3.13 Water Quality

The following discussion summarizes the existing water quality environment and regulatory environment, as well as an analysis of direct and indirect environmental effects of the proposed action. Where feasible, mitigation measures are recommended to reduce the severity of identified effects. In many instances, the effects to water quality will be beneficial as a result of the proposed action. The Kings Beach watershed hydrologic and SEZ existing conditions information presented in this analysis is based on information from the *Kings Beach Watershed Improvement Project Final Hydrologic Conditions Report* (Appendix G; Entrix 2006b) and *Kings Beach Watershed Improvement Project Final SEZ Existing Conditions and Alternatives Report* (Entrix 2006d).

3.13.1 Affected Environment

As illustrated by Figure 3.13-1, the CCIP is located in the lower portion of a watershed that is defined by the following topographic features: (1) northern boundary—a ridge line running east/southeast from Martis Peak at the northwest corner of the watershed to Mount Baldy at the northeast corner; (2) eastern boundary—from Mount Baldy south along a ridgeline to a point due east of Kings Beach, then west/southwest through Kings Beach to the Lake Tahoe shoreline; (3) western boundary—from Martis Peak at the northwest corner south along a ridgeline and the western side of Griff Creek into Kings Beach, then slightly southwest to the Lake Tahoe shoreline; and (4) southern boundary—the Lake Tahoe immediately south of Kings Beach.

Several annual, perennial, and ephemeral creeks, drainages, and ditches in the CCIP area convey surface flows from upstream portions of the watershed, across the CCIP area, and into Lake Tahoe. The most significant of these creeks is Griff Creek, a perennial stream located along the western edge of the CCIP area.

The quality of surface flows originating in the upper watershed is generally expected to be good because of the limited disturbance in this area. However, as these flows enter the

lower portion of the watershed and are conveyed across the CCIP area, their quality often degrades below certain federal, state, and TRPA standards because of the entrainment of various pollutants, including phosphorus, nitrogen, and sediment, within the flows. As such, surface flows entering Lake Tahoe from the CCIP area could exceed various federal, state, and TRPA water quality standards under certain conditions. The water quality of Lake Tahoe, as the receiving water for all surface flows in the action area watershed, is of primary concern for the CCIP.

Lake Tahoe is the world's tenth deepest lake at 505 meters (1,657 feet) with a mean depth of 313 meters (1,027 feet). The water quality of the lake is generally good and supports several beneficial uses as identified in the Lahontan Region Water Quality Control Plan (Basin Plan). These uses include water supply, navigation, recreation, fishing, and species habitat.

Although nutrient concentrations are very low in the lake at present, relatively small nutrient loadings can seriously affect Lake Tahoe's water quality. This is attributable primarily to the lake's long retention time. Lake Tahoe's large volume of 156 km^3 and its relatively small watershed are largely responsible for the lake's approximate 700-year hydraulic retention time (Goldman et al., p. 312, 1989). When nutrients enter the lake, they remain active and are used continually until the natural retention time is up.

Perhaps the greatest change to Lake Tahoe in the last four decades has been the enhanced transport of sediment from the watershed and the loss of about 30 cm (12 inches) per year of clarity in Lake Tahoe's waters. Because Lake Tahoe has a very long residence time (defined as the average time a parcel of water spends in a body of water), the flushing action of precipitation and runoff that benefits many other lakes cannot be relied upon to preserve Lake Tahoe. Therefore, sediments and nutrients discharged to Lake Tahoe from various surrounding watersheds may remain suspended in the water column or settled on the lake bottom for hundreds of years. Increased nutrient loading rates exert their full effect through a gradual buildup of nutrient concentrations over many years. The buildup

