time (i.e., approximately 1.5 cfs), extreme high flows are those exceeded only roughly 1 percent of the time (i.e., approximately 500 cfs), and the median flow is the flow exceeded approximately 50 percent of the time (i.e., approximately 20 cfs). There are some minor differences in the curves when the data are sorted seasonally because the spring series has higher flows below the median and the fall/winter series has higher extremes (Exhibit 3.3-5). The flow duration curves for spring (March through July) and winter (August through February) periods show that the spring series has higher flows for the bulk of discharges (50 percent to 99.9 percent of time flow exceeded), but the winter series has higher peaks during the less frequent events (1 percent to 10 percent of time flow exceeded) (SH&G 2004a: III-2).

Climate-driven cycles can produce extreme highs and lows during a single year and from one year to the next. Precipitation timing, amounts, and mix of snow and rain can vary significantly from year to year (Coats and Goldman 2001:406, Rowe et al. 2002:13), producing year-to-year variability in streamflow. Future climate change may alter the spatial distribution and total amount of precipitation, the relative proportion of snow versus rain, and flood and drought extremes. The following information summarizes the anticipated effects of climate change on potential hydrology of the study area, based on available projections for the region. This discussion is not an estimate of the possible effects of the project on climate change, which is described in Section 3.16, “Cumulative Impacts.”



Source: SH&G 2004a, Figure 3.2

Upper Truckee River Annual and Peak Streamflow **Exhibit 3.3-4**



Source: SH&G 2004a, Figure 3.4

Upper Truckee River Mean Daily Streamflow Duration Curves **Exhibit 3.3-5**

Over the last decade or so, a few studies have looked at potential climate change effects on surface and groundwater hydrology, water resource issues, or forest response for the Sierra Nevada or Lake Tahoe region, or both (Jeton, Dettinger, and Smith 1996; Knowles and Cayan 2004; Millar et al. 2004). These provide information about possible changes in water inputs to the project's study area (e.g., snowpack, rainfall, streamflow). Some studies have focused on the response of Lake Tahoe to climate change (e.g., Jassby, Reuter, and Goldman 2003; Coats et al. 2006), but have not commented directly on expected changes in tributary rivers.

The most useful data are those recently compiled and generated by Tetra Tech (2007). Tetra Tech (2007) explored the effects of climate change on overall watershed hydrologic response in relation to the total maximum daily load (TMDL) watershed model of pollutant loadings to Lake Tahoe. Tetra Tech (2007) used regional (within California) climate change projections by Dettinger (2005) and Cayan et al. (2006). Those studies used somewhat different modeling, downscaling, and meta-analysis approaches, but for the Tahoe Basin, they had close agreement on modeled, representative changes. Further, Dettinger (2005) provided predictions for the near future (c. 2050).

The central estimate for temperature and precipitation changes from the Cayan et al. (2006) paper and the Dettinger (2005) paper formed the basis of Tetra Tech's Central Projection model scenario: a 2°C warming and a 10 percent decrease in total precipitation by mid-century. Additional modeling scenarios were formulated by Tetra Tech (2007) using temperature increases of one standard deviation on either side of that central estimate (1°C and 3°C increases above current temperatures) and precipitation changes of one standard deviation above and below the central estimate (-25 percent and +15 percent of today's total precipitation, as well as a no change from today's precipitation).

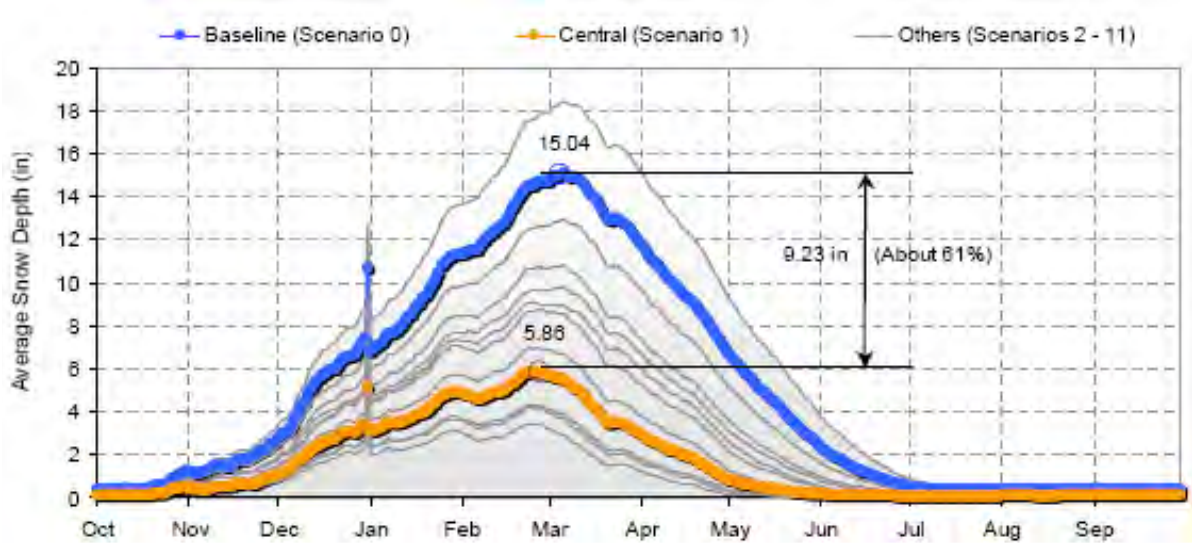
Tetra Tech simulated baseline (existing) and the various climate change scenarios for a 15-year model evaluation period (1990 through 2004) by applying the percent changes in temperature and precipitation uniformly to the historic weather data sets. Simulations with the spatially discrete (with 184 subwatersheds and 20 land uses) and temporally detailed (i.e., hourly time steps for the 15-year period) Tetra Tech model provide information on the range of conditions that could occur throughout Lake Tahoe watersheds in terms of total precipitation, air temperature and snow pack, and water yield from snow, as well as total outflow to streams (surface runoff and baseflow). An analysis of annualized daily snowpack from the model results is also provided by Tetra Tech (2007), which indicates the range of likely changes in snowpack depth, snow accumulation/snowmelt season, and timing shifts (Exhibit 3.3-6).

Local Runoff

Local runoff entering the study area or being generated within the study area has not been measured; however, it can be estimated for the purpose of sizing storm drainage facilities, as needed. In general, the runoff entering the study area via the unnamed creek would be expected to have slightly larger peaks and volumes under present developed watershed conditions than under the historic undeveloped status. Similarly, runoff generated within the golf course portion of the study area is likely to differ somewhat from prior natural conditions, because of alterations made to topography, soils, vegetation, and impervious surfaces and direct changes related to surface pond storage and irrigation. Runoff generated within the Washoe Meadows SP portion of the study area is likely to be fairly similar to natural conditions, except that roads and trails have compacted soil, and old quarry cut slopes have intercepted groundwater, both of which may increase surface runoff.

USACE, at the request of the Lake Tahoe Storm Water Quality Improvement Committee, is developing a new drainage design criteria manual to improve estimates of runoff volumes, peak discharges, and hydrograph shapes (USACE 2007). The methodology approved by the County and/or the committee at the time of project review would be applied to quantify runoff as a basis for the project's storm drainage feature modifications and/or mitigations. Tentative estimates of urban drainage hydrology in Section 3.3.2, "Environmental Consequences," are appropriate for the purpose of comparing alternatives (rather than for final design).

Scenario	Date			Relative to Baseline (Days)				Peak Percent Change
	Snowpack >0.5 in	Snowpack Peak	Snowpack <0.5 in	Pack Start	Peak Shift	Pack End	Duration	
Baseline	Oct 20	Mar 6	Jul 2	0	0	0	256	0%
Central (1)	Nov 10	Feb 27	May 11	+21	-8	-52	183	-61%
2	Oct 25	Mar 6	Jun 25	+5	0	-7	244	-14%
3	Oct 26	Mar 6	Jun 10	+6	0	-22	228	-35%
4	Oct 18	Mar 6	Jul 18	-2	0	+16	274	+22%
5	Oct 25	Mar 6	Jun 15	+5	0	-17	234	-29%
6	Oct 29	Feb 27	May 20	+9	-8	-43	204	-54%
7	Nov 17	Feb 24	Apr 27	+28	-11	-66	162	-72%
8	Nov 17	Feb 24	Apr 28	+28	-11	-65	163	-72%
9	Oct 26	Feb 27	Jun 1	+6	-8	-31	219	-42%
10	Nov 9	Feb 25	Jun 1	+20	-10	-31	205	-40%
11	Nov 25	Feb 24	Apr 22	+36	-11	-71	149	-77%



Snowpack Characteristics for Climate Change Scenarios **Exhibit 3.3-6**

Groundwater

Groundwater Basins

The study area is within the Tahoe Valley South Subbasin of the Tahoe Valley Groundwater Basin, a water supply source for domestic and public water uses with elevations ranging from 6,225 feet at lake level to above 6,500 feet in the south (DWR 2004:1). There are a few domestic wells along Sawmill Road just north of the Upper Truckee River and Angora Creek confluence, and one public well south of the study area adjacent to U.S. 50 near Meyers (Rowe and Allander 2000:20). The California Department of Water Resources (DWR) has monitored several wells in the Tahoe Basin since the 1960s and, with the exception of some localized decreases in groundwater levels near the urban wells related to pumping, there has been no long-term change or decrease in water levels (DWR 2004:2).

Watershed Groundwater Conditions

Groundwater in the Upper Truckee River watershed generally parallels surface water flow and moves northward toward Lake Tahoe, discharging via seepage to stream channels and the lake (USACE 2003:1-2). Groundwater generally flows toward the stream channel (e.g., gaining reach) in the upper reaches of the watershed upstream of the study area. In the portion of the Upper Truckee River watershed within the study area, groundwater often parallels the stream channel (e.g., either a steady or losing reach) and local monitoring data discussed below shows both losing and gaining reach sections within the study area. Downstream of the study area, groundwater flows toward the Upper Truckee River channel (e.g., gaining reach); however, close to the lake, dominant groundwater flows toward the lake rather than toward the channel (Rowe and Allander 2000:31).

Hydraulic gradients (groundwater surface slopes) are greatest in the upper elevations of the Upper Truckee River watershed and decrease rapidly in the downstream valley areas. For example, the groundwater gradient near Luther Pass is 700–1,400 feet per mile (ft/mi) and decreases to 30–60 ft/mi in the lower Christmas Valley area. The hydraulic gradient ranges from approximately 20 to 40 ft/mi in the study area (Rowe and Allander 2000:31).

Local Groundwater Conditions

Groundwater conditions in the study area and vicinity can be described using a combination of long-term DWR monitoring wells in the vicinity and several more recent monitoring wells within the study area (Exhibit 3.3-7). A single DWR monitoring well with long-term groundwater levels is located south of the study area, between U.S. 50 and the East San Bernardino residential neighborhood (DWR 12N18E29L001M) (Exhibit 3.3-8). This monitoring well exhibited fairly steady groundwater levels over its period of record (1970–1994) (Exhibit 3.3-8), generally responsive to the surface water conditions of wet versus dry years. Groundwater at this well was typically between 12 and 22 feet below ground surface (bgs) (Exhibit 3.3-8).

Long-term ground level data within the study area come from three wells installed within the existing golf course (Exhibit 3.3-7) under a water quality monitoring and reporting program mandated by the Lahontan RWQCB (Lahontan Board Orders No. 6-89-9 and No. 6-00-4). Water levels in the Lahontan monitoring wells were sampled in 1994 and from 2000 through 2007 (Exhibit 3.3-9). Only the first couple of sampling events included all three wells; however, the data indicated that the two downstream locations (MW1 and MW3) had slightly deeper groundwater (approximately 4 feet bgs) than did MW2 (approximately 1–3 feet bgs). The upstream and downstream wells (MW2 and MW1, respectively) are both fairly close to the river; however, the downstream well (MW1) has water depths from 5 to 7 feet bgs, whereas the upstream well (MW2) has water levels ranging from 2 to 4 feet bgs (Exhibit 3.3-9). Compared with levels in other years, MW1 and MW2 show the highest groundwater levels in May 2005, with water at the surface of MW2. This likely reflects the peak in average annual surface runoff conditions.

Between November 2006 and November 2007, State Parks installed 40 groundwater monitoring wells, arranged in several transects, across the study area (Exhibit 3.3-7). The first year of monitoring provides indicators of the

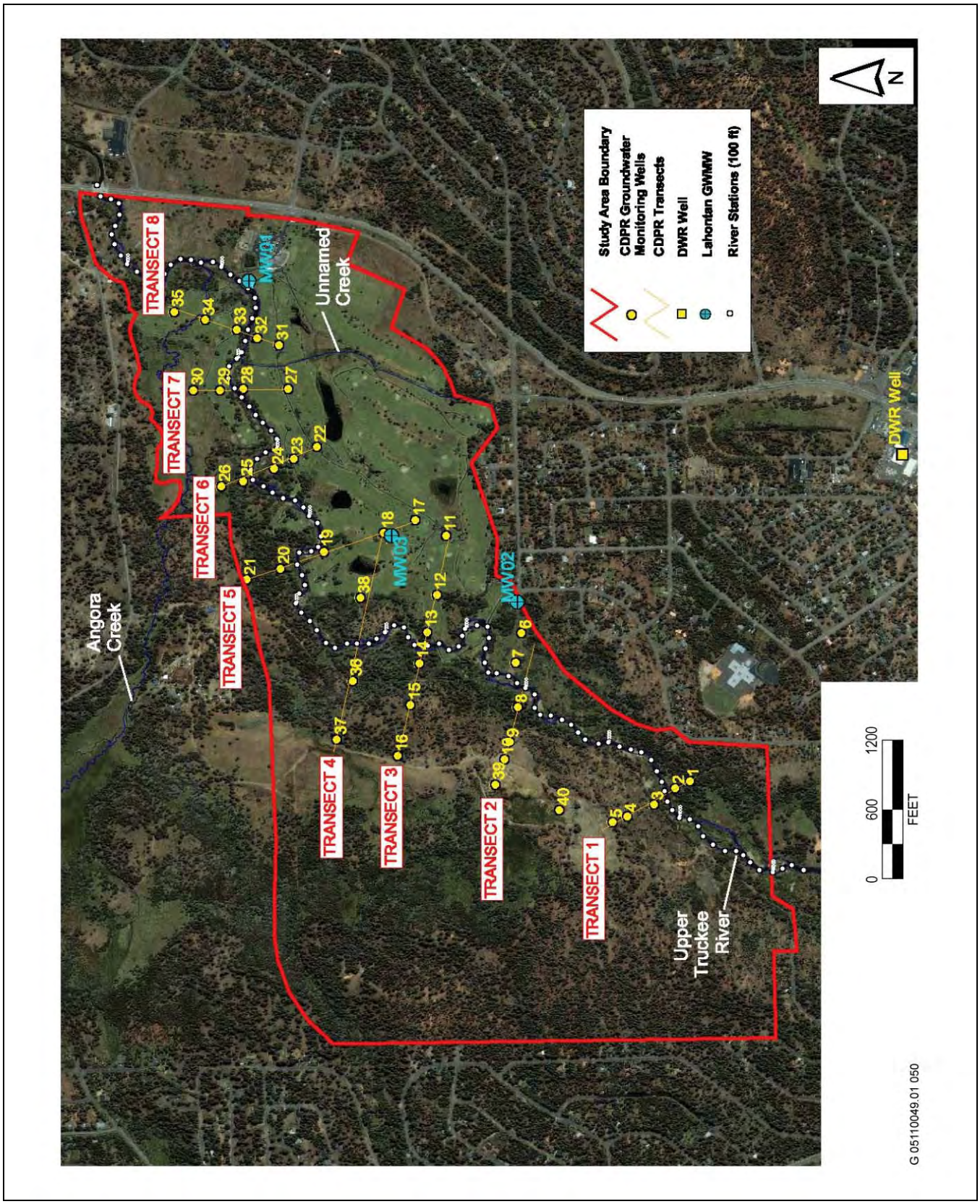
range of seasonal groundwater conditions within the study area (Exhibits 3.3-10A to 3.10-G). The 2007 groundwater monitoring data indicate typical alluvial surface water–groundwater relationships. Groundwater generally follows the river down-valley (i.e., north and northeast), parallel to the river, as seen by comparing groundwater elevations at each transect in a down-valley order. Groundwater elevations along the east side of the river from Transects 2–8 show a down valley groundwater gradient in the range of 6–26 ft/mi, slightly less than that reported by Rowe and Allander (Rowe and Allander 2000:31). The down-valley gradient becomes gentler in the main meadow, with relatively consistent and small decreases in water levels between Transects 6, 7, and 8. The north side of Transects 5-8 is influenced by the previously restored Angora Creek, which has since experienced higher groundwater elevations.

At any given transect, groundwater generally flows toward the river, at least during the spring. Groundwater flows from the west side of the valley towards the river are relatively consistent in all seasons and throughout the study area, except for minor reverse flows away from the river in fall at Transect 2. High groundwater west of the river on the west edge of Transects 2, 3, and 4 are influenced by the quarry cutslope, small drainages, and surface seeps. A fall monitoring event that included surface water measurements shows the river at Transects 2, 3, and 4 to be steady or slightly gaining (groundwater flowing toward the river) on the left (west) bank and losing (groundwater flowing away from the river) along the right (east) bank, while farther downstream at Transects 5–8 the reach is shown to be gaining on the right bank. This could be attributed in part to the golf course ponds influence along Transects 5–7 and the decrease in valley gradient. Fall water levels decrease 2–3 feet, and spring levels as much as 4–6 feet east of the river as one moves toward the river (Exhibits 3.3-10D and 3.3-10E).

Large seasonal fluctuations of the groundwater level occur in some parts of the study area. For example, seasonal groundwater levels vary by approximately 6 feet near both sides of the Upper Truckee River at Transect 2 (Exhibit 3.3-10A), probably supported by the functional overbank flows within this reach. Seasonal groundwater levels vary by approximately 5 feet on the west side of the river along Transect 3 (Exhibit 3.3-10B), but on the east side of the incised channel at this same location groundwater is lower and remains lower all year. The wide fluctuation of seasonal changes in surface water and groundwater flows supplied from the west side slope is not transmitted across the incised channel. Large fluctuations are also evident across Transect 5 (Exhibit 3.3-10D) and the west side of Transect 6 (Exhibit 3.3-10E). In these transects, surface water within Angora Creek and along its functional floodplain west of the river supports higher spring and fall groundwater levels, while the area east of the incised river channel has lower groundwater that tends to remain lower in all seasons.

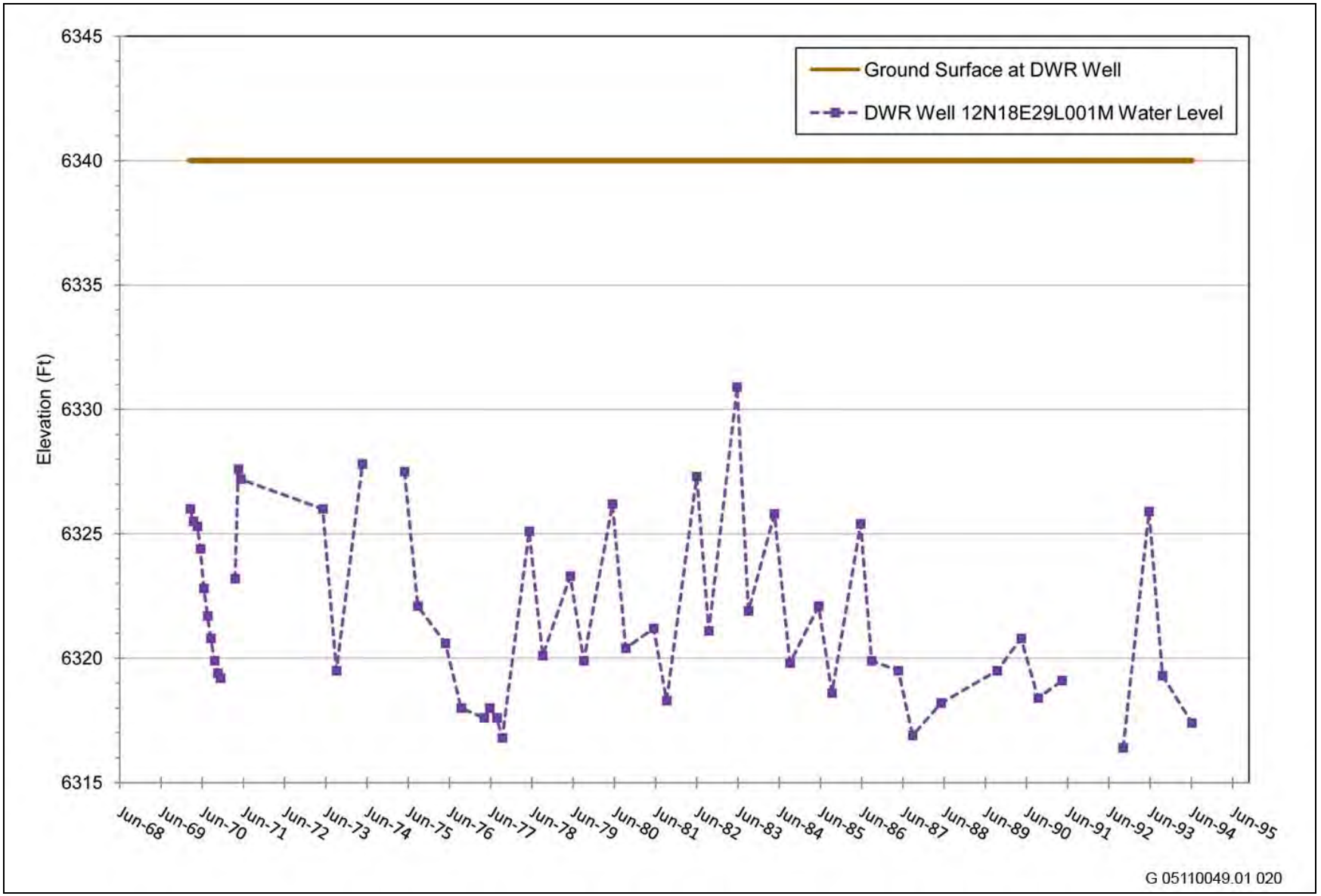
Seasonally consistent groundwater levels occur in a few locations, especially in transects 7 and 8, located farthest downstream (Exhibits 3.3-10F and 3.3-10G). Both sides of the Upper Truckee River have relatively small seasonal fluctuations in this area (approximately 1–2 feet), perhaps because of the influence of the Angora Creek system on the northwest and the golf course ponds and irrigation on the southeast. Consistently high groundwater levels are seen several hundred feet west of the river at the far west end of Transects 2, 3, and 4 (Exhibits 3.3-10A and 3.3-10B). Consistently low groundwater levels are noted east of the incised Upper Truckee River channel in Transects 3 and 4 (Exhibits 3.3-10B and 3.3-10C).

