

4.17 HYDROLOGY AND WATER QUALITY

This section describes the physical characteristics of the project area, focused on surface hydrology, drainage, flooding, groundwater, and water quality; identifies laws and regulations related to these resources; and presents an analysis of the environmental effects associated with implementation of the alternatives. Section 4.15, “Wetlands,” describes waters of the United States and waters of the state within the context of the statutes, regulations, and policies that regulate wetland resources. Section 4.12, “Vegetation,” discusses mesic and aquatic land cover types as vegetation and habitat types and as sensitive natural communities. Section 4.14, “Wildlife and Aquatics,” discusses aquatic land cover types as habitats for common and special-status species.

4.17.1 Affected Environment

The study area for hydrology and water quality for the Base-to-Base Gondola project alternatives includes the geographic area encompassing the following three scales of potential impact areas: (1) the immediate area where project components would be installed, (2) the extended area around those components where disturbance from installation activities is likely, and (3) the broader hydrological environment originating at the first geographic intersection of project implementation activities and hydrological features, continuing all the way downstream to the point where dilution renders any perceivable environmental effect immeasurable. This third area specifically encompasses the receiving watersheds of Squaw Creek, Bear Creek, and the first reach of the middle Truckee River from the confluence with Bear Creek to the town of Truckee.

A portion of the Alternative 2 alignment passes along the ridge crest that separates the Truckee River watershed and the Five Lakes Creek watershed. Components of the alignment between the Alternative 2 mid-stations, including part of the area of temporary vegetation removal, the temporary access road, and gondola towers, may cross the watershed divide. The environment in this area consists primarily of granitic outcrop, and hydrological features are limited to ephemeral drainages that convey winter snowmelt. Because the disturbance area within the Five Lakes Creek watershed would be extremely small, and because the drainages in that area represent a small contribution to the watershed, effects on the watershed from implementation of Alternative 2 would be immeasurable. In addition, Resource Protection Measures (RPMs) and avoidance of aquatic features through the use of setbacks would result in minimal activity in this area. Therefore, the Five Lakes Creek watershed is not included in the study area for the Base-to-Base Gondola project.

4.17.1.1 ENVIRONMENTAL SETTING

Physiography and Climate

The project site is located in a portion of Placer County high in the Sierra Nevada mountain range. It is typical of the high alpine environment of the upper Sierra mountains, characterized by steep, predominantly igneous mountain slopes, thin soil cover, and craggy, uneven drainage patterns. The proposed gondola would follow a linear alignment of land between the base of the Alpine Meadows Ski Area (Alpine Meadows) (approximately 6,900 feet above sea level [asl]) and the base of the Squaw Valley Ski Area (Squaw Valley) (approximately 6,275 feet asl), spanning, and connecting, the mountainous terrain between the two resorts.

The project area is characterized by a typical montane climate, with cool, wet winters, and mild, dry summers. Local meteorological conditions are recorded by more than one source. Average temperatures range from daytime highs of 42 °F in January to 82 °F in July. Precipitation data (collected as inches of rain or water equivalent snow) for Olympic Valley is collected at the Squaw Valley Fire Station gage; snow accumulation is collected at the Squaw Valley Ski Area SNOTEL site; and temperature is collected at the Truckee Station National Oceanic and Atmospheric Administration weather gage. Conditions representing Olympic Valley serve as an excellent proxy for conditions at Alpine Meadows, as both valleys experience

similar seasonal weather conditions. The nearly 3,000-foot elevation difference between the valley floor (~6,200 feet) and ridge crests (~9,000 feet) produces local climate diversity.

The average total annual precipitation on the valley floor is 47 inches snow in water equivalent (meaning the inches of water both as rain and if all snow were melted), while the average for surrounding mountains is 263 inches snow in water equivalent. The year-to-year variability in total precipitation for the valley is large relative to its average, while the variability of total precipitation (including snow in water equivalent) on the mountain is extreme (a minimum around 120 inches and a maximum over 500 inches). Because the pattern of years with high versus low precipitation is not consistent for the mountain and valley locations, there are mixed effects on surface runoff production and groundwater recharge potential. In addition, while historically most of the area's precipitation comes in the form of snow, in recent years the snowline has been trending to higher elevations, resulting in a mix of precipitation that is more heavily rain-dominated than in the past. The pattern of precipitation, with winters of heavy snowfall, followed by rapidly warming temperatures in the late spring and early summer, is the main driver of the hydrologic cycle for creeks and rivers within the project area, and regionally. Observations on snowpack in the Sierra Nevada have been made year-round, with snowpack observed as late as July, which can drive heavy runoff periods well into summer.