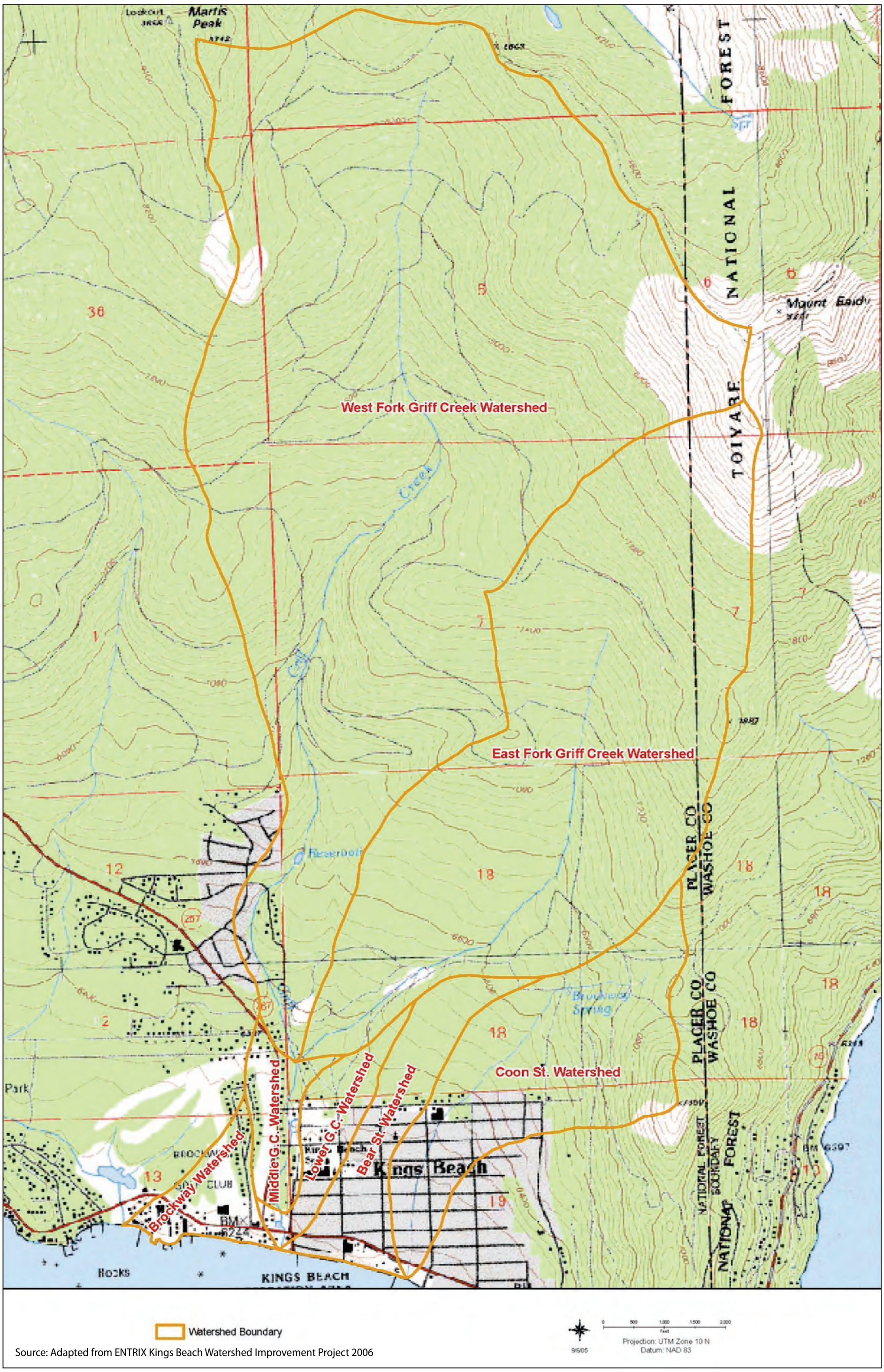


Figure 3.13-1
Kings Beach Commercial Core Improvement Project
Watershed Map

of nutrients and sediments stimulates algal growth and increases the concentration of fine suspended particles, thereby decreasing clarity of the lake (Entrix 2006b).

3.13.1.1 Caltrans Contribution to Stormwater in the CCIP Area

Highway stormwater runoff contains a variety of characteristic contaminants. During storm events, rainwater first collects atmospheric pollutants and, upon impact, gathers roadway deposits. This runoff can negatively affect the receiving waters in various ways, including sedimentation, eutrophication (the proliferation of microscopic organisms and vegetation), accumulation of pollutants in sediments and benthic organisms (organisms residing on the bottom of an area covered by water), and destruction of native species. The Caltrans Storm Water Research and Monitoring Program has collected water quality data for three consecutive years (2000–2003) from six highway runoff–monitoring sites in the Tahoe Basin. Descriptions of these sites and summaries of the monitoring data can be found in the Annual Data Summary (CTSW-RT-030-054.36.02) that is submitted to the State Water Board by the Caltrans Storm Water Monitoring Program. The Caltrans highway runoff value is the average concentration that is calculated from the highway water quality monitoring data. The average values from the 23 statewide monitoring sites (including the six located in the Tahoe Basin) are listed in Table 3.13-1.

Based on the highway stormwater runoff data collected by the Caltrans Storm Water Research and Monitoring Program, pollutants that are expected to be found in runoff from the proposed action include conventional constituents (biochemical oxygen demand [BOD], calcium carbonate [$CaCO_3$], chemical oxygen demand [COD], total dissolved solids [TDS], total organic carbon [TOC], total suspended solids [TSS] and total volatile suspended solids [TVSS], etc.) hydrocarbons, metals, microbial agents, nutrients, volatile and semi-volatile organics, pesticides, and herbicides. Pollutants are usually deposited on the roadway as a result of fuel combustion processes, lubrication system losses, tire and brake wear, transportation load losses, paint from infrastructure, and atmospheric fallout. Sources of specific pollutants are outlined in Table 3.13-2.

Table 3.13-1. Caltrans Tahoe Basin Stormwater Data on Pollutant Concentrations

Constituent/Parameter	Units	Average Stormwater Runoff Concentration from Tahoe Basin Highways
Conventional		
pH	pH units	7.0
Electrical Conductivity	µmhos/cm	87
Total Suspended Solids	mg/L	103
Total Dissolved Solids	mg/L	83
Hardness as CaCO3	mg/L	34
Dissolved Organic Carbon	mg/L	17
Total Organic Carbon	mg/L	20
Nutrients		
Nitrate (as N)	mg/L	1.0
Total Kjeldahl Nitrogen	mg/L	1.0
Total Phosphorus	mg/L	0.27
Dissolved Orthophosphate	mg/L	0.10
Total Metals		
Arsenic	µg/L	2.5
Cadmium	µg /L	0.6
Chromium	µg /L	8
Copper	µg /L	27
Lead	µg /L	37
Nickel	µg /L	12
Zinc	µg /L	144
Dissolved Metals		
Arsenic	µg /L	0.9
Cadmium	µg /L	0.2
Chromium	µg /L	3
Copper	µg /L	13
Lead	µg /L	7
Nickel	µg /L	5
Zinc	µg /L	60

Note: µmhos = micromoles, mg = milligrams, µg = micrograms, L = liters.