Groundwater levels and flow patterns in the study area and both upstream and downstream along the Upper Truckee River and portions of Trout Creek and other tributaries are degraded relative to natural conditions as a result of past direct actions and the stream's geomorphic response to those actions. Watershed-scale hydrologic changes, stream channel incision, and groundwater extraction for water supply have lowered groundwater levels along the incised channels and modified groundwater flow rates in areas of groundwater pumping, even reversed flows in areas with excessive extraction. The degraded conditions along incised channels interrupt groundwater flow paths and increases groundwater loss to surface water, reducing groundwater storage volume and groundwater storage from year to year. Groundwater conditions within particular reaches can influence groundwater and surface water within adjacent downstream reaches. The degraded groundwater status impairs near surface groundwater support for the high soil moisture conditions needed in meadows and marshes.



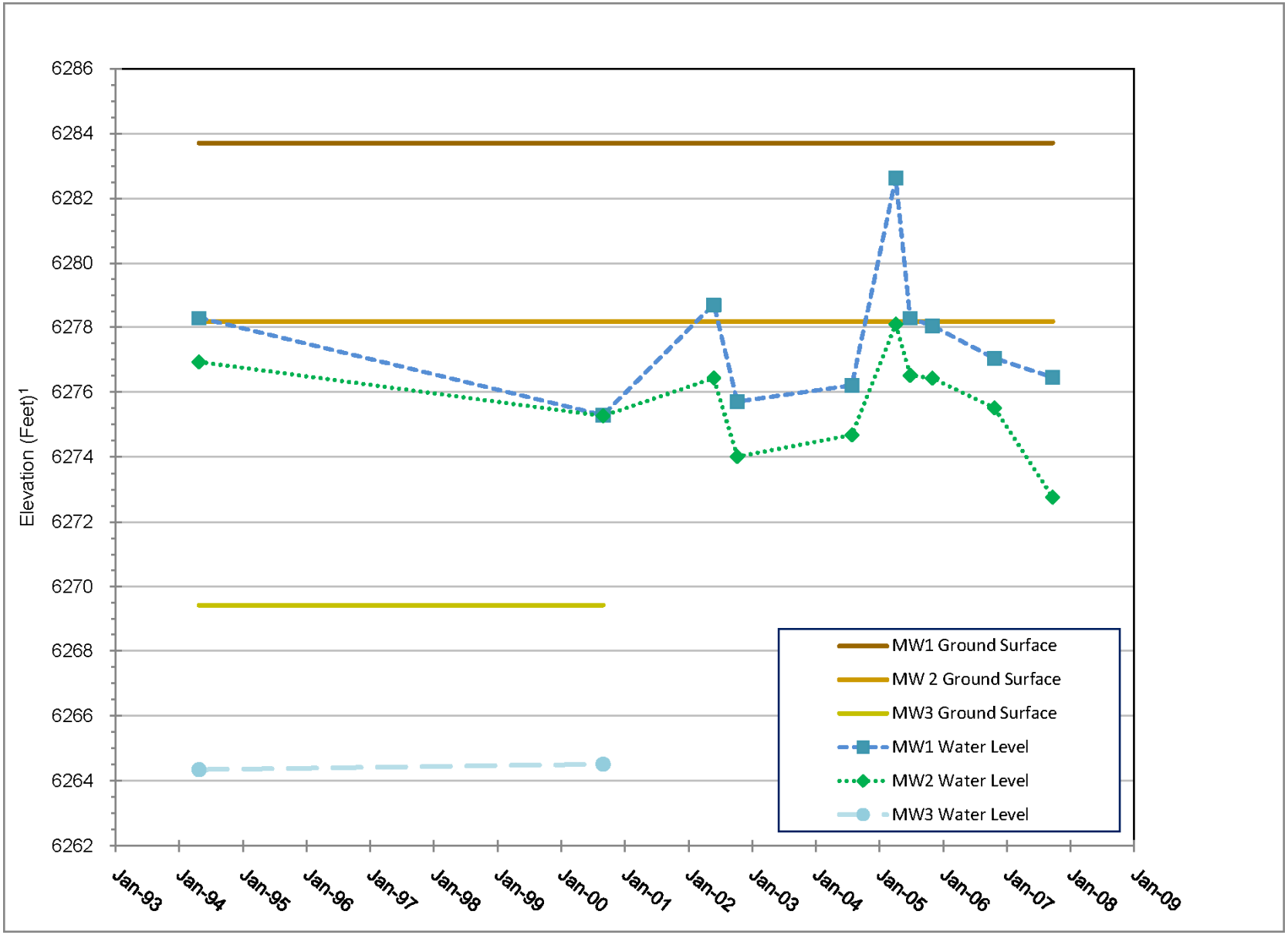
Source: VM Consulting 2009, with data from DWR and State Parks

Groundwater Monitoring Well Locations in the Study Area and Vicinity **Exhibit 3.3-7**



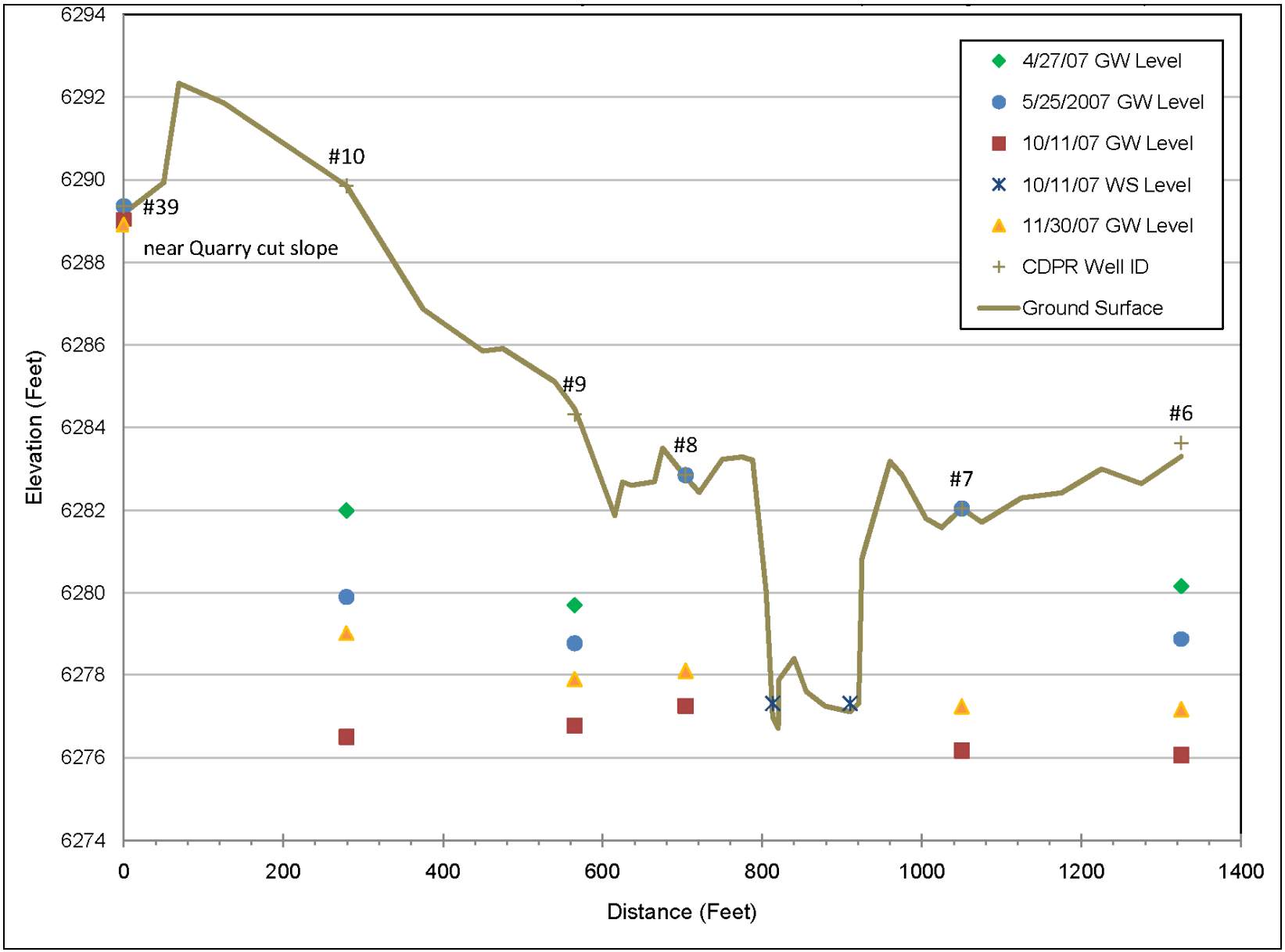
Source: DWR

Long-Term Groundwater Levels in the Vicinity **Exhibit 3.3-8**



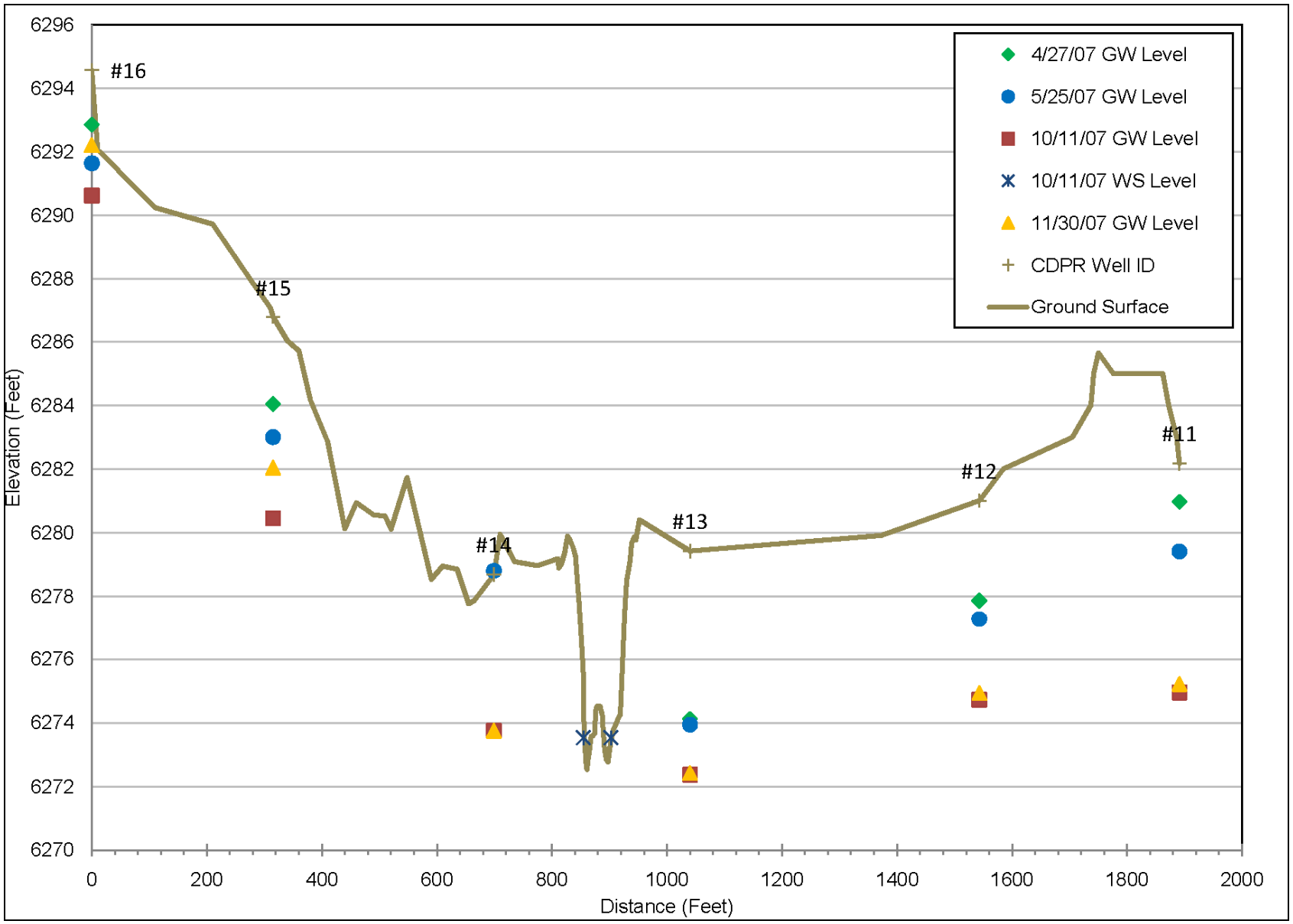
Source: VM Consulting 2009, with data from American Golf/Lahontan RWQCB

Long-Term Groundwater Levels in the Study Area **Exhibit 3.3-9**



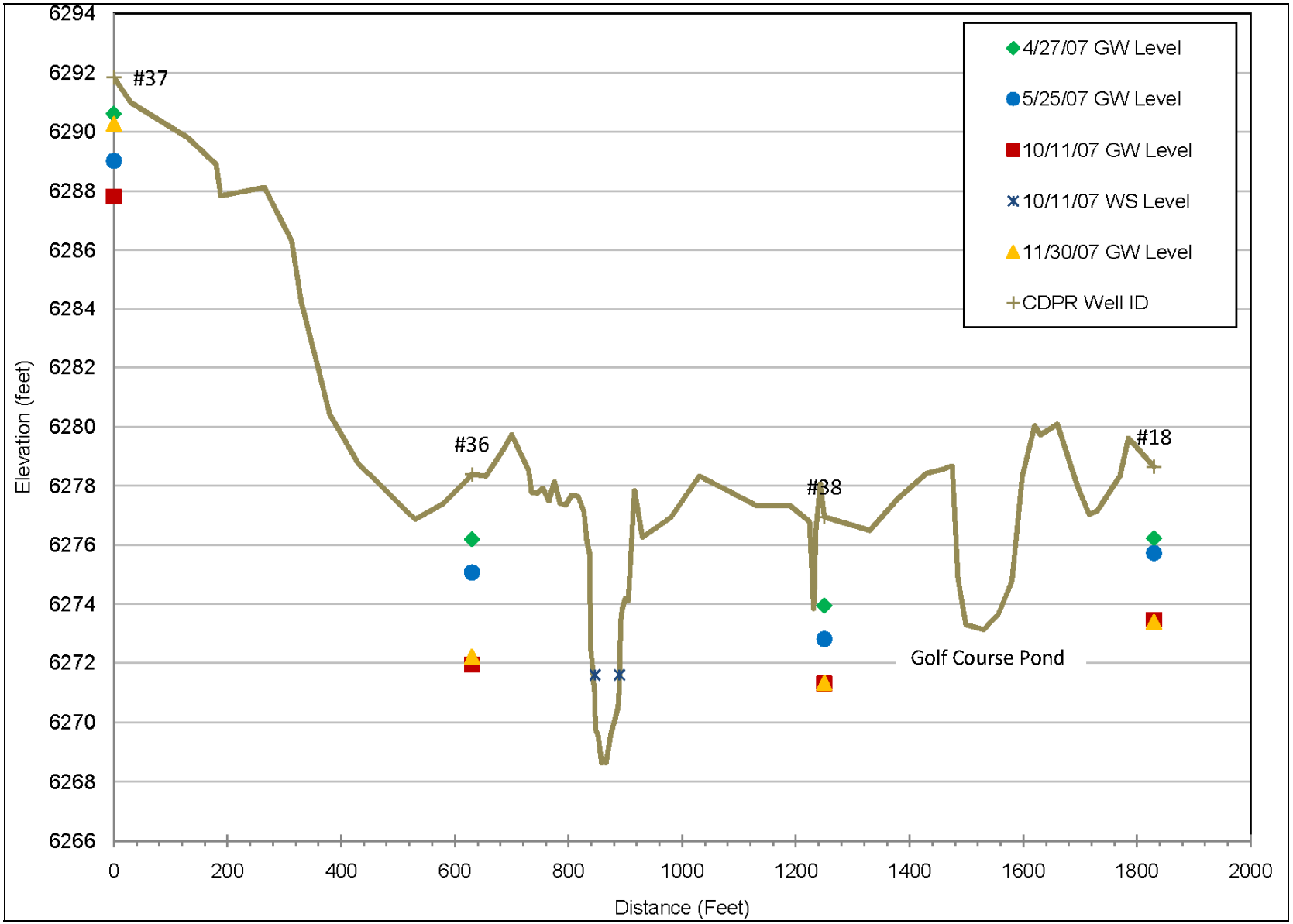
Source: Data compiled by VM Consulting in 2009, with data from State Parks

2007 Groundwater Levels within the Study Area, Transect 2 **Exhibit 3.3-10A**



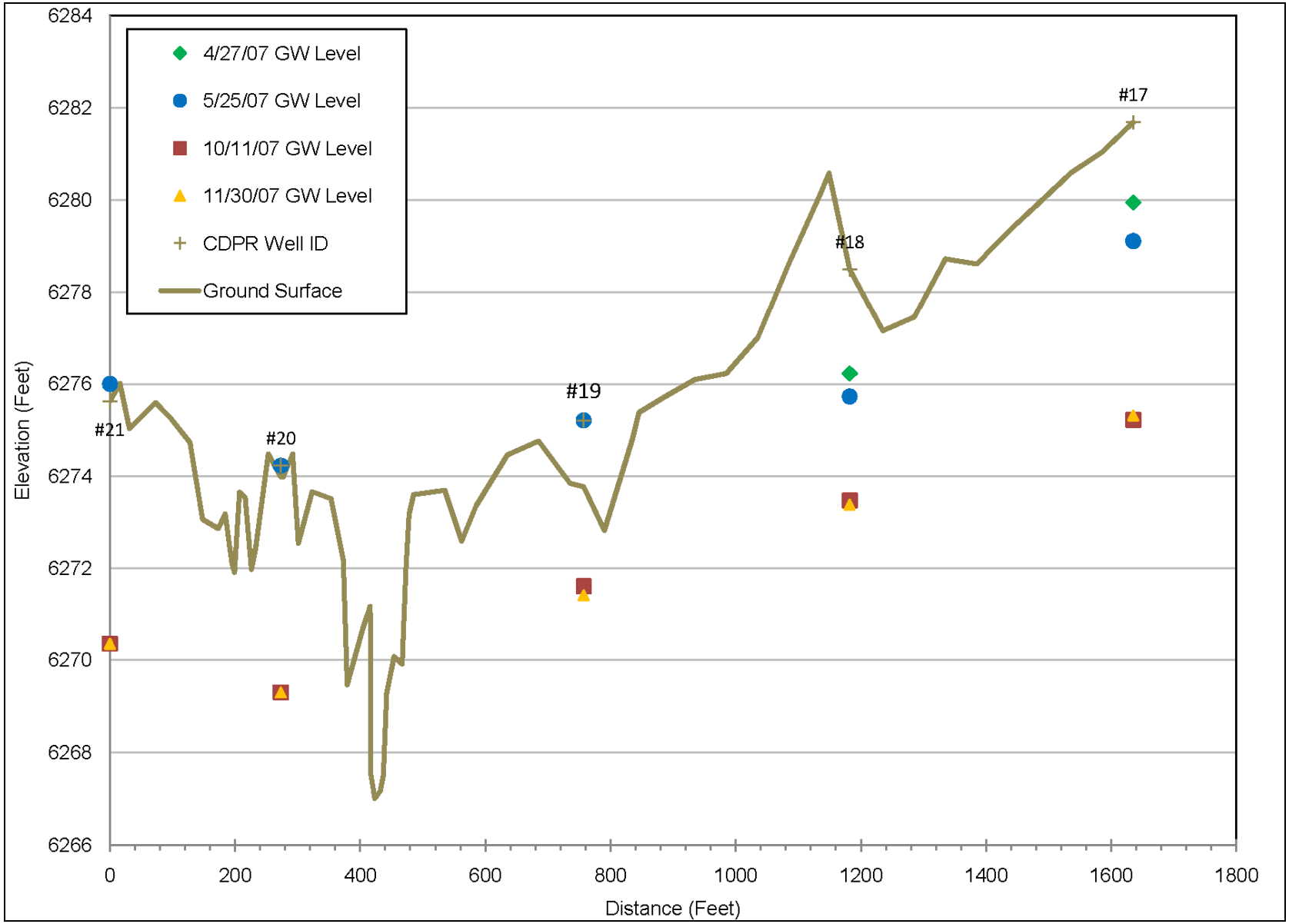
Source: Data compiled by VM Consulting in 2009, with data from State Parks