Source: Caltrans Tahoe Highway Runoff Characterization and Sand Trap Effectiveness Studies, 2000–2003 Monitoring Report, June 2003. CTSW-RT- 054.36.02.

Table 3.13-2. Caltrans Pollutant Sources

Constituents	Primary Sources
Particulates	Pavement wear, vehicles, atmosphere, maintenance, snow/ice abrasives, sediment disturbance
Nitrogen, Phosphorus	Atmosphere, roadside fertilizer application, sediments
Lead	Auto exhaust, tire wear, lubricating oil and grease, bearing wear, atmospheric fallout
Zinc	Tire wear, motor oil, grease
Iron	Auto body rust, steel highway structures, moving engine parts
Copper	Metal plating, bearing and bushing wear, moving engine parts, brake lining wear, fungicide and insecticide application
Cadmium	Tire wear, insecticide application
Chromium	Metal plating, moving engine parts, brake lining wear
Nickel	Diesel fuel and gasoline, lubricating oil, metal plating, bushing wear, brake lining wear, asphalt paving
Manganese	Moving engine parts
Bromide	Exhaust
Cyanide	Anticake compound used to keep deicing salt granular
Sodium, Calcium	Deicing salts, grease
Chloride	Deicing salts
Sulphate	Roadway bed, fuel, deicing salts
Petroleum	Spills, leaks or blow-by of motor lubricants, antifreeze and hydraulic fluids, asphalt leachate
PCBs, Pesticides	Spraying of highway rights-of-way, atmospheric deposition, PCB catalyst in synthetic tires
Pathogenic Bacteria	Soil litter, bird droppings, trucks hauling livestock/stockyard waste
Rubber	Tire wear
Asbestos*	Clutch and brake lining wear

Note:

* No mineral asbestos has been identified in runoff; however some breakdown products of asbestos have been measured.

Source: United States Department of Transportation. Federal Highway Administration. Publication No. FHWA-PD-96-032. June 1996.

3.13.2 Regulatory Setting/ Tahoe Regional Planning Agency Thresholds

3.13.2.1 Federal Clean Water Act

In 1972, the Federal Water Pollution Control Act was amended making the discharge of pollutants to the waters of the United States from any point source unlawful, unless the discharge is in compliance with an NPDES permit. The Federal Water Pollution Control Act was subsequently amended in 1977 and was renamed as the Clean Water Act (CWA). The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The CWA, as amended by the Water Quality Act of 1987, states that stormwater discharges are point-source discharges and establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES program. The following are important sections of the CWA.

- Sections 303 and 304 provide water quality standards, criteria, and guidelines.
- Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate, or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect the quality of the state's waters (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401, which certifies that the project will not result in degradation of any water quality standards.
- Section 402 establishes the NPDES, a permitting system for the discharge of any pollutant (except for dredged or fill material) into waters of the United States. This permitting program is administered by Regional Water Quality Control Boards (RWQCBs), and is discussed in detail later.
- Section 404 establishes a permit program for the discharge of dredged or fill material into waters of the United States. This permit program is administered by the USACE.

- Section 208 requires states to develop areawide waste treatment management plans that include a process for identifying nonpoint sources and establishing feasible control measures. Plans prepared under section 208 are to be submitted to EPA in return for receiving federal financial assistance for the planning process. Decisions concerning NPDES Permits and Section 404 permits are supposed to be consistent with the section 208 plans. Because the proposed action is within TRPA jurisdiction, a 208 plan already exists, and through project compliance with applicable TRPA codes, the proposed action is properly covered under TRPA 208 plans.

3.13.2.2 State Porter-Cologne Water Quality Control Act

The State of California's Porter-Cologne Water Quality Act provides the basis for water quality regulation in California. The act requires a Report of Waste Discharge for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state.

The State Water Board administers water rights, water pollution control, and water quality functions throughout the state, while the RWQCB is responsible for the protection of beneficial uses of water resources within its jurisdiction and uses planning, permitting, and enforcement authorities to meet this responsibility.

- **NPDES Program**: The State Water Board has issued Caltrans a Statewide NPDES Storm Water Permit (Order No. 99-06-DWQ), adopted July 15, 1999, which covers all Caltrans facilities in the state. In compliance with this permit, Caltrans developed the Statewide Storm Water Management Plan (SWMP) to address stormwater pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP describes the minimum procedures and practices that Caltrans uses to reduce the pollutants it discharges from storm drainage systems owned or operated by Caltrans. It outlines procedures and responsibilities for protecting water quality at Caltrans facilities, including the selection and implementation of BMPs. The proposed action will be expected to follow the guidelines and procedures outlined in the SWMP and the regulations for the NPDES

permit. In addition and more precisely, the proposed action will be expected to comply with Lahontan Board Order No. R6T-2005-2007 (General Permit No. CAG616002) and obtain a stormwater permit from LRWQCB through submittal and approval of a NOI and SWPPP.