2007 Groundwater Levels within the Study Area, Transect 3 **Exhibit 3.3-10B**



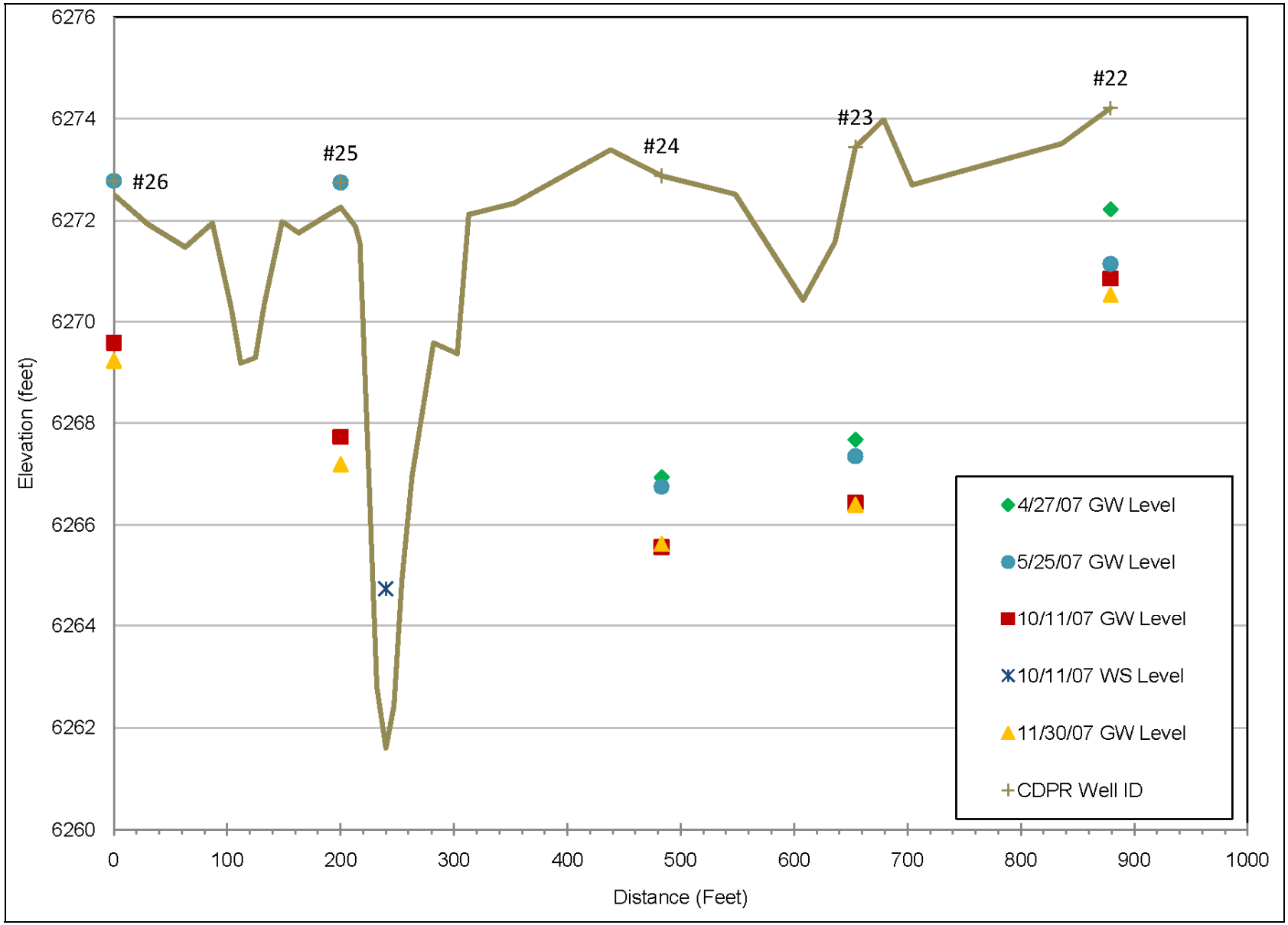
Source: Data compiled by VM Consulting in 2009, with data from State Parks

2007 Groundwater Levels within the Study Area, Transect 4 **Exhibit 3.3-10C**



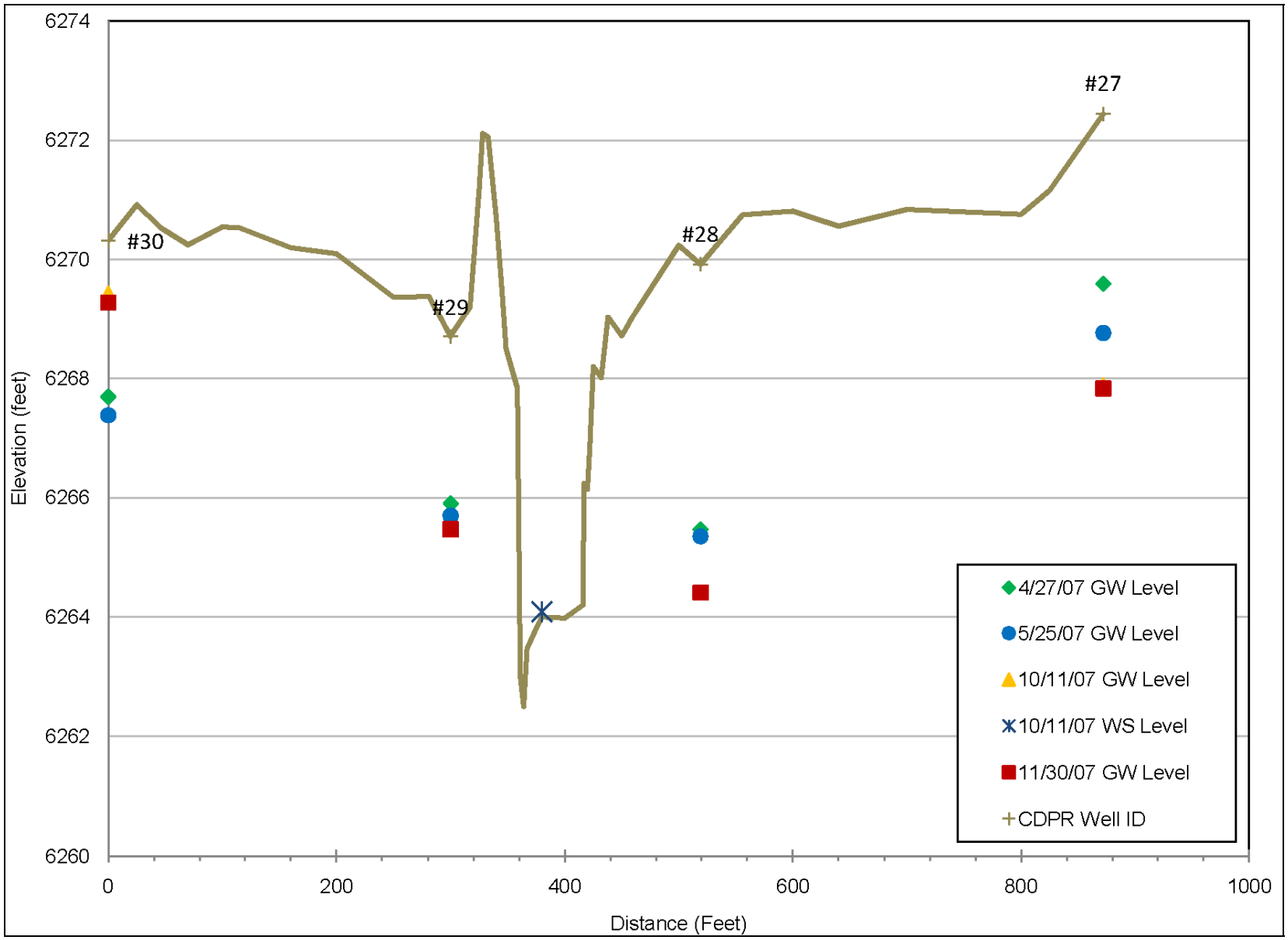
Source: Data compiled by VM Consulting in 2009, with data from State Parks

2007 Groundwater Levels within the Study Area, Transect 5 **Exhibit 3.3-10D**



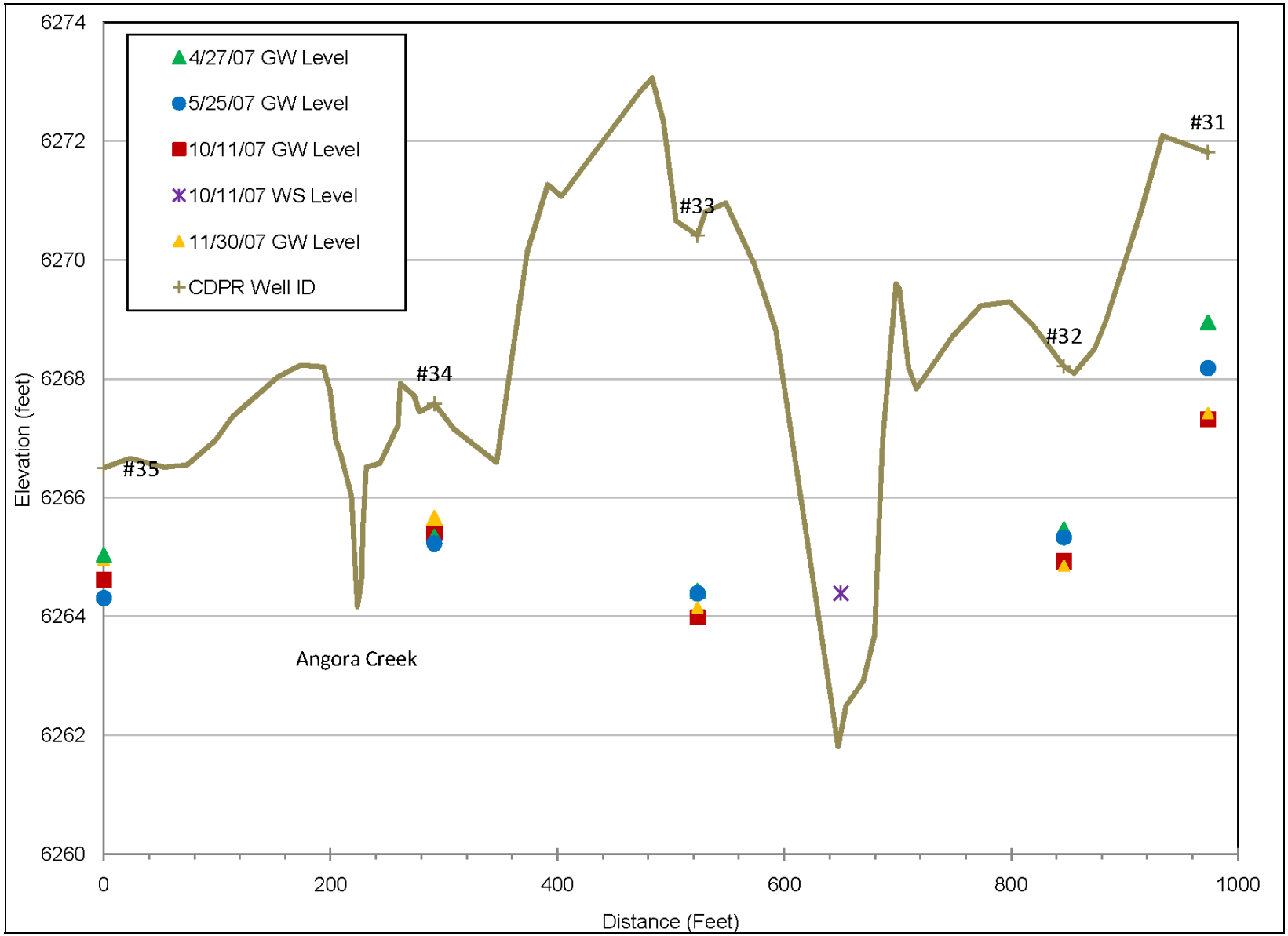
Source: Data compiled by VM Consulting in 2009, with data from State Parks

2007 Groundwater Levels within the Study Area, Transect 6 **Exhibit 3.3-10E**



Source: Data compiled by VM Consulting in 2009, with data from State Parks

2007 Groundwater Levels within the Study Area, Transect 7 **Exhibit 3.3-10F**



Source: Data compiled by VM Consulting in 2009, with data from State Parks

2007 Groundwater Levels within the Study Area, Transect 8 **Exhibit 3.3-10G**

Flood Frequencies

Streamflow in the Upper Truckee River is unregulated (i.e., there are no substantial dams or flow control structures upstream of the study area); therefore, streamflow magnitudes and frequencies are not managed. Rather, they occur as a function of climate and weather conditions, land use, vegetation cover, and channel and floodplain characteristics. Extreme peak flows associated with damaging floods on the Upper Truckee River are mostly, but not entirely, associated with winter season rain-on-snow conditions. These occur during large winter rainstorms where antecedent snowpack adds to the total runoff. For example, the flood of record on January 1, 1997, that resulted in a peak flow of 5,120 cfs at the Meyers USGS gauge was from rain-on-snow augmented runoff. The December 31, 1996, and January 1, 1997, storm produced rainfall below 8,000 feet mean sea level (msl), but occurred after prior snowstorms that left several feet of snowpack down to lake level (6,200 feet msl) (SH&G 2004b:11–12). Floods of moderate magnitude may result from spring snowmelt events, rainstorms, or rain-on-snow events. Flow from spring snowmelt tends to be less extreme because the snowpack melts gradually over the watershed's various elevation zones. Summer thunderstorms in the Tahoe Basin are common and can be intense, but they are typically brief and cover only small portions of the watershed. They rarely produce substantial flooding or flood hazards in the vicinity of the study area (USACE 1999).

Statistical analysis of recorded streamflow is typically used to characterize various flood events. At least two sets of flood statistics were developed for the Upper Truckee River within the study area, using available data from the USGS gauges near Meyers (#103366092 and #10336600) and standard methods (Table 3.3-2) (SH&G 2004a:III-7, SWC 2007:10–11). The two studies produced estimates of the statistical frequency (expressed as return interval in years) for associated peak streamflow magnitudes (expressed in cfs). The values generated by statistical analysis represent the anticipated Upper Truckee River streamflow at the study area over the life of the project, if watershed hydrology remains similar to the last 40 years. High-magnitude, low-frequency flooding events (e.g., 25-year and 100-year recurrence interval events) have the potential to inundate large areas of the golf course, including areas near the clubhouse and a few residences along Sawmill Road, and are of concern for flood hazard analysis. Low magnitude, high frequency events (e.g., 1.5-year recurrence interval) are mostly of concern relative to optimizing channel design dimensions for geomorphic stability and overbanking processes. They are not critical for flood hazard analysis.

Table 3.3-2
Upper Truckee River Flood Frequency Analyses

	Instantaneous Peak Flow (cfs)			Average Daily Flow (cfs)		
Return Period	SH&G 2004	SWC 2007	Difference	SH&G 2004 >200 cfs	SWC 2007 >373 cfs	Difference
(years)	Annual Series			Partial-Duration Series		
1.5	502	537	7%	336	492	32%
10	1,950	1,937	-1%	1,120	1,034	-8%
50	3,780	3,713	-2%	2,250	1,611	-40%
100	4,830	4,720	-2%	2,960	1,916	-54%
n	39	41		129	67	

Notes: cfs = cubic feet per second; n = number of events
Sources: SH&G 2004b, SWC 2007

Instantaneous peak flows were analyzed using the Annual Series (the single maximum instantaneous value for any given water year), for slightly different periods of record (i.e., n of 41 versus 39). The estimated instantaneous peak flow magnitudes using the annual series are similar in both studies, as demonstrated by the small percent difference in results across the range of return periods.

Average daily flows calculated from streamflow collected at 15-minute intervals were analyzed using the Partial Duration Series approach, which includes all average daily flows during a given year above a particular threshold value. The results of this method are sensitive to the selected threshold value, which was 200 cfs for the SH&G analysis and 373 cfs for the Sound Watershed Consulting (SWC) analysis. Because the SWC analysis excluded flows between 200 and 373 cfs, their results for the most frequent (smallest magnitude) events are skewed toward higher values. For example, the SH&G analysis suggests the 1.5-year streamflow is 336 cfs, while the SWC analysis indicates it as 492 cfs. The cited partial duration series include both rain-on-snow and snowmelt flows, since they have similar flood hazard importance. Sorted statistical analysis of rain-on-snow versus snowmelt streamflows is useful in understanding the relatively large geomorphic role that less frequent rain-on-snow events have on channel form and function.

SH&G conducted hydraulic modeling of existing conditions within the study area in the HEC RAS computer program, using the peak flows shown in Table 3.3-3 (SH&G 2004b:11). The peak flows used in the flood model vary slightly from, but are within the range of, the statistical values described above (Table 3.3-2). Cross sections used in the flood model were developed from a 1-foot LIDAR contour map using HEC-GeoRAS (SH&G 2004b:11). The model covered the area between the U.S. 50 crossing at Elks Club Drive (beginning roughly 82 feet downstream of the bridge crossing) to just upstream of the Lake Tahoe Golf Course hole 6 bridge. The modeled reach was roughly 8,000 feet in total length and incorporated California Department of Transportation (Caltrans) as-built plans for the U.S. 50 bridge geometry.

Table 3.3-3
Peak Flows Used in the SH&G HEC RAS Models

Recurrence Event	Flow (cfs)
1.5-year	370
5-year	1,171
10-year	1,828
50-year	3,415
100-year	6,183

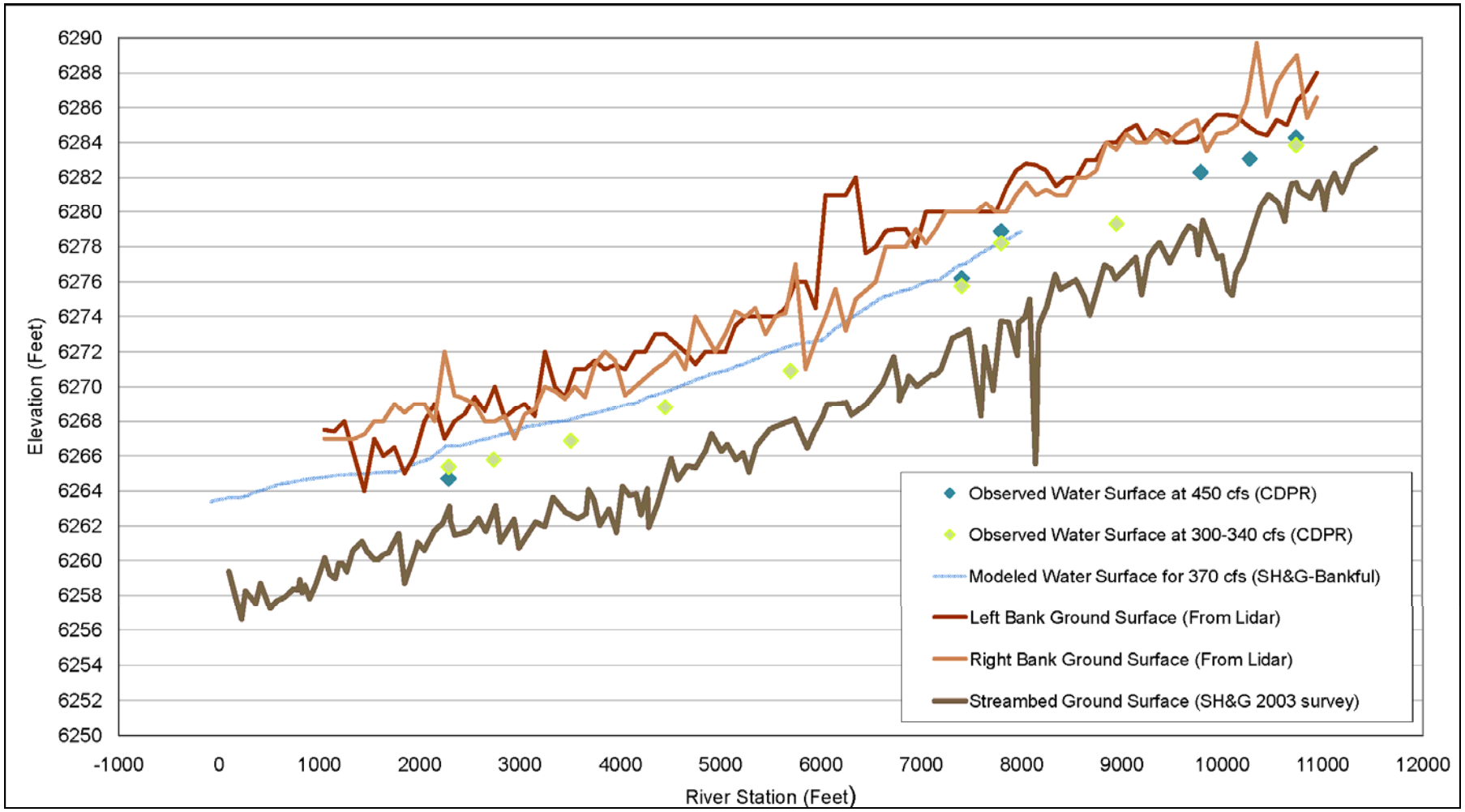
Source: Data compiled by VM Consulting in 2009

Overbanking and Active Floodplain

Under existing conditions, Upper Truckee River overbank flooding is limited within the study area, and the active floodplain is relatively narrow except near the confluence of Angora Creek where the floodplain is shared (Exhibit 2-3). Field observations of Upper Truckee River water levels by State Parks staff members during streamflow events and modeled Upper Truckee River water levels under particular streamflows by SH&G (2004a) provide information to describe the extent and location of overbanking in the study area (Exhibits 3.3-11 and 3.3-12).

Functional alluvial streams under snowmelt hydrology typically experience overbanking nearly every year, often expressed as the 1.5-year recurrence interval streamflow, or the geomorphic bankfull flow. The 1.5-year streamflow for the study area has been estimated by various studies as ranging between 370 and 500 cfs (see Tables 3.3-2 and 3.3-3).

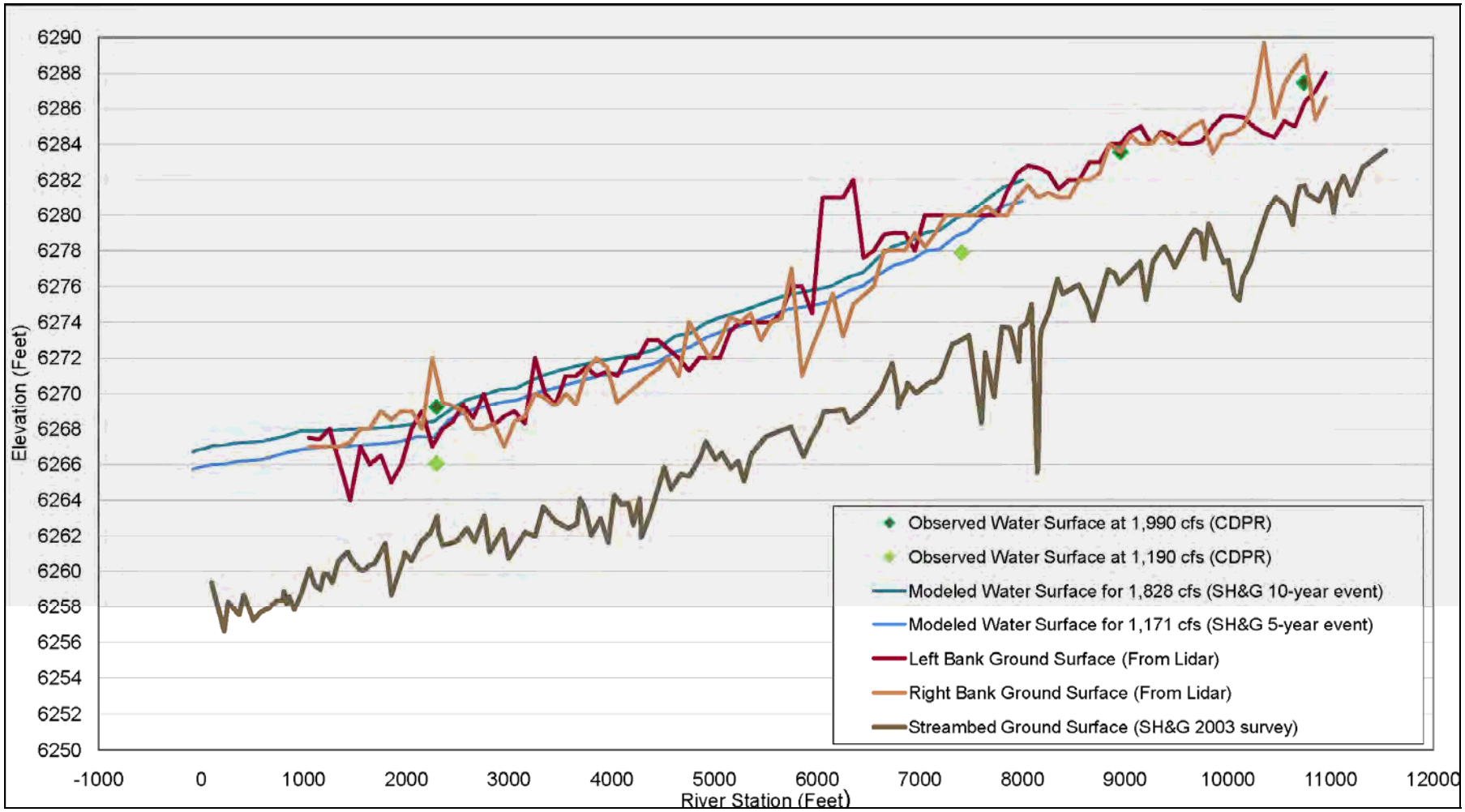
For small, frequent streamflows around 300–450 cfs (from a little less than to the mid-range of the estimates for the 1.5-year event and/or the natural geomorphic bankfull), available hydraulic modeling and field observations indicate that the Upper Truckee River water surface remains well below the existing streambanks throughout nearly all of the study area (Exhibit 3.3-11). This is because the channel is incised, with enlarged width and depth.



Source: SH&G 2004b, data from State Parks

Observed and Modeled Water Surface Elevations in the Project Reach of the Upper Truckee River for Frequent Streamflows near Natural Geomorphic Bankfull (300–450 cfs)

Exhibit 3.3-11



Source: SH&G 2004b, data from State Parks

Observed and Modeled Water Surface Elevations in the Project Reach of the Upper Truckee River for the 5-Year to 10-Year Peak Streamflow Events (1,171–1,990 cfs)

Exhibit 3.3-12

None of the observed water surfaces reach top of bank. The modeled water surfaces reach top of bank only in a couple of isolated locations: at the left bank near RS 1500 to 2000 and on the right bank near RS 3000 and RSs 5800–6300. SH&G (SH&G 2004a:III-28) estimated that more than 800–1,200 cfs would be needed to create overbanking, which greatly exceeds the 1.5-year peak flow. Field observations of a low, discontinuous, vegetated floodplain surface at an elevation associated with flows on the order of 350–450 cfs (SH&G 2004a, River Run Consulting 2006) support a conclusion that the geomorphic bankfull flow overbanks only in the main incised channel onto the narrow inset floodplain between terrace banks and not onto former floodplain on the main valley floor. The enlarged channel capacity and high banks prevent overbanking at flow magnitudes that would reach the top of bank in a functional channel, thus floodplain function along the Upper Truckee River within the study area is degraded.

SH&G initially estimated the existing channel capacity at three sites in the study area as roughly 600–800 cfs (SH&G 2004a:III-28), which implies that overbanking might occur approximately every 2–4 years. However, for streamflows that approximate the 5-year event, the modeled Upper Truckee River water surface (at 1,171 cfs) is above banks in several locations, but the observed water surface (at 1,190 cfs) was not above banks and the modeled surface is still confined by high streambanks along much of the reach (Exhibit 3.3-12). The modeled water surface for the 5-year event exceeds the top-of-bank elevation in much of Reach 2 and several portions of Reach 1, although it is below the bank in Reach 3. However, the modeled surface overestimates the water elevation relative to the observed water surfaces, as the water is observed to remain confined within the terrace banks relative to the model estimates. Overbanking would be expected throughout the entire study area for a 5-year event if the floodplain and channel connection was functional.

For streamflows that approximate the 10-year event, the modeled Upper Truckee River water surface (at 1,828 cfs) is above banks for several subreaches, but the observed water surface (at 1,990 cfs) is not consistently above banks and the modeled surface is confined by high streambanks in a few locations (Exhibit 3.3-12). Overbanking would be expected throughout the reach for a 10-year event if the floodplain and channel connection was functional. The channel capacity of the existing enlarged channel appears to limit overbank flows throughout most of the study area to events with peak flow magnitudes between the 5- and 10-year events (e.g., approximately 1,500 cfs). This is a substantially degraded condition relative to a stable functioning stream channel that would overbank every year or two.

Bridge Effects

The Upper Truckee River bridge at U.S. 50 near Elks Club Drive constricts the flow of the river through the study area, producing a high-velocity scour effect under the bridge and a low-velocity backwater and sedimentation effect upstream of the bridge. The results of hydraulic modeling indicate that the bridge strongly controls water surface elevations for a distance of up to 2,500 feet upstream when flows are greater than the 10-year event (SH&G 2004b:11). The bridge backwater effect is evident in the field during high flows and is further indicated by the remaining large sediment bars near the upstream end of the backwater effect (SH&G 2004b:11).

Historically, the U.S. 50 crossing of the Upper Truckee River has had various locations, orientations, widths, and lengths, resulting in a range of effects on the river. The original bridge was built in 1936. Scour problems along the north abutment were reported first in August 1954, and riprap was placed in June 1959. Scour was reported around both piers in 1963, and the channel was further modified and graded at the time of a bridge widening in 1969 (Stantec Consulting 2006:1.1). The bridge was again widened in 1995 to the present deck width of 55.5 feet and span of 161.5 feet, with supports skewed 11 degrees to improve their alignment to channel flow (Stantec Consulting 2006:1.1).

The 1991 hydraulic analysis for design of the 1995 bridge replacement used a 100-year flow of 5,200 cfs and called for the soffit (i.e., underside of the bridge deck) elevation to be 6,268.77 feet, to leave sufficient freeboard above the modeled 100-year water surface of 6,266.9 feet (Stantec Consulting 2006:1.1). The design modeling for the bridge replacement estimated the 100-year water surface elevation lower than FEMA's modeled 100-year water surface elevation of 6,269.5 feet in the same general area.

A more recent hydraulic analysis of the same location was conducted in support of a proposed bicycle and pedestrian bridge (i.e., the Sawmill Bike Path Project). The same flows developed for the previous Caltrans study were used, a 50-year flow of 4,565 cfs and 100-year flow of 5,677 cfs; and the resulting water surface elevations were 6,266.74 and 6,267.66 feet, respectively (Stantec Consulting 2006:E.1). The water surface elevation for the 100-year flood, as modeled for bridge design, was slightly lower than the 6,269.5-foot FEMA estimate.

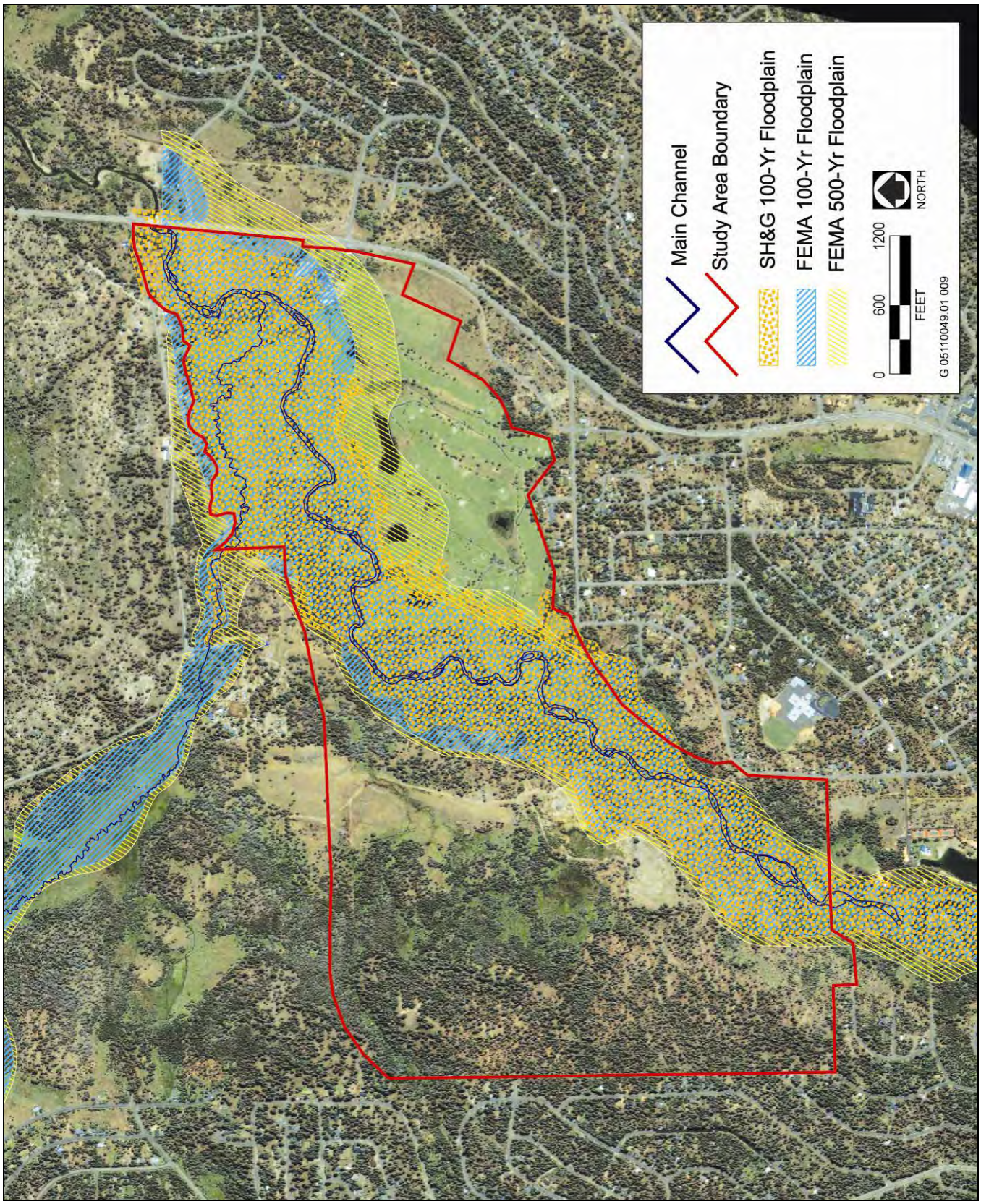
In addition to the U.S. 50 bridge at Elks Club Drive, five smaller golf cart bridges cross the Upper Truckee River within the study area. These bridges are generally undersized and restrict flood flow capacity, raising water levels upstream of each bridge. The undersized bridges also cause local channel erosion, which has necessitated extensive maintenance (River Run Consulting 2006:19). The bridges at holes 6 and 7 have caused the most serious problems, and several channel protection measures have been implemented over the years in response to damaging erosion and infrastructure threats. Flood events have damaged irrigation supply lines attached to golf course bridges (Stanowski, pers. comm., 2008). The treatments have been localized measures and primarily restricted to bank protection. They have not alleviated long-term or areawide flood affects. Hydraulic analysis of the golf course bridges has been conducted as part of preliminary project alternatives studies (SH&G 2004c). The existing hole 6 bridge is 45 feet long, and the hole 7 bridge is 75 feet long (it was replaced in the mid-1990s). Both are undersized and contribute to local downstream scour and bed and bank instability. The hole 6 bridge causes significant upstream backwater and functions as a grade control (SH&G 2004c:9).

Flood Hazards

Hazardous flooding that may affect structures, infrastructure, or persons is typically limited to relatively large events, with a regulatory focus on major flooding associated with the 100-year event. Although infrequent, the larger rain-on-snow flood events occur often enough to have significant geomorphic consequences. Large rain-on-snow flood events occurred on the Upper Truckee River in 1955, 1963, 1965, and 1997 (River Run Consulting 2006:10). The January 1, 1997, rain-on-snow event rapidly melted the snow (SH&G 2004a: III-2) and produced a record peak flow of 5,120 cfs. This flow was 70 times the average annual streamflow at the Meyers gauge (USGS #103366092) and resulted in substantial bank erosion and channel incision in many areas along the Upper Truckee River.

Past actions along the Upper Truckee River corridor have modified the 100-year floodplain boundaries, storage capacity, and/or flow directions, including: placement of fill for road crossings and other transportation facilities (e.g., U.S. 50 road fills, City Airport); placement of fill and/or structures for residential, commercial, or other uses (e.g., Tahoe Island area, Elks Club, Grocery Outlet, Carrows); and/or removal of floodplain area by levee protection for residential, commercial, or other uses (e.g., Tahoe Keys). These actions occurred primarily several decades ago, before regulations regarding floodplain management. However, the result of historic actions has been to degrade the 100-year floodplain storage capacity and flow routes relative to natural conditions. Floodplain capacity and flow routes in specific reaches may affect those in adjacent reaches, and for the 100-year event these effects have influences in both upstream and downstream directions.

A substantial portion of the study area, mostly along the Upper Truckee River and Angora Creek corridors and through sections of the golf course, is within the FEMA 100-year floodplain, as shown by the recently updated FEMA September 2008 FIRMs (Panels 06017C0632E and 06017C0369E) (FEMA 2008) (Exhibit 3.3-13). Because most of the study area is used as a golf course, there are minimal structures, with the exception of the golf course bridges, within the 100-year floodplain. Within and adjacent to the northeastern end of the study area, a few homes and structures are located along the south side of Sawmill Road, within the 100-year FEMA floodplain. According to the recent 2008 FEMA map, a portion of the golf course clubhouse on the northwest end is located within the periphery of the FEMA 100-year floodplain. An engineer's drawing prepared during the time the golf course clubhouse was being proposed showed the 100-year flood boundary elevation as 6,272 feet National Geodetic Vertical Datum (NGVD) and delineated its location in reference to the proposed building footprint using the 1983 FEMA map (Haen, pers. comm., 1991). Given that the 100-year base flood elevations are very similar between the 1983 and 2008 FEMA maps once the conversion from NGVD to North American Vertical Datum (NAVD) 88 is



Source: SH&G 2004b, FEMA 2008

Modeled and Regulatory 100-Year Floodplain in the Study Area **Exhibit 3.3-13**

done, it is likely this same condition still holds true. With clubhouse finished floor elevations in the areas of interest at approximately 6273.8 feet (assuming NGVD), it appears that the building elevations remain above the 6,272 feet NGVD floodplain elevation, as accepted at the time of clubhouse project approval.

The SH&G modeling of the 100-year flood boundary is similar to the FEMA modeled floodplain (Exhibit 3.3-13), with some discrepancies along the edges, likely due to greater accuracy afforded by using the detailed LIDAR topography. For example, the FEMA 100-year floodplain covers a slightly wider section in the northeast section of the study area, whereas the SH&G-modeled 100-year floodplain includes additional area to the south in the more central portion of the study area. A much smaller section of the clubhouse is within the SH&G-modeled 100-year floodplain, as on the 2008 FEMA FIRM.

The FEMA base flood elevations in the study area range from approximately 6,270 feet NGVD (6,274 feet NAVD) roughly 150 feet upstream of the U.S. 50 crossing, to approximately 6,280 feet NGVD (6,284 feet NAVD) 6,500 feet upstream. Where the FEMA 100-year and SH&G-modeled 100-year flood areas overlap, the SH&G 100-year elevations are similar to the FEMA elevations (i.e., within approximately 1 foot).

Water Supply and Use

Water supply for the clubhouse, maintenance facilities, and all other potable uses in the study area is provided for fee by the South Tahoe Public Utility District. Only nonpotable uses are supplied from local surface water and groundwater sources (Stanowski, pers. comm., 2008).