- **Municipal Separate Storm Sewer System (MS4) Program**: The EPA defines MS4 to include a conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, storm drains) owned or operated by a state, city, town, county or other public body having jurisdiction over disposal of stormwater and designed or used for collecting or conveying stormwater. EPA's Phase II Final Rule includes permit requirements for designated small municipalities that maintain control of a separate storm sewer system. The objectives of the Phase II regulations are to (1) reduce the discharge of pollutants to the maximum extent practicable, and (2) protect water quality. Caltrans is the owner of an MS4 permit that includes conveyances at SR 28 and meets or exceeds the requirements of the small municipalities within the action area.
- **Construction Activity Permitting:** Caltrans construction activity is covered by the NPDES permit (Order No. 99-06-DWQ). In addition, construction activity is subject to Lake Tahoe Hydro Unit General Permit for Discharges of Storm Water Runoff associated with Construction Activity (Board Order 6-00-03). However, because Placer County is the lead agency for this project, Board Order No. R6T-2005-2007 will apply to the proposed action. A notification of construction is required for enrollment for projects that have 0.4 hectare (1 acre) of soil disturbance. By law, all stormwater discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least 1 acre of total land area must comply with the provisions of this NPDES Permit and develop and implement an effective SWPPP. Implementation of the plan starts with the commencement of construction and continues through the completion of the proposed action. Upon completion of the project, the applicant must submit a Notice of Termination to the LRWQCB to indicate that construction is completed.

3.13.2.3 Lahontan Regional Water Quality Control Board

The Porter-Cologne Act provides for the development and periodic review of basin plans that designate beneficial uses of California's major rivers and groundwater basins and establish narrative and numerical water quality objectives for those waters. Beneficial uses represent the services and qualities of a water body (i.e., the reasons the water body is considered valuable), while water quality objectives represent the standards necessary to protect and support those beneficial uses. Basin plans are implemented primarily by using the NPDES permitting system to regulate waste discharges so that water quality objectives are met (see discussion of the NPDES system in the *Clean Water Act* section above). Basin plans are updated every 3 years and provide the technical basis for determining waste discharge requirements and taking enforcement actions.

Basin plans are adopted and amended by the LRWQCB.

Construction activities are regulated under the NPDES General Permit for Discharges of Storm Water Runoff associated with Construction Activity (General Construction Permit), provided that the total amount of ground disturbance during construction exceeds 1 acre. In addition, this permit does no cover disturbance to lands classified as SEZs or Bailey Land Capability Classification 1b. A separate prohibition exemption must be granted for such activity. The LRWQCB enforces the General Construction Permit. Coverage under a General Construction Permit requires the preparation of a SWPPP and NOI. The SWPPP includes pollution prevention measures (erosion and sediment control measures and measures to control non-stormwater discharges and hazardous spills), demonstration of compliance with all applicable local and regional erosion and sediment control standards, identification of responsible parties, a detailed construction timeline, and a BMP monitoring and maintenance schedule. The NOI includes site-specific information and the certification of compliance with the terms of the General Construction Permit.

3.13.2.4 Local Regulations: Placer County and Tahoe Regional Planning Agency

Placer County published a Tahoe Basin Storm Water Management Plan (TSWMP) (Place County 2006) to address the need for protection of critical habitat from pollutants that may be contained in stormwater runoff as dictated by Lahontan Board Order No. R6T-2005-0026 (NPDES Permit No. CAG616001) issued to Placer County, El Dorado County, and the City of South Lake Tahoe. The primary goal of the TSWMP is to achieve compliance with the Phase I portion of the Municipal Stormwater Program Permit for small municipalities. The plan outlines how Placer County approaches the stormwater quality program and provides staff with guidance for implementing the program. Placer County recognizes that in order to achieve this primary goal, the following secondary goals also need to be achieved:

- Increasing public awareness of the effects of their activities upon water quality through public education;
- Increasing staff effectiveness by providing training to all involved personnel;
- Assisting business and residential compliance with all stormwater quality programs by offering workshops and other educational opportunities to audiences within the community; and
- Improving program strength by creating a stable funding plan.

TRPA is also designated by California, Nevada, and the EPA as the areawide water quality planning agency under Section 208 of the federal CWA. It adopted a bi-state plan, currently entitled Water Quality Management Plan for the Lake Tahoe Region (208 Plan). Most appropriate provisions of the 208 Plan, however, are incorporated into the Water Quality Control Plan for the North Lahontan Basin. TRPA established some regional goals and policies that are key elements to the region. In 1982, TRPA adopted Resolution No. 82-11, which includes environmental thresholds for the Lake Tahoe Basin. Among those thresholds is Water Quality 4, which establishes standards for total

nitrogen, soluble inorganic nitrogen, total phosphorus, soluble phosphorus, total iron, and suspended sediment in tributary streams.

Chapter 3 of the *TRPA Thresholds Evaluation Report* covers water quality regulations and applicable thresholds for various water quality constituents. Chapter 3 states that:

> The purity of Lake Tahoe and its tributary streams helps make the Tahoe Basin unique. Lake Tahoe is one the three clearest lakes of its size in the world. Its unusual water quality contributes to the scenic beauty of the Region, yet it depends today upon a fragile balance among soils vegetation, and man. The focus of water quality enhancement and protection is the Basin is to minimize man-made disturbance to the watershed and to reduce or eliminate the addition of pollutants that result from development.

Chapter 3 of the *TRPA Thresholds Evaluation Report* on water quality presents two goals followed by relevant policies that will help achieve such goals.

> **Goal #1:** Reduce loads of sediment and algal nutrients to Lake Tahoe; meet sediment and nutrient objectives for tributary streams, surface runoff, and sub-surface runoff and restore 80% of the disturbed lands.
>
> **Goal #2:** Reduce or eliminate the addition of other pollutants that affect, or potentially affect, water quality in the Tahoe Basin.

Goal #1 has eight policies and Goal #2 has ten policies that can be found in the water quality chapter of the *TRPA Thresholds Evaluation Report*. The report also contains numeric water quality thresholds that are presented below.

TRPA water quality thresholds are as follows:

- WQ1—Decrease sediment load as required to attain turbidity values not to exceed 3 Nephelometric Turbidity Units (NTU) in littoral Lake Tahoe. In addition, turbidity shall not exceed 1 NTU in shallow waters of Lake Tahoe not directly influenced by stream discharges.
- WQ2—Average Secchi depth, December–March, shall not be less than 33.4 meters.

- WQ3—Annual mean phytoplankton primary productivity shall not exceed 52 gC/m2/yr. California: algal productivity shall not be increased beyond levels recorded in 1967–1971, based on a statistical comparison of seasonal and annual mean values.
- WQ4—attain a 90th percentile value for suspended sediment of 60mg/L, total nitrogen range of 0.15 to 0.23 mg/L, total phosphorus range of 0.005 to 0.030 mg/L, and total iron range of 0.01 to 0.07 mg/L (annual average).
- WQ5—Dissolved inorganic nitrogen, 0.5 mg/L; dissolved phosphorus, 0.1 mg/L; dissolved iron, 0.5 mg/L; suspended sediment, 250 mg/L, grease and oil 2.0 mg/L, total phosphate as P, 0.1 mg/L, and turbidity, 20 NTU.
- WQ6—Surface water infiltration into the groundwater shall comply with the Uniform Regional Run Off guidelines. For total nitrogen, 5 mg/L; total phosphorus, 1 mg/L; total iron, 4 mg/L; turbidity, 200 NTU; and grease and oil, 40 mg/L.
- WQ7—Attain existing water quality standards.

In addition, Chapter 81 of the TRPA Code of Ordinances has additional water quality control objectives. Chapter 81 states that pollutants in surface runoff shall not exceed the following at the 90th percentile:

- Dissolved Organic Nitrogen as N 0.5 mg/l
- Dissolved Phosphorus as P 0.1 mg/l
- Dissolved Iron as Fe 0.5 mg/l
- Grease and Oil 2.0 mg/l
- Suspended Sediment 250 mg/l

Chapter 81 also contains objectives for groundwater quality and states that waters infiltrated into soils shall not exceed the following maximum constituent level:

- Total Nitrogen as N 5 mg/l
- Total Phosphate as P 1 mg/l
- Iron as Fe 4 mg/l
- Turbidity 200 NTU
- Grease and Oil 40 mg/l

For Caltrans projects, a MOU between TRPA and the LRWQCB acknowledges that LRWQBC is the lead regulatory agency for water quality in the region. LRWQBC water quality thresholds can be found in the Basin Plan. The LRWQBC numeric effluent limits for runoff discharged to infiltration systems are different from TRPA Threshold WQ-6. The LRWQCB has total phosphorus objectives set at 0.15 mg/l and a total nitrogen objective of 0.008 mg/L for Lake Tahoe. Both of these objectives are more conservative than TRPA objectives. The LRWQBC numeric effluent limits for surface discharges are similar to TRPA Threshold WQ-5, but this would be an inaccurate comparison of total to dissolved (although WQ-5 is the same for turbidity, grease, and oil).