Historically, a riparian surface water diversion (DWR #S015849) located near RS 2200 has been the primary source of golf course irrigation water. Only the first nine holes were irrigated during the first 5 years after construction; however, the entire 18-hole course has been irrigated for the past 43 years (Stanowski, pers. comm., 2008). The existing golf course has a total irrigated area of 119 acres, including 96 acres of intensively managed landscape areas (Table 3.3-4) and 23 acres of minimally managed landscape that receives irrigation more regularly than under the ideal definition due to the existing system conditions.

Table 3.3-4
Irrigated Areas at Lake Tahoe Golf Course

Landscaped Area*	Total (acres)
Intensively Managed	96
Minimally Managed*	23
Naturalized*	7
TOTAL	126

Note: * Intensively Managed areas include tees, greens, fairways, driving range, lawn, and rough. Minimally managed and naturalized areas are inadvertently overirrigated compared to their ideal management (as defined in Chapter 2) because of the existing irrigation system equipment.
Source: Data provided by State Parks in 2009

Channel conditions and shallow flow depths in the river have rendered surface water diversion difficult. During drought and/or some dry-season situations, a submersible pump is used to pull water from the Upper Truckee River during the day for temporary storage in the largest golf course pond (hole 9 pond) for irrigation distribution overnight (Stanowski, pers. comm., 2008). Non-potable water use, and therefore the quantity diverted from the Upper Truckee River, has not been documented historically. The maximum capacity of the existing submersible pump rate is 1,000 gallons per minute (gpm). Recent irrigation practices range from as early as 6 p.m. to as late as 10 a.m. (16 hours per day), which would equate to a maximum daily irrigation use of 960,000 gallons per day (approximately 2.95 acre-feet per day).

The irrigation system on the existing course is a combination of old pipes and lines that have been patched, repaired, and replaced as needed over the years (Stanowski, pers. comm., 2008). Irrigation lines within the front-nine greens have been repaired and replaced during the past decade; however, the remaining areas still have older lines with lower effectiveness and efficiency. Irrigation heads spray water a full 360 degrees with 90 foot throw distance, making it difficult to target water application (Walck, pers. comm.., 2009). Despite some of the system deficiencies, modern irrigation control and soil moisture monitoring are performed to help conserve water on the course (Lake Tahoe Golf Course and Restaurant 2000).

American Golf Corporation is developing an alternative irrigation supply using an on-site well. The intent would be to increase flexibility and maximum capacity while reducing the need to draw from the river under low-flow conditions. As of October 2008, the groundwater supply has been tested, and began operation during the 2009 irrigation season. Test yields of approximately 400 gpm have been typical, with a maximum of 600 gpm. The desired yield would be in the range of 450–500 gpm (Stanowski, pers. comm., 2008).

3.3.2 ENVIRONMENTAL CONSEQUENCES

SIGNIFICANCE CRITERIA

For this analysis, significance criteria are based on the checklist presented in Appendix G of the State CEQA Guidelines; the TRPA Initial Environmental Checklist; factual or scientific information and data; and regulatory standards of Federal, State, and local agencies. These criteria also encompass the factors taken into account under NEPA to determine the significance of an action in terms of the context and intensity of its effects. In development of mitigation measures for significant impacts of the project, effects on environmental threshold carrying capacities (thresholds) of the Tahoe Regional Planning Compact were considered. The project's effects on thresholds are further described in Chapter 4, Section 4.6, "Consequences for Environmental Threshold Carrying Capacities."

CEQA Criteria

Under CEQA, an alternative was determined to result in a significant impact related to hydrology if it would:

- substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted);
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on-or off-site;
- create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- place housing within a 100-year flood hazard area as mapped on a Federal flood hazard boundary or FIRM or other flood hazard delineation map;
- place within a 100-year flood hazard area structures that would impede or redirect flood flows;

- expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or

- expose people or structures to a significant risk of inundation by seiche, tsunami, or mudflow.

NEPA Criteria

An environmental document prepared to comply with NEPA must consider the context and intensity of the environmental effects that would be caused by or result from the proposed action. Under NEPA, the significance of an effect is used solely to determine whether an EIS must be prepared. The factors that are taken into account under NEPA to determine the significance of an action in terms of the context and the intensity of its effects are encompassed by the CEQA criteria used for this analysis.

TRPA Criteria

Based on TRPA's Initial Environmental Checklist, an alternative would result in a significant impact for hydrology and flooding if it would result in any of the following:

- changes in currents, or the course or direction of water movements;

- changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff so that a 20-year, 1-hour storm runoff (approximately 1 inch per hour) cannot be contained on the site;

- alterations to the course or flow of 100-year flood waters;

- change in the amount of surface water in any water body;

- alteration of the direction or rate of flow of groundwater;

- change in the quantity of groundwater, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations;

- substantial reduction in the amount of water otherwise available for public water supplies; or

- exposure of people or property to water-related hazards such as flooding and/or wave action from 100-year storm occurrence or seiches.

METHODS AND ASSUMPTIONS

The impact analysis examines the effects of each alternative over the short term and long term for each of the issues and topics listed above. Short-term effects are defined as those that would be temporary. Short-term, temporary effects are those that could occur over hours, days, or weeks during the active construction phase. In addition, the river system is expected to experience adjustments after construction, so the short-term, temporary analysis also looks at interim effects that might occur during the first few years after construction, assuming that streamflows are at least average, or until the first moderately large flood event (approximately 10-year peak flow).

The impact analysis has been performed using a combination of quantitative and qualitative methods. The analysis was performed by a hydrologist/geomorphologist and civil engineer experienced in river restoration in general and the Tahoe Basin environment, specifically. Information for the project site and vicinity and professional experience on similar projects was referenced and has been incorporated into the analysis of the river system history, existing conditions, likely future conditions, and conditions expected under each action alternative.

The results of hydraulic modeling of the study area and the initial alternatives, completed by SH&G, are incorporated into this impact analysis (SH&G 2004b). The hydraulic modeling by SH&G provides information about water surface elevations, boundaries of the inundation area, flow depths, and average velocity, allowing a comparison between existing conditions and a restored-channel alternative. The SH&G restoration alternative (SH&G Alternative # 4) assumed a longer, smaller channel and higher bed elevation than that proposed for this project under Alternatives 2, 3, and 5, but would have similar floodplain connectivity and overall design. Therefore, SH&G's modeling for the restoration alternative provides a conservative estimate of possible flood hazards from the proposed Alternatives 2, 3, and 5. The analysis of existing conditions conducted by SH&G is directly applicable to the analysis of existing conditions in this EIR/EIS/EIS; it also provides a suitable representation of flooding conditions under Alternative 4 because the river would remain in the present alignment, size, and elevation.

Effects of climate change on future hydrology are incorporated into the evaluation of the No Project/No Action Alternative (Alternative 1). However, even the most geographically and temporally focused available forecasts of climate change effects on hydrologic parameters (Tetra Tech 2007) are relatively variable and substantially uncertain. Therefore, the possible influences of various climate change scenarios, not just the core/central scenario, are considered in this analysis. The statements are expressed only in qualitative terms because of the degree of uncertainty and because the influences vary by scenario.

IMPACTS FOUND TO BE LESS THAN SIGNIFICANT AND NOT DISCUSSED FURTHER

Housing within a 100-Year Flood Hazard Area—The proposed alternatives would not place any new housing or buildings within the existing FEMA flood hazard area; therefore, no impact related to placing housing within a 100-year flood hazard area would occur.

Failure of a Levee or Dam—The study area is not within an identified dam-failure inundation zone or near any constructed levees; therefore, no flood hazard related to failure of a levee or dam would occur. Other possible changes related to flooding are fully discussed below.

Tsunami, Landslide, or Mudflow Risks—The study area is inland and in mountainous terrain remote from marine sources of tsunami hazards, and in an area without landslide/mudflow risks. Further, the site is located several miles from the shoreline of Lake Tahoe and at a high enough elevation to be protected from the possibility of seiche waves from the lake.

Short-Term Dewatering of Surface Water Features—Major construction activities would require temporary dewatering or bypassing of work areas along the Upper Truckee River, Angora Creek, and the unnamed creek. Although these activities may result in temporary changes to the amount of water in the surface water features of the study area, they would not result in any long-term changes to surface water. Hydrologic effects would be less than significant. Temporary dewatering and water diversion effects on biological resources are discussed in Section 3.5, "Biological Resources."

IMPACT ANALYSIS AND MITIGATION MEASURES

Alternative 1: No Project/No Action: Existing River and 18-Hole Regulation Golf Course

IMPACT 3.3-1 (Alt. 1) Long-Term Increase in Stormwater Runoff Volumes. *Implementing Alternative 1 would not modify the existing golf course footprint, increase the amount of impervious surface, or directly modify the existing channels of the creeks, drainages, or the Upper Truckee River in the study area. Therefore, stormwater drainage patterns would not change and the volume of stormwater runoff would not increase relative to the existing condition. No impact would occur.*

Runoff volumes and peak-flow magnitudes generated in the study area differ from natural conditions because of past direct actions and the hydrologic response to those actions. Changes to runoff volumes and peak-flow magnitudes relative to natural conditions have occurred historically within the study area and in contributing watersheds. Comstock logging and urban development created widespread direct disturbance of soils and vegetation coverage, increasing runoff volumes and peaks. However, the counteracting effects of fire suppression and second growth of forests have moderated these changes, at least in undeveloped portions of the watersheds. The net effect of the historical actions and watershed recovery has been to create runoff patterns that differ from patterns in the undisturbed watershed; however, it is uncertain whether there has been a net adverse impact, because no records exist of runoff and peak flows before the 1960s.

Several past actions have affected runoff generation within the study area: temporary and long-term placement of fill material (e.g., historic road crossings, golf course topography for tees and greens), logging, pasture management, grazing, and fire suppression. Along the margins of the study area, urban development has directly modified natural soils and vegetation, increasing the total volume and rates of peak flows entering the study area from the local drainages.

Alternative 1 would not modify runoff volumes or peak flows generated on the site, but the effects of climate change could allow existing adverse conditions to worsen. The effects of climate change would modify runoff volumes and peak flows; however, uncertainty exists about the change in precipitation, which could produce a range of runoff responses when combined with various projected temperatures. The core scenarios predicted indicate that runoff (mean flows) in fall and winter would increase, while runoff in spring and summer would decrease. Although mean flows and total annual runoff might be similar to or less than existing flows and runoff under most climate change scenarios, peak flows from rainstorms and rain-on-snow events could be similar to or larger than existing peak flows. Under Alternative 1, the historical increase in impervious surfaces (for detailed discussion of coverage, see Impact 3.6-3 (Alt. 1) in Section 3.6, “Earth Resources”) and degraded soil and vegetation cover, and the resulting runoff generation and peak-flow conditions would not be modified. Therefore, the existing degraded conditions related to runoff volumes and peak-flow magnitudes would continue under this alternative. There would be no impact.

No mitigation is required.

IMPACT 3.3-2 (Alt. 1) Long-Term Increase in Peak Flows Generated or Released Downstream. *Implementing Alternative 1 would not directly modify the peak flows generated within the study area or those released from the study area to downstream reaches of the Upper Truckee River. Natural channel adjustments to prior disturbances may eventually result in a minor reduction in peak flows released downstream during small to moderate floods. This impact would be* ***less than significant****.*

No increases in stormwater runoff volume would occur under Alternative 1 (Impact 3.3-1 [Alt. 1]), and the study area soils, vegetation, or stream channels would not be physically modified in a manner that would otherwise alter generation of peak flows. Therefore, no direct changes to the size of creeks and river channels in the study area would be made under Alternative 1. However, natural geomorphic trends suggest that under this alternative, the incised channel of the Upper Truckee River would continue to widen, with subsequent formation of inset floodplain in many areas of the project reach. Although this is limited in some areas by golf infrastructure, it might eventually provide some limited increased opportunity for overbank floodplain storage during small to moderate (1.5-year to 10-year) flood events, which could reduce the peak flow released downstream by a small but measureable amount. However, the surrounding terrace would not be reactivated as an enlarged active floodplain to facilitate more substantial reductions in peak flows released downstream. Additionally, little change in overbank floodplain storage during major peak-flow events (i.e., 25-year, 100-year events) would be expected under Alternative 1. Therefore, implementing this alternative would not result in an adverse increase in peak flows generated within the study area or discharged to downstream reaches of the Upper Truckee River. This impact would be less than significant.

No mitigation is required.

IMPACT 3.3-3 (Alt. 1) Long-Term Increase in Overbanking during Small to Moderate Flood Events. *Implementing Alternative 1 would not directly modify the size or configuration of the Upper Truckee River channel or floodplain within the study area. Natural channel adjustments to prior disturbances may eventually provide some limited opportunity for increased frequency of overbanking onto a small active floodplain inset within the incised channel. This impact would be* ***less than significant****.*

The size and configuration of stream channels and floodplain in the study area would not be physically modified under Alternative 1. However, natural geomorphic trends suggest that under this alternative, the incised Upper Truckee River channel would continue to widen, with subsequent formation of inset floodplain in many areas of the project reach. Although this is limited by golf infrastructure, it could slightly increase the opportunity for overbanking during small to moderate (1.5-year to 10-year) flood events. However, the inset floodplain would remain isolated within the incised channel, between high terrace banks. No increase in overbanking frequency or expanded active floodplain area would affect the surrounding terrace. Only minor beneficial changes relative to the existing, degraded floodplain function would result, and those changes would be realized only after many more years of channel adjustment to past disturbances. The area and location of the active floodplain would remain similar to the existing conditions (Exhibit 3.3-14). This impact would be less than significant.

No mitigation is required.

IMPACT 3.3-4 (Alt. 1) Long-Term Increase in the 100-Year Flood Hazard Area or Elevation. *Implementing Alternative 1 would not directly modify the existing channel (size, shape, or location) or floodplain surfaces, and would not place new impediments within the FEMA regulatory floodway or floodplain. This alternative would not include any elements that could change the extent or elevation of the 100-year special flood hazard area as designated by FEMA. This impact would be* ***less than significant****.*

The existing streambank stabilization treatments would not be directly modified under Alternative 1, but the banks would be repaired as needed in response to flood events to protect infrastructure, natural resources, or private property. The potential repairs or replacement of bank treatments are assumed to have approximately the same dimensions and characteristics as the existing treatments, and the repairs would not make a measurable change in the river channel's 100-year flow capacity or flow routes.

Under Alternative 1, the existing golf course bridges would not be replaced or relocated unless they are damaged by a flood or expected to fail. These undersized bridges, including the bridges by holes 6 and 7 (approximate RS 8200 and RS 7575), would continue to constrict flow during high flows, resulting in local streambed and streambank erosion. It is assumed that the channel would have either the same or more conveyance capacity if the bridges were repaired or replaced, and that bridge repair or replacement would not increase flow impediments or introduce new impediments. If these changes were to occur, they could locally modify the 100-year-flood water-surface elevation within the study area, but the downstream constriction at the U.S. 50 bridge would continue to limit the rate at which flood waters would be discharged downstream. This impact would be less than significant.

No mitigation is required.

IMPACT 3.3-5 (Alt. 1) Long-Term Modification of Groundwater Levels and Flow Patterns. *Implementing Alternative 1 would not directly modify the size, shape, or locations of existing creek and river channels; alter the size, elevation, or uses of existing golf course ponds; or change soils or subsurface conditions throughout the study area. Alternative 1 would not include any element that could change groundwater levels or flow patterns, but minor changes would occur as the degraded channel continues to widen. This impact would be* ***less than significant****.*

The study area's existing groundwater levels and flow patterns have been modified by direct disturbance to the channel, the channel's natural geomorphic response through incision and widening, and the creation and maintenance of surface ponds for irrigation and drainage on the golf course. The degraded channel conditions have lowered groundwater levels relative to natural conditions, at least in the corridor adjacent to the incised channel. The degraded channel condition has also increased the seasonal fluctuation of groundwater levels throughout the natural floodplain by reducing the amount of overbanking for surface water recharge and increasing discharge (gradients) to the river channel. Conversely, the constructed and managed golf course ponds have supported groundwater levels locally by providing sources of diverted surface water (and pumped deep groundwater) at specific locations. Because the physical characteristics of the ponds and their water management would remain similar to existing conditions under Alternative 1, this artificial support of groundwater levels on portions of the terrace surface would continue.

Under Alternative 1, as the channel's natural adjustments cause the channel to widen, an associated retreat of groundwater would occur along the incised river channel, with possible increased discharge (loss) to the river and therefore from the ponds. The mixed effects of channel adjustments to past degradation and artificial groundwater support by the golf course ponds would continue under Alternative 1. This impact would be less than significant.

No mitigation is required.

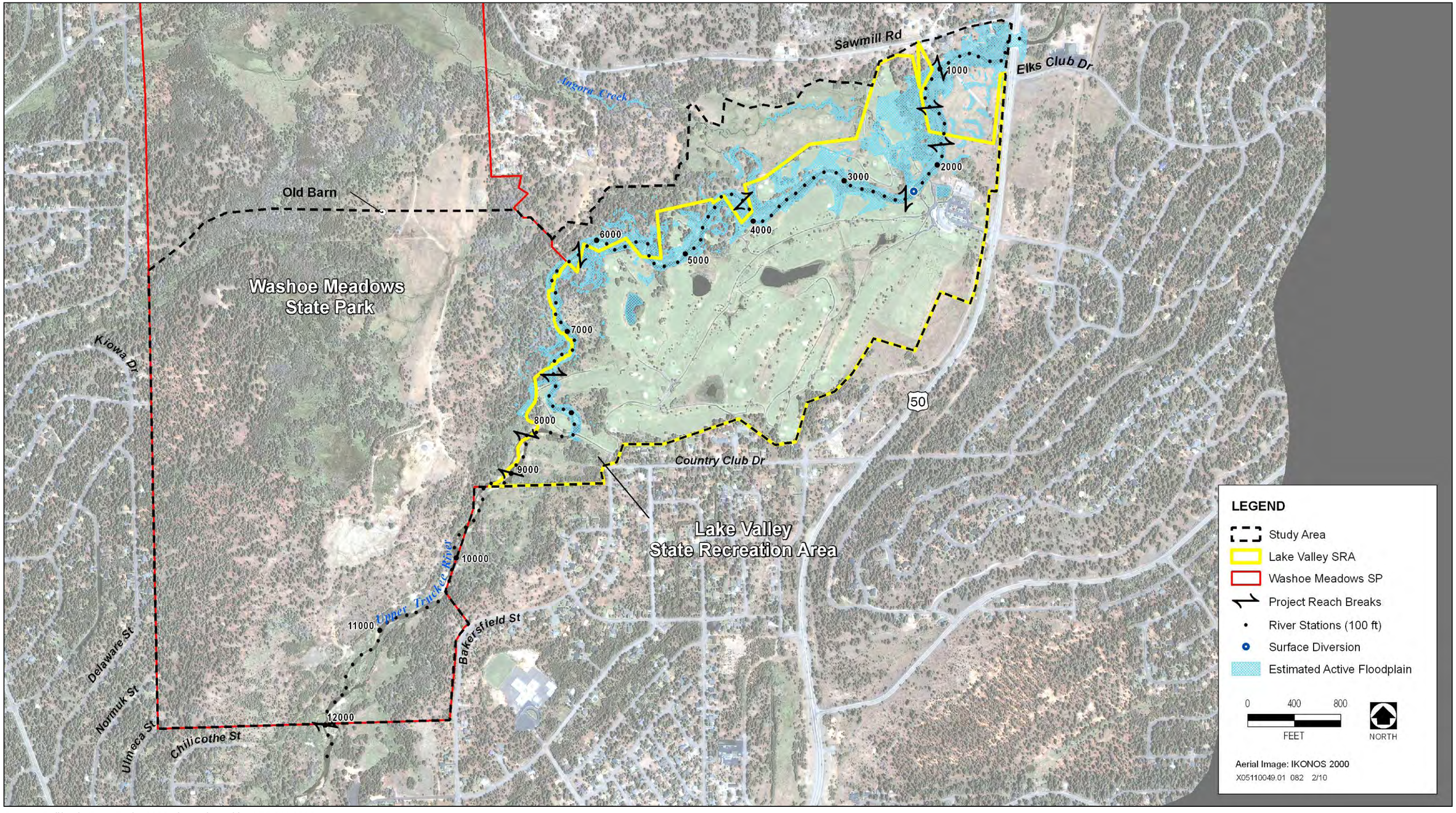
IMPACT 3.3-6 (Alt. 1) Long-Term Increase in Irrigation-Water Demand. *Implementing Alternative 1 would not directly modify the existing demand for irrigation water by land uses within the study area, nor would it modify the use of surface water from the Upper Truckee River or from on-site groundwater wells. Demand for irrigation water in the study area would remain similar to existing demand. This impact would be* ***less than significant****.*

Existing acreage of irrigated land and the irrigation system in the study area would not be directly modified under Alternative 1. As under existing conditions, about 103 acres of the total footprint would be "intensively" managed landscape, with regular irrigation (except for 7 acres of hard coverage); 23 acres would be "minimally" managed landscape, and 7 acres would be "naturalized" landscape under Alternative 1. These landscape management categories are defined and described in Chapter 2 of this draft EIR/EIS/EIS. Although the descriptions of these categories indicate that only the intensively managed areas would be irrigated regularly, deficiencies exist in the existing irrigation network's physical characteristics and operational system, which prevents optimized water application. Therefore, at least some of the minimally managed and naturalized areas receive overspray irrigation under existing conditions. Piecemeal repairs of the irrigation network over time might eventually improve efficiency and reduce inadvertent irrigation of some of these areas, but no quantitative information is available about the area or timing of such improvements. Water demand for irrigation would remain similar to existing demand. This impact would be less than significant.