3.13.3 Environmental Consequences (Including Permanent, Temporary, Direct, Indirect)

Impact WQ-1. Substantial Alteration in the Quality of Surface Runoff

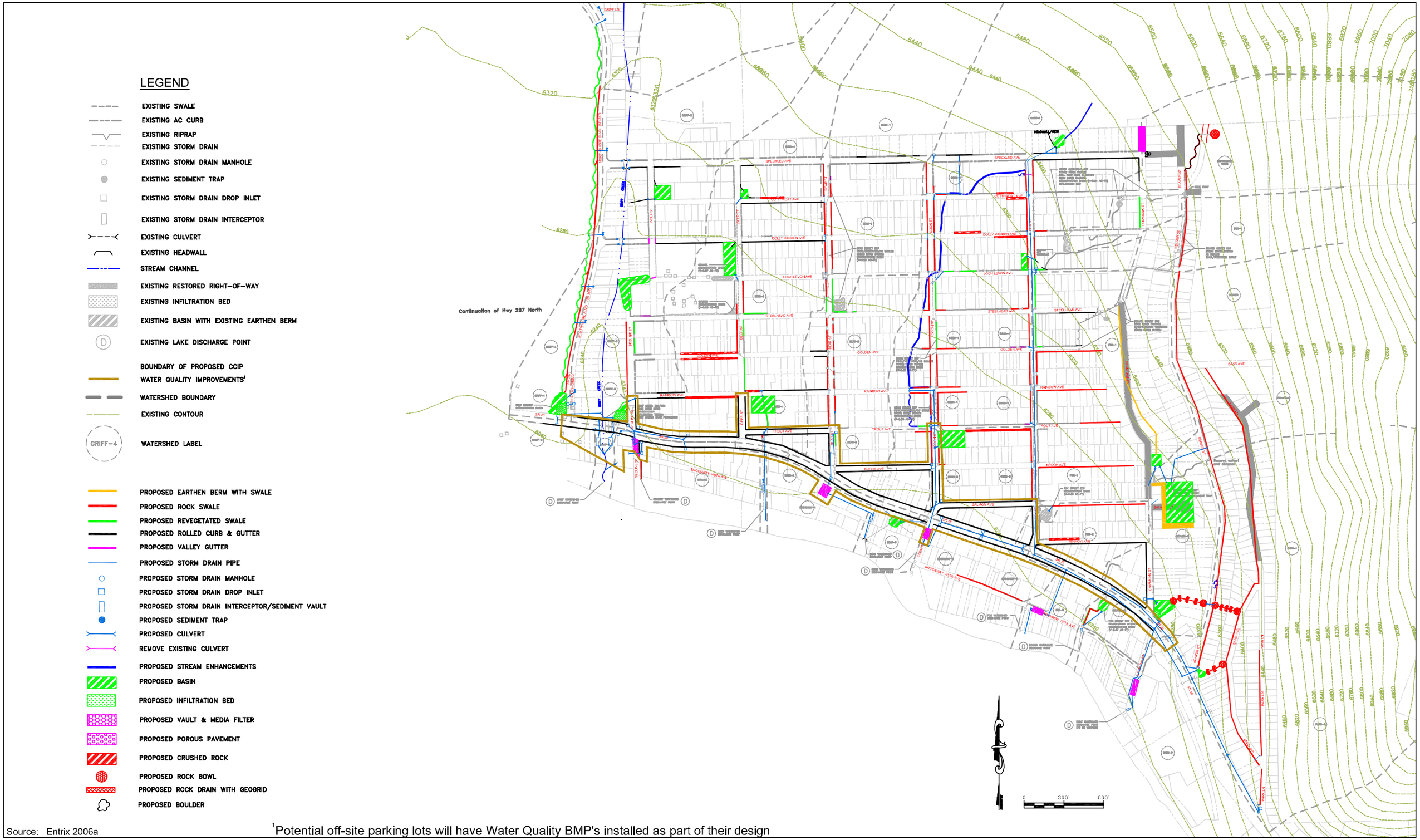
Alternative 1

Implementation of the no-build alternative would result in no change to the current conditions. As a result, the outdated drainage facilities would remain the same and overtopping of the road would continue to occur which would continue to increase the transport of roadway contaminant loading during the storm season.

Alternatives 2–4

Short-term effects to water quality could occur during construction activities. Construction activities associated with the CCIP will not result in the physical alteration of the course of any annual or perennial creeks, streams, or streambeds present in the action area because construction activities will stay within the existing ROW. In addition, concentrations of TOC, TSS, turbidity, dissolved oxygen (DO), and nutrients such as nitrogen and phosphorus in creeks and groundwater would not be affected substantially by construction activities as streambeds will not be physically altered or moved. However, construction activities could result in short-term elevated nutrient loads from the erosion of disturbed soils during construction could occur if precipitation events would occur simultaneously with construction activities. In addition, spills of hazardous, toxic, toxic, or petroleum substances during construction activities could result in temporary effects to water quality. Mitigation has been identified to reduce the severity of this effect (Mitigation Measures WQ-1 and WQ-2).

Implementation of Alternatives 2–4 would result in various improvements to the drainage, collection, conveyance, and treatment facilities that would ultimately improve water quality in the long term. As indicated in *Chapter 2, Alternatives*, and Figure 3.13-2, drainage, collection, conveyance, and treatment improvements will be implemented as part of the proposed WIP to improve water quality in the Kings Beach region and CCIP. These design features will help to collect, convey, and treat water runoff from on-street parking sites implemented as part of the CCIP and as well as runoff flowing into the CCIP from areas upstream of the CCIP. Moreover, as indicated in Chapter 2, the proposed CCIP drainage, collection, conveyance, and treatment facilities that tie into and interface with the proposed WIP improvements would improve the quality of the surface runoff through the CCIP. In addition, all off-street parking lots would be designed with water collection and infiltration features to contain runoff on-site for a 20-year, 1-hour storm flow. These water collection and infiltration features will be incorporated into the off-site parking lots and are designed to mitigate runoff associated with the additional hard coverage from the parking lots. Because water would be contained entirely on-site,



Source: Entrix 2006a

[1]Potential off-site parking lots will have Water Quality BMP's installed as part of their design

Figure 3.13-2
Kings Beach Commercial Core Improvement Project
Proposed Water Quality Improvement Components

the off-site lots would not worsen water quality in the region. Consequently, implementation of the CCIP would result in long-term benefits to the quality of surface runoff due to these improved drainage, collection, conveyance, and treatment facilities. As indicated in *Section 3.11,* CCIP drainage improvements will be implemented as part of the proposed action. However, the proposed WIP improvements will be implemented in phases likely as separate projects with priority given to areas of the project watershed having the poorest drainage conditions.