No mitigation is required.

Alternative 2: River Ecosystem Restoration with Reconfigured 18-Hole Regulation Golf Course

IMPACT 3.3-1 (Alt. 2) Long-Term Increase in Stormwater Runoff Volumes. *Implementing Alternative 2 would modify the golf course footprint, relocate and modify the type of impervious surfaces (including a new restroom and paving of unpaved parking area), and directly modify the existing channels of the creeks, drainages, and the Upper Truckee River in the study area. Changes to stormwater drainage patterns may occur within the new golf course footprint and in the areas of existing golf course to be restored. Storm drainage systems would be installed and upgraded within the new golf course footprint to locally provide increased detention and infiltration of runoff. At the conceptual level of design, it is uncertain whether storm drainage system features would be sized and located appropriately to prevent an increase in the amount of stormwater runoff released to the river or creeks in the study area. This impact would be* ***potentially significant****.*



Source: California State Parks 2008, data adapted by AECOM 2010

Estimated Active Floodplain: Alternatives 1 and 4

Exhibit 3.3-14

Alternative 2 would relocate and modify the type of impervious surface in the study area, including relocation of hard coverage from SEZ to Land Class 5, and 1b more distal from the river, replacement of soft coverage with hard coverage, and result in net removal of coverage. Some specific locations with impervious surfaces would include a new restroom, cart paths, and paving of the existing overflow parking. The study-area wide benefits of reduced and relocated coverage are described under Impact 3.6-3 (Alt. 2) in Section 3.6, "Earth Resources". There would be an overall increase in footprint area, but coverage within 100 feet of the river would decrease. However, the specific hydrologic effects of the changes in coverage type and locations within particular sub-watersheds within the Washoe Meadows SP and Lake Valley SRA have not yet been calculated given the conceptual level of design. It is possible that the volume of stormwater runoff generated within certain portions of the study area would increase relative to existing conditions.

Alternative 2 would incorporate stormwater improvements/routing and detention basins as part of the landscaping within the new golf course footprint on the west side of the river; however, the layout, specific features, and performance standards for all of the stormwater system have not yet been determined. In general, the sizing, location, and design of features would be expected to meet regulatory standards enforced by the Lahontan RWQCB and TRPA. Because it is uncertain whether storm drainage system features would be sized and located appropriately to prevent an increase in the amount of stormwater runoff released to the river or creeks in the study area, this impact would be potentially significant.

Mitigation Measure 3.3-1 (Alt. 2): Provide On-Site Storm Drainage Facilities and Accompanying Stormwater Drainage Plan to Prevent Damage from Increased Runoff Discharged to Creek or River Channels.

Stormwater improvements shall be incorporated into the final detailed project design. Before issuance of grading permits, State Parks shall submit a detailed stormwater drainage plan to El Dorado County and TRPA for review and approval. The plan shall identify the locations, sizes, and types of facilities used to retain and treat the runoff volumes and peak flows. The detailed design shall meet the following minimum performance criteria:

- Stormwater facilities shall be installed in the sub-watershed of each existing natural drainages (e.g., swales, seeps, creeks) that will experience project-related changes to topographic, soil, and/or vegetation cover;
- Peak runoff discharge from the stormwater system to each of the existing natural drainage swales, creeks, or the Upper Truckee River shall be equal or less than pre-project conditions up to the 10-year event;
- Nuisance perennial discharge of excess irrigation water shall be prevented; and
- Where rerouting of drainages or point discharges from the stormwater facilities are necessary, those discharges shall be designed to prevent streambed or streambank erosion in the receiving water body.

The stormwater designs and drainage plan shall strive to incorporate BMPs where feasible, including but not limited to:

- pervious pavement or pavers,
- strategically placed bioswales and vegetated swales,
- constructed wetlands and detention ponds,
- rock- or boulder-lined areas to prevent disruption or erosion, and
- training of maintenance personnel on stormwater pollution prevention measures.

With the measure described above, the stormwater system would be expanded and improved to meet specific performance requirements. Therefore, with implementation of Mitigation Measure 3.3-1 (Alt. 2), Impact 3.3-1 (Alt. 2) would be less than significant.

IMPACT 3.3-2 (Alt. 2) **Long-Term Increase in Peak Flows Generated or Released Downstream.** *Implementing Alternative 2 has the potential to increase the peak flows generated within the portions of the study area where existing natural soils and vegetation would be converted to new impervious surfaces; however, the conceptual design includes stormwater detention features and expansion/upgrades to the stormwater system. In addition, the proposed modifications to the river channel and the enlarged active floodplain under Alternative 2 would result in a beneficial reduction in peak flows released to downstream reaches of the Upper Truckee River during small to moderate flood events. Major flood-peak flows released downstream would not be expected to change. This effect would be* ***beneficial****.*

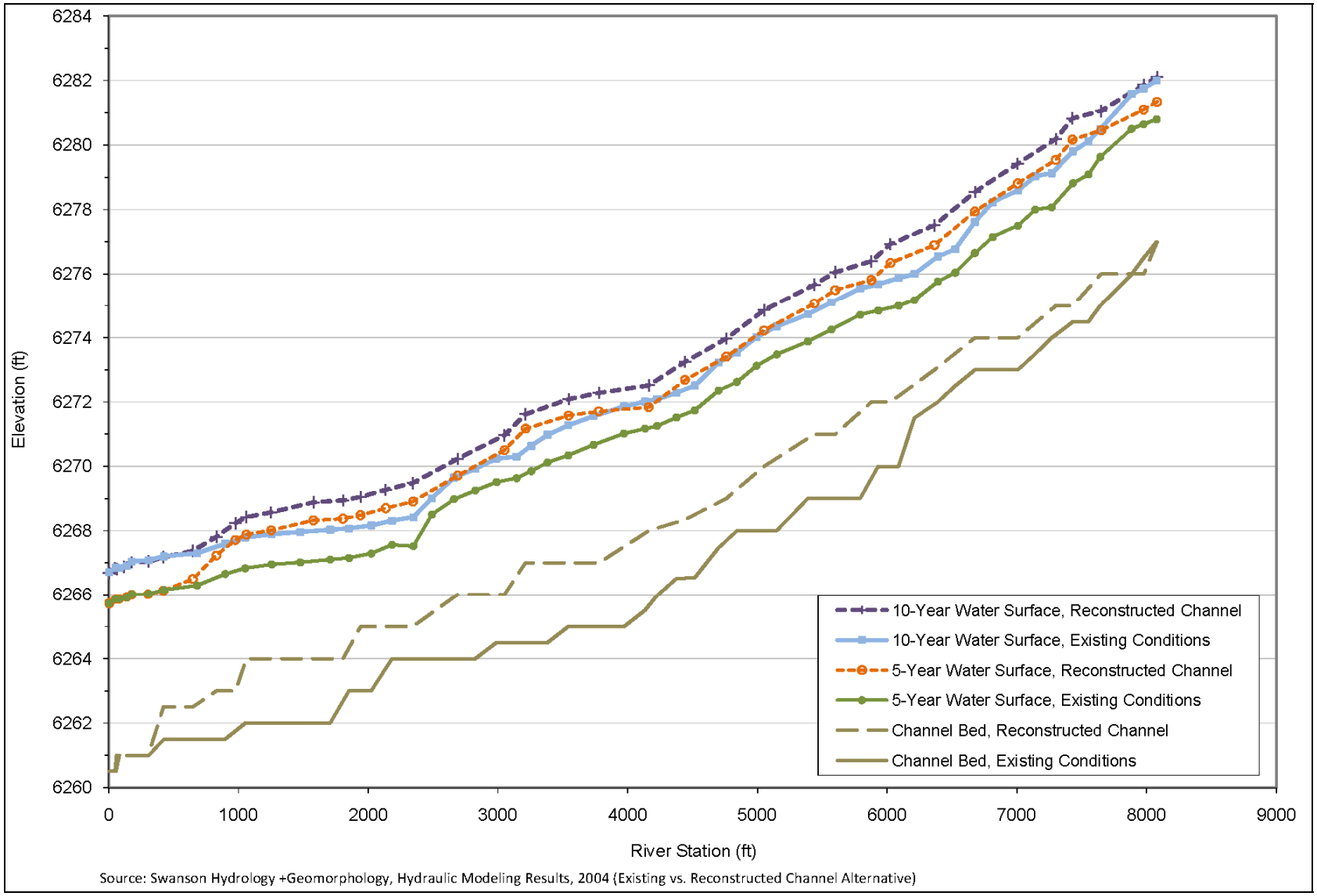
Under Alternative 2, generation of peak flows could increase within portions of the study area where existing natural soils and vegetation would be converted to new impervious surfaces, but stormwater drainage systems would be expanded and upgraded as part of the project and some existing impervious areas near the river would be restored. However, the project's conceptual-level design does not specify the size, location, or performance standards of the stormwater system for the new golf course, and unmitigated peak flows in some subbasins within the site might be greater than under existing conditions. The conceptual design does indicate that multiple stormwater ponds would be part of the proposed system, including a new pond on the west side of the river; therefore, it is expected that the final stormwater system would be able to detain and retain adequate runoff volumes to prevent increases in peak flows discharged to the creeks or river channels on-site. Implementing Mitigation Measure 3.3-1 (Alt. 2) as described above would also reduce the potential magnitude of a possible stormwater peak-flow effect within the site.

Of greater magnitude and importance for changes in peak flows are the beneficial changes to the stream channel's size and configuration and the enlargement of the active floodplain within the study area that would occur under Alternative 2. By increasing channel length (adding 1,590 feet), elevating the streambed 2–4 feet in many locations, and reducing channel capacity in a majority of reaches, implementation of Alternative 2 would increase opportunities for overbanking during small to moderate (2-year to 10-year) flood events. Along more than 9,000 feet of channel—the newly constructed sections, reconnected meanders, and modified existing channel—increased frequency of overbanking would be expected during small to moderate flood events. The improved floodplain connection would allow temporary spreading of peak flows entering the site from the upstream watershed and storage of a portion of the total flow. Under the restored channel conditions, the area inundated by the 5-year peak flow (i.e., the active floodplain) would increase from 36 acres to as much as 77 acres, and the area inundated by the 10-year flood would increase from 61 acres to as much as 99 acres (Exhibit 3.3-15). The volume of peak flows discharged from the site downstream along the river during small to moderate floods would be reduced because additional temporary storage would be available for shallow slow-moving water on the enlarged floodplain.

Implementing Alternative 2 would not modify the configuration or capacity of the U.S. 50 bridge across the Upper Truckee River. The bridge's restrictive effect on river flows discharged downstream during moderate to large events (e.g., 10-year to 100-year peaks) would not be modified. Therefore, peak flows released downstream during moderate to large flood events would not be expected to change. This effect would be beneficial.

No mitigation is required.

IMPACT 3.3-3 (Alt. 2) **Long-Term Increase in Overbanking during Small to Moderate Flood Events.** *Implementing Alternative 2 would directly modify the size and configuration of the Upper Truckee River channel within the study area to increase the frequency of overbanking onto portions of the surrounding terrace, thus enlarging the active floodplain. Natural channel adjustments would increase the frequency of overbanking onto a small active floodplain, inset within the sections of existing incised channel that would be retained as part of the active channel. This effect would be* ***beneficial****.*



Source: SH&G 2004b

Water Surface Profiles for the 5-Year and 10-Year Flood Events under the SH&G Restored-Channel Alternative versus Existing Conditions

Exhibit 3.3-15

The stream channel's size, configuration, and floodplain connection would be directly modified throughout the study area under Alternative 2. By increasing channel length (adding 1,590 feet), elevating the streambed by 2–4 feet in many locations, and reducing channel capacity in a majority of reaches, implementing Alternative 2 would increase opportunities for overbanking during small to moderate (2-year to 10-year) flood events. Along 9,000 feet of channel—the newly constructed sections, reconnected meanders, and modified existing channel is expected to provide increased frequency of overbanking during small to moderate flood events. As a best-case estimate, the restored-channel alternative modeled by SH&G (see "Methods and Assumptions") shows a detectable increase in water surface elevation, relative to existing conditions, that begins about 700 feet upstream of the U.S. 50 crossing at the Elks Club and extends throughout the project reaches (Exhibit 3.3-15).

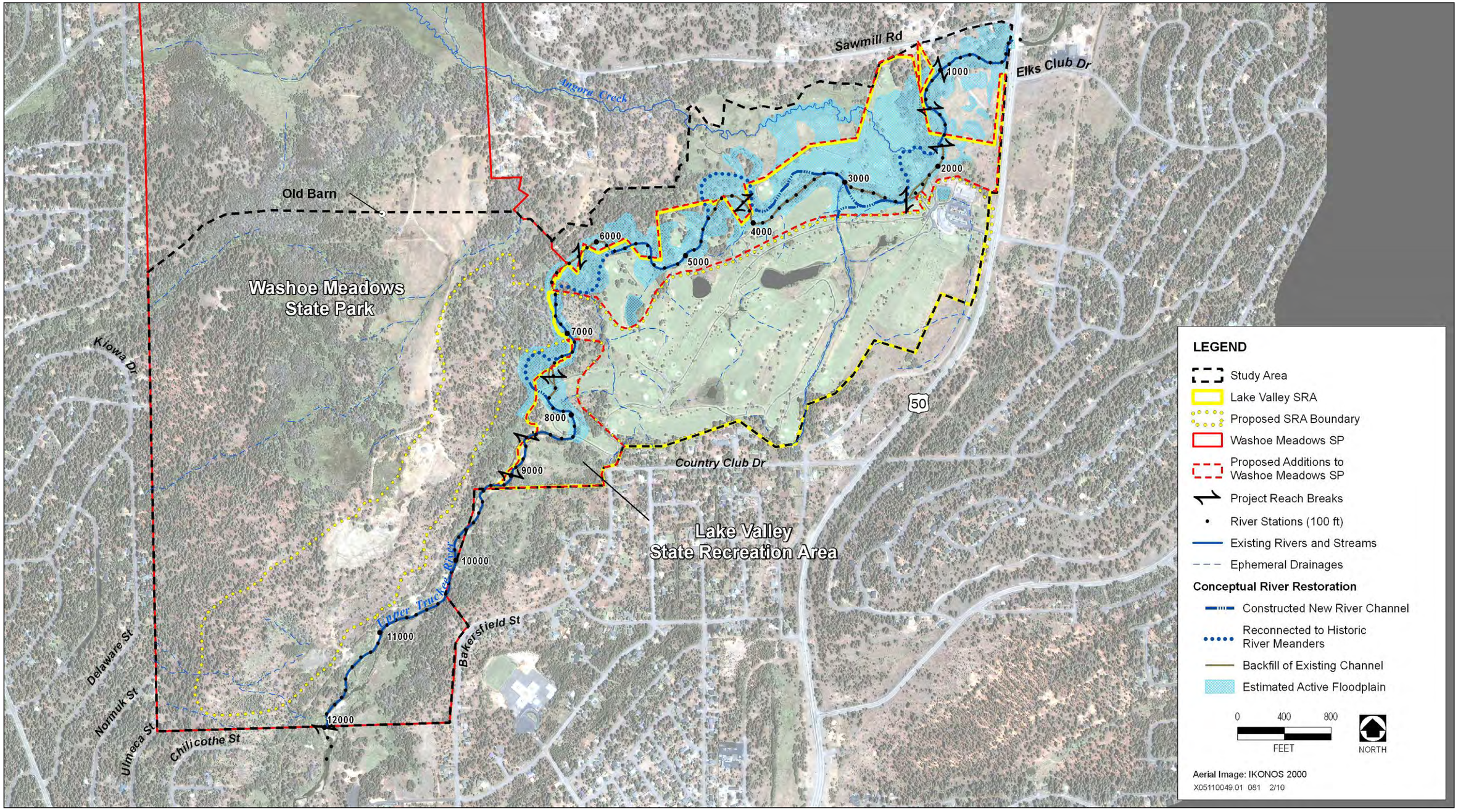
A substantial increase in water surface elevation of up to 1 or 2 feet along much of the restored channel could occur under the 10-year event under Alternative 2. The 5-year peak-flow water surface elevation could increase to approximately the level of the existing 10-year water surface elevation. Channel modifications in reconnected and constructed meanders, excavation of approximately 1.7 acres of inset floodplain, and subsequent adjustments to the natural channel throughout the project reaches would expand the active floodplain area by up to 41 acres for the 5-year peak flow (Exhibit 3.3-16) and the area inundated by the 10-year peak flow by 38 acres (Exhibit 3.3-17). These measurable, substantial beneficial increases in floodplain connectivity and function relative to the existing, degraded floodplain function would be realized on project completion. These changes would be beneficial relative to existing overbanking conditions, and Alternatives 1 and 4. This effect would be beneficial.

No mitigation is required.

IMPACT 3.3-4 (Alt. 2) **Long-Term Increase in the 100-Year Flood Hazard Area or Elevation.** *Implementing Alternative 2 would directly modify the size and configuration of the Upper Truckee River channel within the study area, which could allow the water surface elevation for the 100-year flood to increase or the boundary of the 100-year floodplain to expand. The expanded floodplain would be contained within open space areas and not include any residential areas. Nonetheless, because an increase in flood elevation and/or floodplain would occur, this impact would be* ***potentially significant****.*

The stream channel's size, configuration, and floodplain connection would be directly modified throughout the study area under Alternative 2. By increasing channel length (adding 1,590 feet), elevating the streambed by 2–4 feet in many locations, and reducing channel capacity in a majority of reaches, implementing Alternative 2 may increase the elevation of the water surface and/or the area inundated by large (i.e., 100-year) flood events. For this potentially hazardous risk, the results of the hydraulic modeling for the SH&G restored-channel alternative were used to provide a conservative estimate of the potential change. The smaller channel capacity (i.e., 370 cfs versus 550 cfs) and higher streambed profile assumed in the analysis of the SH&G restored-channel alternative serve to allow a worst-case estimate of potential changes to the 100-year flood elevation from Alternative 2.

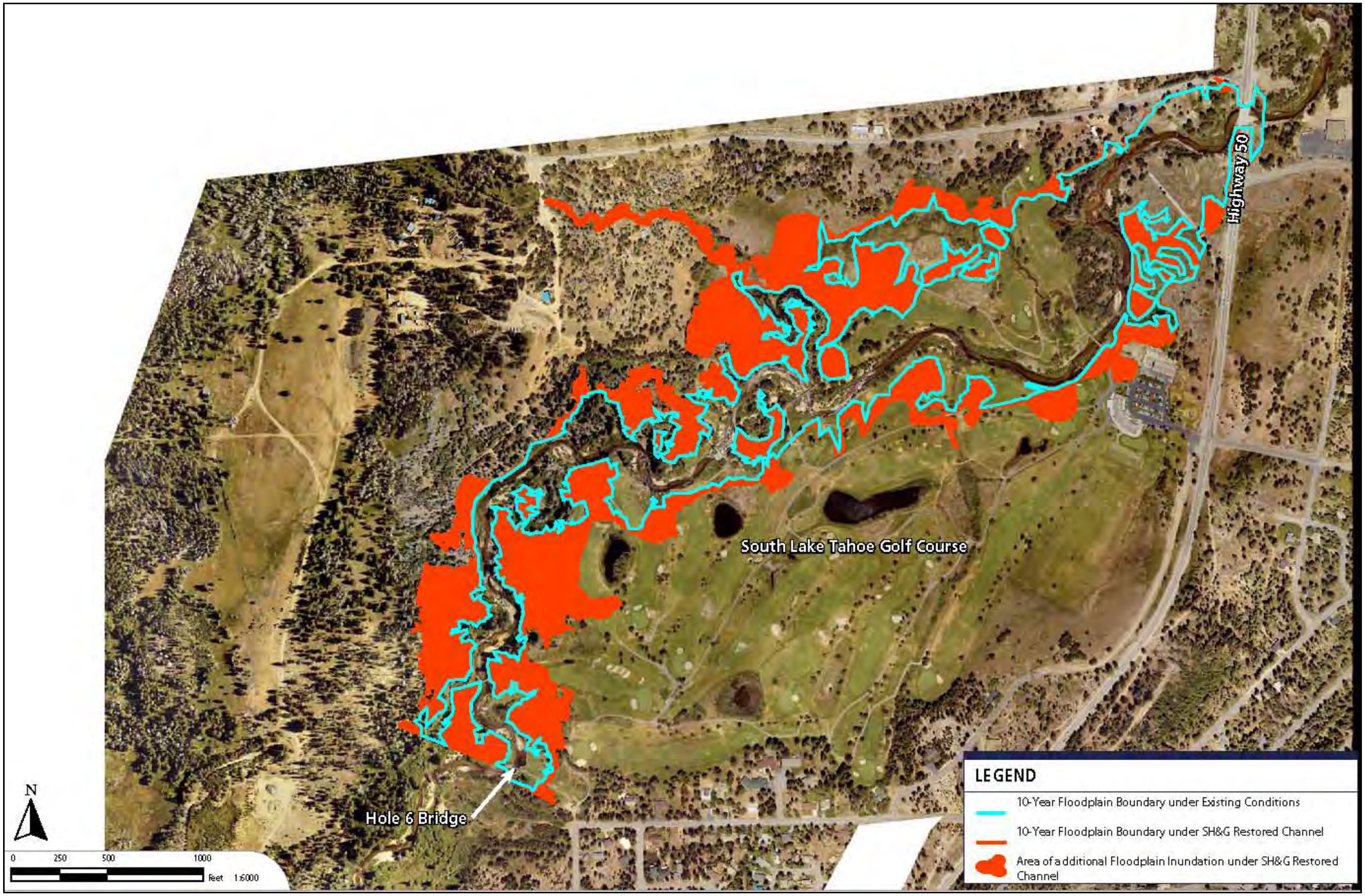
Under existing conditions, the broad valley of relatively level topography provides a large storage area for water from the 100-year flood event to disperse across the terraced surface, and the U.S. 50 bridge crossing by the Elks Club is a constriction that limits the rate of release downstream during major flood events. These factors would not change under Alternative 2, and there would be essentially no change in the margin of the 100-year floodplain along approximately 1,800 feet of the most downstream reach of the project (Exhibit 3.3-18). The channel modifications under Alternative 2 may, however, enlarge the boundaries of the 100-year floodplain farther upstream, primarily on the east edge within the present golf course and at a few locations along the west edge of the potential inundation area. The 100-year floodplain area could expand by as much as 39 acres. A comparison of the modeled water surface profiles (Exhibit 3.3-19) indicates that a detectable increase from the existing water surface profile may begin about 1,000 feet upstream of the U.S. 50 crossing at the Elks Club, and increase to more than 1 foot between about 3,000 feet and 7,000 feet upstream.



Source: California State Parks 2008, data adapted by AECOM 2010

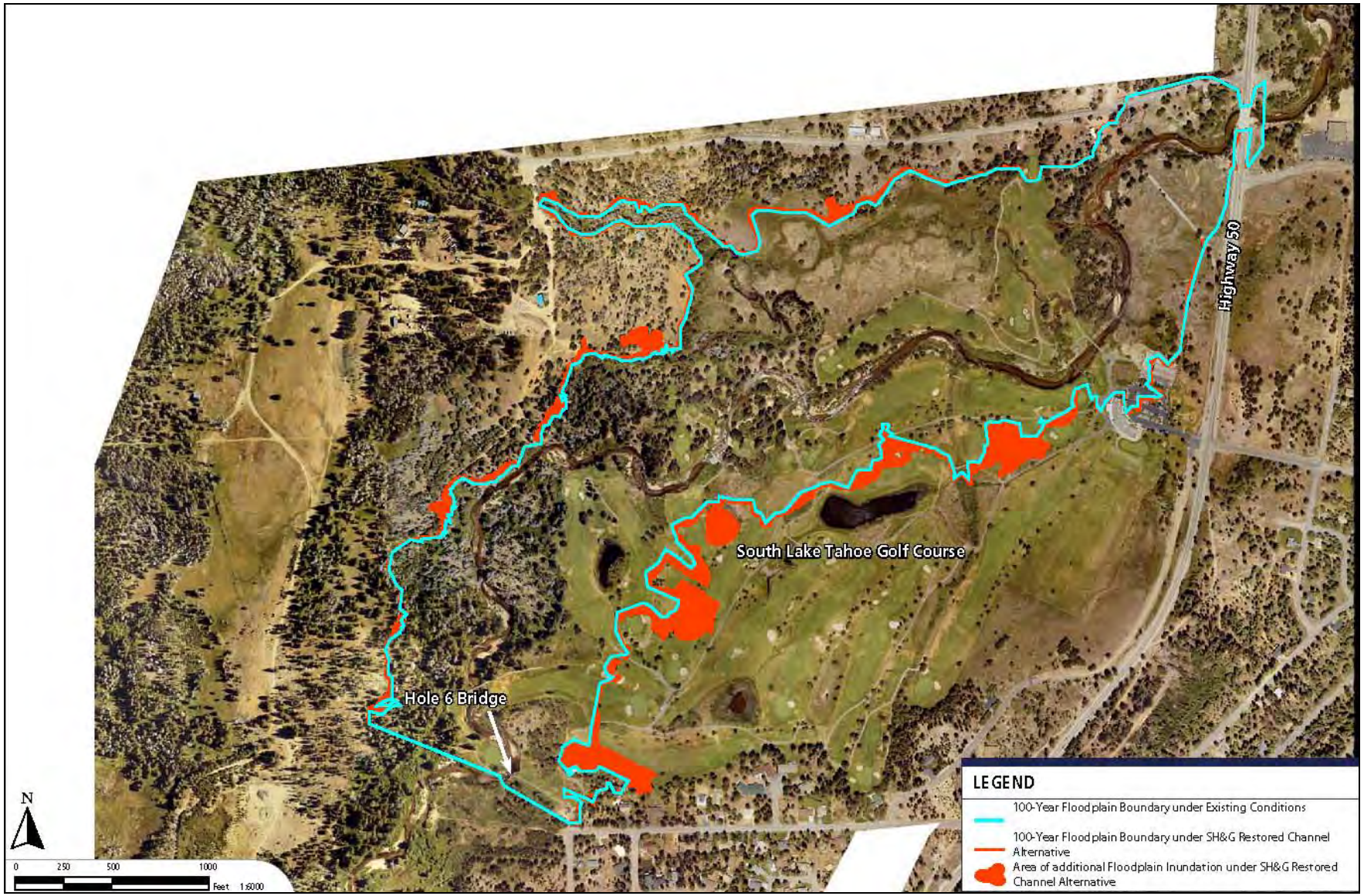
Estimated Active Floodplain: Alternatives 2, 3, and 5

Exhibit 3.3-16



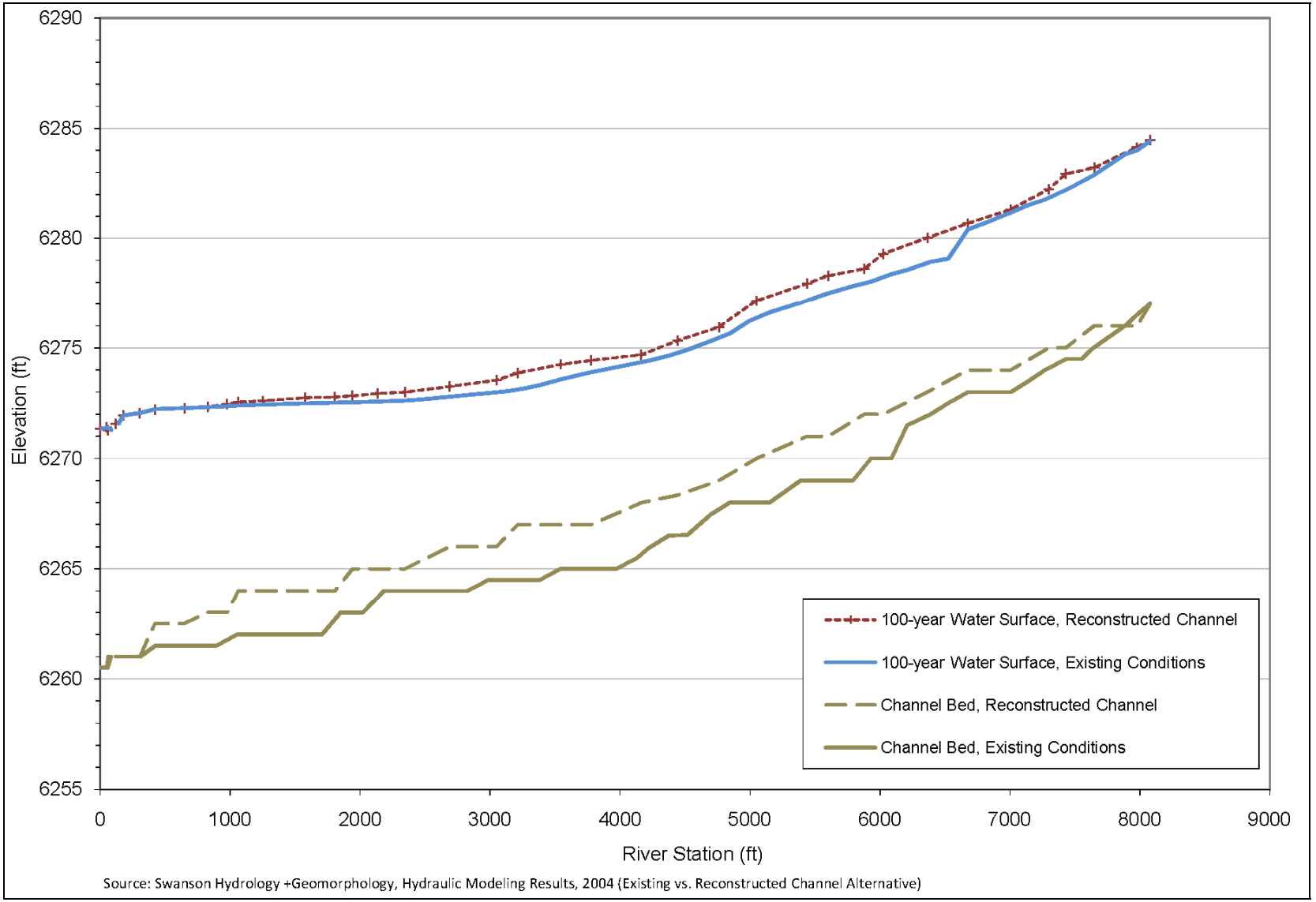
Source: SH&G 2004b

Boundaries of the 10-Year Floodplain under the SH&G Restored-Channel Alternative versus Existing Conditions **Exhibit 3.3-17**



Source: SH&G 2004b

Boundaries of the 100-Year Floodplain under the SH&G Restored-Channel Alternative versus Existing Conditions **Exhibit 3.3-18**



Water Surface Elevations for the 100-Year Flood Event under the SH&G Restored-Channel Alternative versus Existing Conditions

Exhibit 3.3-19

The possible increased water surface elevations and potential enlarged floodplain boundaries for the 100-year event under Alternative 2 would not affect residential structures or major infrastructure features because the floodplain boundaries would be within open space and golf course portions of the study area. No changes to the water surface elevation for, or the location of, the 100-year flood event are expected in the vicinity of existing residential structures along Sawmill Road. In addition, detailed hydraulic modeling of the proposed design may indicate that the potential changes would be less substantial than indicated by these initial conservative modeling estimates. However, it remains possible that Alternative 2 may produce adverse changes to water elevations and inundated areas under the 100-year flood. This impact would be potentially significant.

Mitigation Measure 3.3-4 (Alt. 2): Prevent Detrimental Increases in the Future Water Surface Elevation or Area of the 100-Year Flood.

During design development of Alternative 2 beyond the conceptual planning stage, more precise hydraulic modeling of the proposed channel configuration shall be performed. The hydraulic modeling shall be used iteratively with the detailed design process to identify and incorporate modifications to final design that would achieve the following performance criteria:

- prevent increases in the future 100-year water surface elevation or inundation area as needed to avoid worsening flood hazards or potential damage to existing structures, residences, or public infrastructure.

Examples of design features that could be included in the final design through this iterative modeling/design process include:

- lowered final streambed elevation within the downstream transition from the treated reach to the existing unmodified channel;

- enlarged channel or overbank capacity within and/or downstream of the treated reach.

With the measure described above, design features would prevent any increase in hazards or risk of damage. Therefore, with implementation of Mitigation Measure 3.3-4 (Alt. 2), Impact 3.3-4 (Alt. 2) would be less than significant.

IMPACT 3.3-5 (Alt. 2) Long-Term Modification of Groundwater Levels and Flow Patterns. *Implementing Alternative 2 would directly modify the size, shape, and location of existing creek and river channels; alter the size, elevation, or use of existing golf course ponds; change soils or subsurface conditions in the study area; and increase the potential for surface recharge within an enlarged active floodplain. In combination, these modifications would be expected to raise groundwater elevations along the river corridor and reduce seasonal variation in groundwater levels and gradients, and some artificial groundwater support would still occur in the location of golf course ponds. This effect would be* beneficial.

Implementing Alternative 2 would lengthen the channel, decrease its capacity, and raise the streambed within the reconnected meanders and new constructed channel and in the modified reaches of existing channel. It would also directly raise the ground surface in abandoned reaches of the existing incised channel by creating backfilled channel in restored floodplain areas. These direct effects would enlarge and raise the potential subsurface sediments suitable for groundwater storage, and improve the vertical and lateral groundwater connections throughout the study area. The improved connectivity would allow groundwater to flow across the location now interrupted by the deeply incised channel and reduce the rate of groundwater loss to surface water. The increased frequency of overbanking and increased active floodplain area would enhance opportunities for groundwater recharge, because surface water would be detained and spread over the active floodplain at least every couple of years and for a greater number of days per year for a given peak flow. These beneficial changes would be primarily centered along the proposed river alignment, and would especially improve the area adjacent to the existing river channel.

Under Alternative 2, changes would be made to some of the existing golf course ponds east of the river, and a stormwater pond would be added west of the river. The ponds currently located by holes 9 and 13/16 would likely be expanded by about 0.5 acre, via enlargement around the edges rather than deepening (Stanowski, pers. comm., 2009). The pond currently located by holes 14/15 would be backfilled and reshaped as part of floodplain restoration. The golf course ponds would continue to be used and managed for water supply and drainage. Only minor changes, if any, in groundwater levels or flow patterns east of the river would be expected because the retired pond by holes 14/15 would be within the reactivated floodplain and near a reconnected meander that would provide improved surface-water support.

West of the river, irrigated areas associated with the golf course would be expanded, tree cover would be reduced, and surface water features would be added for aesthetics and storm drainage under Alternative 2. Although it would not be the intent to overirrigate managed grasses, the net effect of the vegetation, irrigation, and drainage changes would likely trend toward improved recharge of local groundwater or support of groundwater levels. Other restoration efforts on the west side of the river would involve reconfiguring a portion of the old quarry pit floor that was cut into the hillside and intercepts groundwater. A more naturalized channel and wetland pond would be constructed. All these activities would improve conditions relative to the existing conditions of an increased rate of groundwater loss to the incised river channel. This effect would be beneficial.

No mitigation is required.

IMPACT 3.3-6 (Alt. 2) **Long-Term Increase in Irrigation-Water Demand.** *Implementing Alternative 2 would directly modify the locations and total acreage of specific irrigated land uses within the study area. The physical and operational irrigation system would be expanded and modified. The net effect of the overall increase in the golf course footprint, reduction of intensively managed areas, and improved irrigation system would be to hold demand in the study area to a level similar to existing conditions. This impact would be* ***less than significant****.*

Existing irrigated acreage and the irrigation system would be modified under Alternative 2. The total footprint of the golf course would expand from 133 acres to 156 acres, but the vegetation types and their management within the footprint would also change. Under Alternative 2, about 92 acres of the total footprint would be "intensively managed" landscape, with regular irrigation; 44 acres would be "minimally managed" landscape; and 20 acres would be "naturalized" landscape. These landscape management categories are defined and described in Chapter 2 of this EIR/EIS/EIS. The descriptions of these categories indicate that only the intensively managed areas would be irrigated regularly, and the irrigation network's physical characteristics and operational system would be specifically redesigned to optimize water application to meet the management definitions throughout the reconfigured golf course. None of the naturalized areas would be irrigated after establishment; the minimally managed areas might be irrigated occasionally, but not regularly.

A working assumption for irrigation-water demand is that the minimally managed areas would consume approximately half as much water per unit area as the intensively managed areas, which are irrigated routinely to support high-quality turf features. Based on the proposed acreages and the likely water demand for each management category, the net effect of the 11-acre decrease in intensively managed landscape, 21-acre increase in minimally managed landscape, and 13-acre increase in naturalized landscape relative to existing conditions would be a total demand similar to existing demand. The current inefficient irrigation system is overwatering the minimally managed and naturalized landscapes; so at present, an area of up to 126 acres is being irrigated, 30 acres unintentionally. Under Alternative 2, the total area regularly irrigated would be reduced to 84 acres, and another 44 acres would be irrigated using the amount of water equivalent to 22 acres of intensively managed landscape, for a total of about 106 fully irrigated acres. This impact would be less than significant.

No mitigation is required.

Alternative 3: River Ecosystem Restoration with Reduced Play Golf Course

IMPACT 3.3-1 (Alt. 3) **Long-Term Increase in Stormwater Runoff Volumes.** *Implementing Alternative 3 would reduce the golf course footprint, decrease the amount of impervious surface, and directly modify the existing channels of the creeks or the Upper Truckee River in the study area. Changes to stormwater drainage patterns may occur within the reconfigured golf course footprint and in the areas of existing golf course to be restored. Storm drainage systems within the reduced play golf course area would be upgraded locally to improve detention and infiltration of runoff. This effect would be* ***beneficial****.*

Alternative 3 would decrease the amount of impervious surface in SEZ adjacent to the Upper Truckee River and Angora Creek, to a greater extent than under Alternative 2. Additionally, Alternative 3 would not modify impervious surface coverage (soft coverage) within Washoe Meadows SP (See Impact 3.6-3 (Alt. 3) in Section 3.6, "Earth Resources")

Under Alternative 3, modified/retrofitted stormwater improvements and routing and detention basins would be incorporated as part of the landscaping within the reduced/reconfigured golf course footprint on the east side of the river (within Lake Valley SRA). No changes would be made to the subwatersheds having impervious surfaces or stormwater drainage facilities. No expansion or paving of the overflow parking would occur and no new restroom facility would be constructed. The production of stormwater runoff because of impervious surfaces would be decreased and occur within the existing stormwater drainage network that would be improved. This effect would be beneficial.

No mitigation is required.

IMPACT 3.3-2 (Alt. 3) **Long-Term Increase in Peak Flows Generated or Released Downstream.** *Implementing Alternative 3 would not increase peak flows generated within the study area from stormwater runoff. The proposed river channel modifications, enlargement of the active floodplain, and removal of all golf course bridge crossings under Alternative 3 would result in a beneficial reduction in peak flows released to downstream reaches of the Upper Truckee River during small to moderate flood events. Major flood-peak flows released downstream would not be expected to change. This effect would be* ***beneficial****.*

Alternative 3 would decrease the amount of impervious surface in the study area (as discussed under Impact 3.3-1 [Alt. 3]), which would not only decrease the volume of runoff generated but also lessen the generation of peak flows within the study area.

Under Alternative 3, modified/retrofitted stormwater improvements and routing and detention basins would be incorporated as part of the landscaping within the modified golf course footprint on the east side of the river. These improvements would improve the routing and detention of stormwater from the remaining developed areas and reduce the generation of peak flows within those areas.

The same enhancements and expansion of the active floodplain would occur under Alternative 3 as under Alternative 2. Implementing these enhancements may allow increased detention of overbanked waters and decrease downstream flood peaks, at least for small to moderate events. The reduction in peak flows released to downstream reaches of the Upper Truckee River during small to moderate flood events would be either the same as or slightly greater than that under Alternative 2.This effect would be beneficial.

No mitigation is required.

IMPACT 3.3-3 (Alt. 3) **Long-Term Increase in Overbanking during Small to Moderate Flood Events.** *Implementing Alternative 3 would directly modify the size and configuration of the Upper Truckee River channel within the study area to increase the frequency of overbanking onto portions of the surrounding terrace, thus enlarging the active floodplain. Natural channel adjustments would increase the frequency of overbanking onto a small active floodplain, inset within the sections of existing incised channel that would be retained as part of the active channel. This effect would be* ***beneficial****.*

This impact is identical to Impact 3.3-3 (Alt. 2) for Alternative 2. The same changes would be made to the river channel and active floodplain under Alternative 3 as under Alternative 2. For a description of these changes and their effects, please refer to Impact 3.3-3 (Alt. 2). This effect would be beneficial.

No mitigation is required.