Impact WQ-2. Substantial Degradation of Water Quality or Violation of any Water Quality Standards or Waste Discharge Requirements

Alternative 1

Implementation of the no-build alternative would not substantially degrade water quality to a point of violating any water quality standards or waste discharge requirements.

Alternatives 2–4

Construction activities associated with Alternatives 2–4 are not anticipated to violate or cause a violation of federal, state, or local water quality standards. Proposed construction activities do not involve treating, altering, or discharging materials from construction activities to streams or water bodies. All construction related materials will be held on-site, and construction activities are not expected to occur during the storm season. There would not be any adverse effects, and no mitigation required. Furthermore, Mitigation Measures WQ-1 and WQ-2 would further reduce the severity of this impact.

As indicated above, implementation of Alternatives 2–4 would result in various improvements to the drainage, collection, conveyance, and treatment facilities that would ultimately improve water quality in the long term, and these improvements would not degrade water quality result in a violation of any water quality standards or waste discharge requirements.

Impact WQ-3. Substantial Alterations of the Existing Drainage Pattern of the Site Area Such That Flood Risk and/or Erosion and Siltation Potential Would Increase

Alternative 1

Implementation of the no-build alternative would result in no change to the current conditions. As a result, the outdated drainage facilities would remain the same and overtopping of the road would occur, which would continue to increase the transport of sediment loading during the storm season.

Alternatives 2–4

Construction of the Alternatives 2-4 could result in short-term erosion and siltation effects. Mitigation has been identified to reduce the severity of this effect (Mitigation Measures WQ-1 and WQ-2).

As indicated in *Chapter 2, Alternatives*, implementation of Alternatives 2–4 would result in various improvements to the current drainage facilities. As a result, the outdated drainage facilities would be improved to handle greater stormwater flows. It is anticipated that these drainage improvements would prevent overtopping of SR 28 at all culverts, crossings, and drainage facilities affected by the proposed action, which would decrease the possibility to transport sediment to the lake. In addition, drainage, collection, conveyance, and treatment improvements will be implemented as part of the proposed WIP to improve water quality in the Kings Beach region and CCIP. These design features will help to collect, convey, and treat water runoff from the CCIP area, and would result in long-term benefits to the quality of surface runoff due to these improved drainage, collection, conveyance, and treatment facilities.

Impact WQ-4. Substantial Reduction in Groundwater Quantity or Quality

Alternative 1

Implementation of the no-build alternative would not result in the reduction of groundwater quantity or quality. The current enforcement maintains maximum concentrations in groundwater of dissolved inorganic nitrogen, dissolved phosphorus, and

dissolved iron and attains the 90th percentile value for suspended sediment concentration of 60 mg/L.

Alternatives 2–4

Implementation of Alternatives 2–4 would not result in the reduction of groundwater quantity or quality.

3.13.4 Mitigation, Avoidance, Minimization, and Compensation Measures

Mitigation Measure WQ-1. Implement Construction BMPs Contained in the SWPPP

To reduce or eliminate construction-related water quality effects before onset of any construction activities, Placer County will require that project contractors obtain coverage under the NPDES General Construction Permit. Placer County will be responsible for ensuring that construction activities comply with the conditions in this permit, which will require development of a SWPPP, implementation of BMPs identified in the SWPPP, and monitoring to ensure that effects on water quality are minimized.

All projects in the Lake Tahoe Basin are required to implement BMPs to protect water quality from impacts related to temporary construction activities and permanent site improvements. BMP guidance issued by regulatory agencies include the following:

- TRPA's *Handbook of Best Management Practices* (1988);
- TRPA Best Management Practices Retrofit Program;
- TRPA Erosion Control Team's general information;
- BMP Contractors Notes (TRPA 2005);
- TRPA guidance for BMP installation developed to incorporate advancing technology; and

- Nevada Department of Transportation *Storm Water Quality Manuals: Construction Site BMPs Manual* (Nevada Department of Transportation 2004).

As part of this process, Placer County will require the implementation of multiple erosion and sediment control BMPs in areas with potential to drain to Lake Tahoe. These BMPs will be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable. BMPs to be implemented as part of this mitigation measure may include, but are not limited to, the measures below.

- Temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, checkdams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) will be employed to control erosion from disturbed areas.
- Drainage facilities in downstream off-site areas will be protected from sediment using BMPs acceptable to the Placer County, the RWQCB, and TRPA.
- Grass or other vegetative cover will be established on the construction site as soon as possible after disturbance.

In addition, construction-related BMPs should be used to minimize the mobilization of sediment from construction activities. The following erosion and sediment control measures, which are based on standard measures and standard dust-reduction measures, will be included in the SWPPP, which is to be included in the construction specifications and project performance specifications.

- Cover or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more) that could contribute sediment to waterways.

- Enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways.
- Contain soil and filter runoff from disturbed areas by berms, vegetated swales, silt fencing, straw wattle, plastic sheeting, catch basins, infiltration basins, or other means necessary to prevent the escape of sediment from the disturbed area.
- Refrain from depositing or placing earth or organic material where it may be directly carried into a stream, marsh, slough, lagoon, or body of standing water.
- Prohibit the following types of materials from being rinsed or washed into the streets, shoulder areas, or gutters: concrete, solvents and adhesives, thinners, paints, fuels, sawdust, dirt, gasoline, asphalt and concrete saw slurry, and heavily chlorinated water.
- Employ temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) to control erosion from disturbed areas.

TRPA requires that projects address water quality by reducing the projected level of contaminant loading. Untreated urban runoff from parking lots and roads does not typically meet the numeric standards for discharge to surface water. The following contaminant types and associated sources are being considered during project design and construction.

- **Sediment-related issues:** sediment generated from erosion during storm events and from increased flow attributable to impermeable surfaces; sediment generated during construction.
- **Nutrient-related issues:** nutrients transported with sediment, atmospheric deposition, organic matter (leaves, grass clippings), and landscape fertilizer.

- **Trash-related issues:** debris from construction and debris deposited by facility users.
- **Oil- and-grease-related issues:** oil and grease deposited by vehicles present on site during construction and facility use.
- **Toxic contaminant–related issues:** concrete-washing during construction, paving during construction (loose gravels, sealants), materials used in structures (paint, wood preservatives), and landscape pesticides.

To address the potential generation of contaminated stormwater discharges, temporary BMPs are shall be applied during and immediately after the construction period. The conscientious application and maintenance of temporary BMPs can protect water quality during construction periods. The minimum temporary BMPs needed to be consistent with the TRPA and Caltrans guidance documents referenced above and to satisfy TRPA Code requirements (Chapters 25, 64, and 81) are outlined in Table 3.13-3.

Table 3.13-3. Temporary Best Management Practices

Temporary Construction Site Practices (BMP-TCS)	Temporary Soil Stabilization Practices (BMP-TSS)
Development site plan (BMP-1)	(nonvegetative)
Grading season (BMP-2)	Straw mulch (BMP-15)
Boundary fencing (BMP-4)	Hydromulch (BMP-16)
Stabilized construction entrance (BMP-6)	Pine needle mulch (BMP-17)
Protection of trees and other vegetation (BMP-8)	Jute netting (BMP-18)
Temporary Sediment Barriers (BMP-TSB)	Plastic netting (BMP-19)
Straw bale sediment barriers (BMP-9)	Wood excelsior blanket (BMP-20)
Filter fencing (BMP 10)	Erosion control blankets or geotextiles (BMP-21)
Straw bale drop inlet sediment barrier (BMP-11)	Chemical mulches and tackifiers (BMP-22)
Sandbag curb inlet sediment barrier (BMP-12)	Temporary Runoff Control on Slopes (BMP-TD)
Filter berm (BMP-13)	Diversion dike (BMP-23)
Siltation berm (BMP-14)	Interceptor swale (BMP-28)
Temporary and/or Permanent Sediment Retention Structures	Diversion swale (BMP-24) - Interception dike (BMP-27)
Sediment trap (BMP-33)	

Source: Tahoe Regional Planning Agency 1988.

Final selection of BMPs will be subject to review by Placer County. Placer County will verify that an NOI and a SWPPP have been filed before allowing construction to begin. Placer County or its contractor will perform routine inspections of the construction area to verify that the BMPs specified in the SWPPP are properly implemented and maintained. Placer County will notify contractors immediately if there is a noncompliance issue and will require compliance.

Mitigation Measure WQ-2. Implement a Spill Prevention and Control Program

Placer County will require contractors to develop and implement a spill prevention and control program to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during construction activities.

The program will be completed before any construction activities begin. This plan will be a part or section of the SWPPP required for the proposed action as the SWPPP addresses non-stormwater releases.

Placer County will review and approve the spill prevention and control program before onset of construction activities. Placer County will routinely inspect the construction area to verify that the measures specified in the spill prevention and control program are properly implemented and maintained. Placer County will notify contractors immediately if there is a noncompliance issue and will require compliance.

The federal reportable spill quantity for petroleum products, as defined in the EPA's CFR (*40 CFR 110*) is any oil spill that (1) violates applicable water quality standards, (2) causes a film or sheen upon or discoloration of the water surface or adjoining shoreline, or (3) causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

If an appreciable spill has occurred and is reportable, the contractor's superintendent will notify Placer County and the county will need to take action to contact the appropriate safety and clean-up crews to ensure the spill prevention plan is followed. A written description of reportable releases must be submitted to the RWQCB and TRPA. This submittal must include a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases would be documented on a spill report form. If the results determine that project activities have adversely affected surface water or groundwater quality, a detailed analysis will be performed by a registered environmental assessor to identify the likely cause of contamination. This analysis will conform to American Society for Testing and Materials standards and will include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this

analysis, Placer County and its contractors will select and implement measures to control contamination, with a performance standard that surface water quality groundwater quality must be returned to baseline conditions. These measures will be subject to approval by Placer County.

3.13.5 Compliance with Tahoe Regional Planning Agency Code

The proposed action alone is expected to benefit the water quality threshold significantly through various drainage conveyance upgrades and stormwater treatment facilities deployed as part of the proposed action. Newly installed drainage facilities will capture many pollutants before they enter the lake. These improvements will greatly outweigh any negative impacts associated with newly created impervious surfaces. No adverse effects are anticipated.