IMPACT 3.3-4 (Alt. 3) **Long-Term Increase in the 100-Year Flood Hazard Area or Elevation.** *Implementing Alternative 3 would directly modify the size and configuration of the Upper Truckee River channel within the study area, which could allow the water surface elevation for the 100-year flood to increase or the boundary of the 100-year floodplain to expand. The expanded floodplain would be contained within open space areas and not include any residential areas. Nonetheless, because an increase in flood elevation and/or floodplain would occur, this impact would be* ***potentially significant****.*

This impact is identical to Impact 3.3-4 (Alt. 2) for Alternative 2. Alternative 3 would result in the same potential changes to the boundaries of the 100-year floodplain and flood water surface elevations. For a description of these changes and their effects, please refer to Impact 3.3-4 (Alt. 2). This impact would be potentially significant.

Mitigation Measure 3.3-4 (Alt. 3): Prevent Detrimental Increases in the Future Water Surface Elevation or Area of the 100-Year Flood.

This mitigation measure is identical to Mitigation Measure 3.3-4 (Alt. 2).

With the measure described above, design features would any increase in hazards or risk of damage. Therefore, with implementation of Mitigation Measure 3.3-4 (Alt. 3), Impact 3.3-4 (Alt. 3) would be less than significant.

IMPACT 3.3-5 (Alt. 3) **Long-Term Modification of Groundwater Levels and Flow Patterns.** *Implementing Alternative 3 would directly modify the size, shape, and location of existing creek and river channels; alter the size, elevation, or use of existing golf course ponds; change soils or subsurface conditions in the study area; and increase the potential for surface recharge within an enlarged active floodplain. In combination, these modifications would be expected to raise groundwater elevations along the river corridor and reduce seasonal variation in groundwater levels and gradients, and some artificial groundwater support would still occur in the location of golf course ponds. This effect would be* ***beneficial****.*

This impact is similar to Impact 3.3-3 (Alt. 3). The same changes to the river and floodplain would be made under Alternative 3 as under Alternative 2. Under this alternative, the golf course pond currently located by holes 14/15 would be backfilled and reshaped as part of floodplain restoration. The remaining golf course ponds would not be enlarged and no new ponds would be created west of the river. Only minor changes, if any, in groundwater levels or flow patterns east of the river would be expected because the retired pond by holes 14/15 would be within the reactivated floodplain area and near a reconnected meander that would provide improved surface-water support. All these activities would improve conditions relative to the existing conditions of an increased rate of groundwater loss to the incised river channel. This effect would be beneficial.

No mitigation is required.

IMPACT 3.3-6 (Alt. 3) Long-Term Increase in Irrigation-Water Demand. *Implementing Alternative 3 would directly modify the locations and total acreage of specific irrigated land uses within the study area, and would reduce the size and upgrade the physical and operational irrigation system. It would reduce the golf course footprint, reduce intensively managed areas, increase naturalized areas, and improve the irrigation system. These changes would reduce total water demand in the study area to less than under existing conditions. This effect would be* ***beneficial****.*

As under Alternative 2, existing irrigated acreage and the irrigation system on the east side of the river would be modified under Alternative 3. However, the golf course would not be expanded to the west side of the river. The total footprint of the golf course would be reduced from 133 acres to 86 acres, and the vegetation types and their management within the footprint would also change. Under Alternative 3, about 51 acres of the total footprint would be "intensively managed" landscape, with regular irrigation; 24 acres would be "minimally managed" landscape; and 11 acres would be "naturalized" landscape. These landscape management categories are defined and described in Chapter 2 of this draft EIR/EIS/EIS. The descriptions of these categories indicate that only the intensively managed areas would be irrigated regularly, and the irrigation network's physical characteristics and operational system would be specifically redesigned to optimize water application to meet the management definitions throughout the reconfigured golf course. None of the naturalized areas would be irrigated after establishment; the minimally managed areas might be irrigated occasionally, but not regularly.

A working assumption for irrigation-water demand is that the minimally managed areas would consume approximately half as much water per unit area as the intensively managed areas, which are irrigated routinely to support high-quality turf features. Based on the proposed acreages and the likely water demand for each management category, the net effect of the 52-acre decrease in intensively managed landscape, 1-acre increase in minimally managed landscape, and 4-acre increase in naturalized landscape relative to existing conditions would be a total demand that would be less than existing demand. The current inefficient irrigation system is overwatering the minimally managed and naturalized landscapes; so at present, an area of up to 126 acres is being irrigated, 30 acres unintentionally. Under Alternative 3, the total area regularly irrigated would be reduce to 51 acres, and another 24 acres would be irrigated using the amount of water equivalent to 12 acres of intensively managed landscape, for a total of about 63 fully irrigated acres. This would reduce total demand by just over one-half relative to existing conditions and demand under Alternative 2. This effect would be beneficial.

No mitigation is required.

Alternative 4: River Stabilization with Existing 18-Hole Regulation Golf Course

IMPACT 3.3-1 (Alt. 4) Long-Term Increase in Stormwater Runoff Volumes. *Implementing Alternative 4 would not modify the existing golf course footprint, or directly modify the existing channels of the creeks in the study area. However, it would increase the amount of impervious surface for a new restroom and paved overflow parking area within Lake Valley SRA. The changes would occur within the same subwatersheds served by existing drainage systems, but at the conceptual level of design, it is uncertain whether site-specific features would be sized and located to prevent an increase in the amount of stormwater runoff released to the river or creeks in the study area. This impact would be* ***potentially significant****.*

Under Alternative 4, the areas and locations of existing impervious surfaces within the SEZ and floodplain adjacent to the Upper Truckee River and Angora Creek would not be modified (see Impact 3.6-3 (Alt. 4) in Section 3.6, "Earth Resources"). However, two existing bridges would be replaced by a single new bridge with associated cart path relocation, a new restroom would be constructed, and the existing overflow parking would be paved. The modifications to impervious surfaces would occur within the same sub-watersheds that have existing stormwater drainage features, facilitating incorporation of any additional stormwater detention or pre-treatment. However, the layout, specific features, and performance standards for the stormwater system have not yet been determined. In general, the sizing, location, and design of features would be expected to meet regulatory standards enforced by the Lahontan RWQCB and TRPA. Because it is uncertain whether storm drainage system features

would be sized and located appropriately to prevent an increase in the amount of stormwater runoff released to the river or creeks in the study area, this impact would be potentially significant.

Mitigation Measure 3.3-1 (Alt. 4): Provide On-Site Storm Drainage Facilities and Accompanying Stormwater Drainage Plan to Prevent Damage from Increased Runoff Discharged to Creek or River Channels.

This mitigation measure is identical to Mitigation Measure 3.3-1 (Alt. 2).

With the measure described above, the stormwater system would be expanded and improved to meet specific performance requirements. Therefore, with implementation of Mitigation Measure 3.3-1 (Alt. 4), Impact 3.3-1 (Alt. 4) would be less than significant.

IMPACT 3.3-2 (Alt. 4) Long-Term Increase in Peak Flows Generated or Released Downstream. *Implementing Alternative 4 would not modify the peak flows generated within the study area or measurably change flows released from the study area to downstream reaches of the Upper Truckee River. Stabilizing the Upper Truckee River streambed and streambanks throughout the study area would prevent continued natural adjustments to past disturbances. Therefore, the conveyance of peak flows through the study area or discharge of flows to downstream reaches would not change relative to existing conditions. This impact would be* ***less than significant****.*

Under Alternative 4, stormwater runoff volume would not increase (Impact 3.3-1 [Alt. 4]), and no physical modifications would be made to the study area soils, vegetation, or stream channels that would otherwise alter generation of peak flows throughout the study area.

No substantial changes to the size of creeks and river channels in the study area would be made under Alternative 4, but the incised Upper Truckee River channel would be stabilized in place. This stabilization to prevent streambank and streambed erosion would restrict natural geomorphic trends of channel widening and subsequent formation of an inset floodplain. The materials used to stabilize the channel may slightly decrease roughness on the streambed but increase the roughness of the streambanks. Minor changes in flow velocity and local hydraulics could occur within the treated reaches, but a measurable increase or decrease in peak flows released downstream would be difficult to discern. Stabilizing the channel in place would limit long-term opportunities for overbank floodplain storage during small to moderate (1.5-year to 10-year) flood events that could occur under Alternative 1, so a small long-term benefit might not be realized under Alternative 4. Additionally, the surrounding terrace would not be reactivated as an enlarged active floodplain to facilitate the substantial reductions in peak flows released downstream expected under Alternatives 2, 3, and 5. Little change in overbank floodplain storage during major (i.e., 25-year, 100-year) peak-flow events would be expected under Alternative 4. No adverse increase in peak flows generated within the study area or discharged to downstream reaches of the Upper Truckee River would result from implementing Alternative 4, but no beneficial peak-flow reductions would be achieved. This impact would be less than significant.

No mitigation is required.

IMPACT 3.3-3 (Alt. 4) Long-Term Increase in Overbanking during Small to Moderate Flood Events. *Implementing Alternative 4 would not modify the size or configuration of the Upper Truckee River channel or floodplain within the study area. Stabilizing the streambed and streambanks would restrict natural channel adjustments to prior disturbances, limiting continued channel widening and formation of an inset floodplain. This impact would be* ***less than significant****.*

The size and configuration of study area stream channels and floodplain would not be physically modified under Alternative 4. Stabilizing the channel to prevent streambank and streambed erosion would restrict natural geomorphic trends of channel widening and subsequent formation of an inset floodplain. This would prevent the minor increase in opportunities for overbanking during small to moderate (1.5-year to 10-year) flood events

expected under Alternative 1, and instead would retain the existing condition. The incised channel would remain isolated between high terrace banks. The area and location of the active floodplain would remain similar to the existing conditions (Exhibit 3.3-14). No beneficial increase in the frequency of overbanking or expansion of floodplain area on the surrounding terrace would occur as under Alternatives 2, 3, and 5. This impact would be less than significant.

No mitigation is required.

IMPACT 3.3-4 (Alt. 4) Long-Term Increase in the 100-Year Flood Hazard Area or Elevation. *Implementing Alternative 4 would not modify the existing channel's size, shape, or location within the FEMA regulatory floodway, but would replace two undersized bridges at holes 6 and 7 with an increased-capacity bridge crossing over an excavated inset floodplain. The hydraulic effects of the bridge changes would be localized within portions of the study area and the effects, if measurable, would reduce water surface elevations and/or the floodplain boundary relative to existing conditions. This impact would be* ***less than significant****.*

Implementing Alternative 4 would not substantially raise the streambed elevation or water surface elevations within the treated river reaches (RS 1400 to RS 8800). Placement of rock and biotechnical treatments would be expected to result in minor hydraulic changes in roughness, but not enough to reduce conveyance of 100-year flows relative to existing conditions.

Under Alternative 4, the two existing golf course bridges upstream of holes 6 and 7 (approximately RS 8200 and RS 7575) would be replaced with a single, longer-span bridge between RS 7800 and RS 8100 (subreach 3B). The new bridge would span the entire channel and active floodplain, and piers would not be placed in the channel bed; therefore, flow constrictions created by the existing two bridges would be eliminated. In addition, an inset floodplain would be excavated near the new bridge to improve hydraulics under high flows, including the 100-year event. The improved conveyance in this subreach might have the localized effect of reducing water surface elevations or extent, but the three remaining golf course bridges downstream would continue to constrict flows. Additionally, the U.S. 50 bridge crossing would be unchanged and would continue to control the rate of flow released and water surface elevations at the downstream end of the study area. Minor localized reductions of 100-year water surface elevations near the replacement golf course bridge would not be expected to result in any adverse increases in either the boundary of the regulatory floodplain or flooding hazards. This impact would be less than significant.

No mitigation is required.

IMPACT 3.3-5 (Alt. 4) Long-Term Modification of Groundwater Levels and Flow Patterns. *Implementing Alternative 4 would not modify the size, shape, or location of existing creek and river channels; alter the size, elevation, or use of existing golf course ponds; or change soils or subsurface conditions throughout the study area. Alternative 4 would not include any element that could adversely affect groundwater levels or flow patterns, but implementing this alternative would prevent the changes that might occur as the degraded channel continues to adjust via widening. This impact would be* ***less than significant****.*

Alternative 4 would perpetuate the existing degraded groundwater levels and patterns, including both natural conditions and artificial groundwater support from golf course ponds. However, stabilizing the channel to prevent streambed and streambank erosion would prevent the potential worsening of groundwater conditions that may result from continued widening of the natural channel, and retreat of groundwater along the incised river channel. These changes, which would occur under Alternative 1, could increase discharge (loss) to the river and therefore from the ponds. The effects of Alternative 4 on groundwater levels and flow patterns would be generally similar to effects under existing conditions, with minor benefits relative to Alternative 1. This impact would be less than significant.

No mitigation is required.

IMPACT 3.3-6 (Alt. 4) Long-Term Increase in Irrigation-Water Demand. *Implementing Alternative 4 would not directly modify the existing demand for irrigation water by land uses within the study area, nor would it modify the use of surface water from the Upper Truckee River or from on-site groundwater wells. Demand for irrigation water in the study area would remain similar to existing demand. This impact would be* ***less than significant****.*

This impact is identical to Impact 3.3-6 (Alt. 1). Demand for irrigation water in the study area under Alternative 4 would be the same as under existing conditions and Alternative 1. For a description of effects on demand for irrigation water by land uses within the study area, please refer to Impact 3.3-6 (Alt. 1).

No mitigation is required.

Alternative 5: River Ecosystem Restoration with Decommissioned Golf Course

IMPACT 3.3-1 (Alt. 5) Long-Term Increase in Stormwater Runoff Volumes. *Implementing Alternative 5 would eliminate the golf course footprint, decrease the amount of impervious surface, and directly modify the existing channels of the creeks, drainages, and the Upper Truckee River in the study area. Changes to stormwater drainage patterns may occur within areas of existing golf course to be restored. Storm drainage systems within the clubhouse, parking lot, and maintenance area would be preserved for detention and infiltration of runoff. This effect would be* ***beneficial****.*

Alternative 5 would make a substantial decrease the amount of impervious surface within the SEZ and floodplain, to a greater extent than either Alternatives 2 or 3 and would include coverage removal along the unnamed creek. Additionally, Alternative 5 would not modify impervious surface coverage within Washoe Meadows SP (See Impact 3.6-3 (Alt. 5) in Section 3.6, "Earth Resources").

The changes that would occur under Alternative 5 would create a benefit relative to existing conditions and all other action alternatives by replacing modified hydrology and storm drainage features with a more natural hydrologic response throughout the decommissioned golf course area that will have soils and vegetation restoration. This effect would be beneficial.

No mitigation is required.

IMPACT 3.3-2 (Alt. 5) Long-Term Changes in Peak Flows Generated or Released Downstream. *Implementing Alternative 5 would not increase peak flows generated within the study area from stormwater runoff. The proposed river channel modifications, enlargement of the active floodplain, and removal of all golf course bridge crossings would result in a beneficial reduction in peak flows released to downstream reaches of the Upper Truckee River during small to moderate flood events. No change to major flood peak flows released downstream would be expected. This effect would be* ***beneficial****.*

As discussed under Impact 3.3-1 (Alt. 5), implementing Alternative 5 would decrease the amount of impervious surface in the study area, which would not only decrease the volume of runoff generated but also lessen the generation of peak flows within the study area.

Under Alternative 5, stormwater improvements and routing and detention basins would be removed from the landscaping within the existing golf course use, and more natural soil, vegetation, and topographic drainage characteristics would be restored in the decommissioned golf course areas.

The same enhancements and expansion of the active floodplain would occur under Alternative 5 as under Alternatives 2 and 3. Implementing these enhancements may allow increased detention of overbanked waters and decrease downstream flood peaks, at least for small to moderate events. The reduction in peak flows released to

downstream reaches of the Upper Truckee River during small to moderate flood events would either be the same as or slightly greater than that under Alternatives 2 and 3. This effect would be beneficial.

No mitigation is required.

IMPACT 3.3-3 (Alt. 5) **Long-Term Increase in Overbanking during Small to Moderate Flood Events.** *Implementing Alternative 5 would directly modify the size and configuration of the Upper Truckee River channel within the study area to increase the frequency of overbanking onto portions of the surrounding terrace, thus enlarging the active floodplain. Natural channel adjustments would increase the frequency of overbanking onto a small active floodplain, inset within the sections of existing incised channel that would be retained as part of the active channel. This effect would be* ***beneficial****.*

This impact is identical to Impact 3.3-3 (Alt. 2). Alternative 5 would have the same increased overbanking during small to moderate flood events as Alternatives 2 and 3. For a full description of this effect, please refer to Impact 3.3-3 (Alt. 2). This effect would be beneficial.

No mitigation is required.

IMPACT 3.3-4 (Alt. 5) **Long-Term Increase in the 100-Year Flood Hazard Area or Elevation.** *Implementing Alternative 5 would directly modify the size and configuration of the Upper Truckee River channel within the study area, which could allow the water surface elevation for the 100-year flood to increase or the boundary of the 100-year floodplain to expand. The expanded floodplain would be contained within open space areas and not include any residential areas. Nonetheless, because an increase in flood elevation and/or floodplain would occur, this impact would be* ***potentially significant****.*

This impact is identical to Impact 3.3-4 (Alt. 2). Alternative 5 would result in the same potential changes to the boundaries of the 100-year floodplain and flood water-surface elevations as under Alternatives 2 and 3. For a full description of this effect, please refer to Impact 3.3-4 (Alt. 2). This impact would be potentially significant.

Mitigation Measure 3.3-4 (Alt. 5): Prevent Detrimental Increases in the Future Water Surface Elevation or Area of the 100-Year Flood.

This mitigation measure is identical to Mitigation Measure 3.3-4 (Alt. 2).

With the measure described above, design features would prevent any increase in hazards or risk of damage. Therefore, with implementation of Mitigation Measure 3.3-4 (Alt. 5), Impact 3.3-4 (Alt. 5) would be less than significant.

IMPACT 3.3-5 (Alt. 5) **Long-Term Modification of Groundwater Levels and Flow Patterns.** *Implementing Alternative 5 would directly modify the size, shape, and location of existing creek and river channels; alter the size, elevation, or use of existing golf course ponds; change soils or subsurface conditions in the study area; and increase the potential for surface recharge within an enlarged active floodplain. In combination, these modifications would be expected to raise groundwater elevations along the river corridor and reduce seasonal variation in groundwater levels and gradients, and some artificial groundwater support would still occur in the location of golf course ponds. These effects would be beneficial relative to the existing degraded conditions. This effect would be* ***beneficial****.*

Alternative 5 would result in the same changes to groundwater conditions along the river corridor as under Alternatives 2 and 3, but decommissioning of the golf course might eliminate the surface pond features and their management as water storage facilities in the east half of the study area. The beneficial effects of Alternatives 2 and 3 on groundwater from restoring the river and meadow ecosystem, including overbanking for recharge, would

also occur under Alternative 5. However, it is possible that some of the artificial support of groundwater by the golf course ponds would be discontinued. Under Alternative 5, the golf course pond currently located by holes 14/15 would be backfilled and reshaped as part of floodplain restoration. The eventual land uses under Alternative 5 would likely modify the physical characteristics and/or management of the remaining ponds, because the type or magnitude of water demand for such land uses is unlikely to be as great as for a golf course. The remaining ponds would still capture local snowmelt and storm runoff, providing detention and extending the groundwater recharge season. However, without the continued use of surface water diversions and deep groundwater pumping to supplement the pond water, some of the present recharge volume and summer-season groundwater recharge would be eliminated. This suggests that a portion of the total benefits expected under Alternatives 2 and 3 would not occur under Alternative 5, but would be confined more narrowly along the river corridor because the golf course ponds would no longer be needed or maintained.

The effects of Alternative 5 on groundwater would be beneficial relative to existing conditions, Alternative 1, and Alternative 4, and similar to but slightly less than the effects under Alternatives 2 and 3. This effect would be beneficial.

No mitigation is required.

IMPACT 3.3-6 (Alt. 5) Long-Term Increase in Irrigation-Water Demand. *Implementing Alternative 5 may nearly eliminate irrigated land uses within the study area. Most of the physical and operational irrigation system would be abandoned after any temporary reduced golf course operations cease. Demand for irrigation water in the study area under Alternative 5 would be substantially less than that under existing conditions or any of the other action alternatives. This effect would be* ***beneficial****.*

Existing irrigated acreage and the irrigation system would be substantially modified under Alternative 5. The golf course use would be eliminated, and the vegetation types and their management within the existing footprint would be converted back to natural vegetation with the exception of about two acres of lawn. None of the 130 acres of decommissioned golf course restored to natural vegetation communities would be irrigated after initial establishment.

The current inefficient irrigation system is overwatering the minimally managed and naturalized landscapes; so at present, an area of up to 126 acres is being irrigated, 30 acres unintentionally. There would be no intensively managed landscape with regular irrigation under Alternative 5. Based on the proposed acreages and the likely water demand for each management category, the decrease in intensively managed landscape and restoration of natural plant communities supported by the restored river and floodplain hydrology would reduce total demand for irrigation water to less than five percent of that under existing conditions. This effect would be beneficial.

No mitigation is required.

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