Hydrology

Truckee River and Truckee River Basin

The project alternatives are located within the Truckee River basin, a basin which encompasses an area of approximately 3,060 square miles (1,958,400 acres) across California and Nevada (NDEP 1997). Approximately 25 percent of the basin is in California and 75 percent in Nevada. The middle Truckee River originates at Lake Tahoe, in California, and flows northeast over a distance of 105 miles to terminate at Pyramid Lake in the desert of northwestern Nevada. Pyramid Lake is an evaporative topographic sink with no outlet, a remnant of the ancient Lake Lahontan that covered vast portions of the modern-day state of Nevada. There are five recognized reaches of the Truckee River system: (1) the 15-mile reach beginning at the Truckee River's origin at the Lake Tahoe Dam in Tahoe City, California; (2) the 20-mile reach that cuts through the Carson Range of the Sierra Nevada mountains, flowing through the upper Truckee River canyon between Truckee, California, and Verdi, Nevada; (3) the 15-mile reach through the Truckee Meadows and the Cities of Reno and Sparks, Nevada, to Vista, Nevada; (4) the 30-mile reach from Vista, Nevada to Wadsworth, Nevada, through the lower Truckee River canyon, cutting through the Virginia Range; and (5) the 25-mile reach below Wadsworth, Nevada, traversing a broad alluvial valley to Pyramid Lake" (NDEP 1997). The watershed between Lake Tahoe and Pyramid Lake includes 1,190 square miles within portions of Nevada; Placer and Sierra Counties in California; and portions of Washoe, Storey, and Lyon Counties and Carson City in Nevada. In California, the watershed includes the drainage areas surrounding the Truckee River between Lake Tahoe and the Town of Truckee, the Donner Creek drainage area west of Truckee, the Martis Creek drainage south and east of Truckee, the Prosser Creek and Little Truckee River drainage areas north and east of Truckee, and the upper Truckee River canyon below Hirschdale to the Nevada state line in Verdi. The project alternatives occur upstream of two minor tributaries to the middle Truckee River, Squaw Creek and Bear Creek (described in detail below).

Squaw Creek and Squaw Creek Watershed

Squaw Valley and Alpine Meadows, being separated by a mountainous ridge, are hydrologically separate entities (Exhibit 4.17-1), with Squaw Valley draining into Squaw Creek, in what is known as Olympic Valley. Average monthly precipitation is highest in the winter and spring, with little to no precipitation in July, August, and September. Most of the precipitation occurs as snow between December and March, while a small percentage is received as rain in the spring and early summer.

The project site is located within the low-elevation portion of the approximately 8-square-mile Squaw Creek watershed, a tributary to the middle reach of the Truckee River (hydrologically downstream of Lake Tahoe). The main Squaw Valley village area is at the west end of the valley floor, at the transition where steep headwater tributaries become flat, meandering flow. The proposed base-terminal for the gondola on the

Squaw Valley side would be near the main Squaw Valley village, approximately 0.5 mile southwest from Squaw Creek's confluence with the Truckee River.

Squaw Creek is a small (approximately 8.2 square miles), subalpine and alpine watershed located about 6 miles northwest of Lake Tahoe, between the towns of Tahoe City and Truckee in California. Ephemeral drainages feeding Squaw Creek headwaters originate high in the surrounding mountains, at elevations as high as 8,900 feet above mean sea level (amsl), and flow down to the main stem and on to the Truckee River at approximately 6,200 feet amsl. The main stem of the creek, at the west end, is divided into north and south subwatersheds, which converge at the base of Squaw Valley, west of the main village area (Exhibit 4.17-1). The northern portions of the action alternatives occur in the south subwatershed. This western end of the creek, with the north and south subwatersheds, is the focus of analysis as the remainder of the creek flows away from the project area, with the lower portions of the creek several miles from the nearest proposed facility.

Both branches of Squaw Creek have similar relief, although the south fork is generally smaller, steeper, and has a higher mean elevation than the north fork. Despite differences in size, existing data indicate that the smaller south fork contributes approximately twice as much runoff per unit area. Watershed geology is dominated by andesitic and granitic rocks and glacial deposits. Land use in the watershed is mostly recreational, commercial, and residential. Over the past 50 years, natural vegetation has been removed from hillslopes in the south fork, and these areas have been developed into ski slopes and maintenance roads. A small amount of Ski Area development has also occurred in the north fork. Removal of vegetation for ski slopes has vastly increased the amount of sediment discharged into the watershed, chiefly affecting the south fork where the majority of disturbance has occurred.

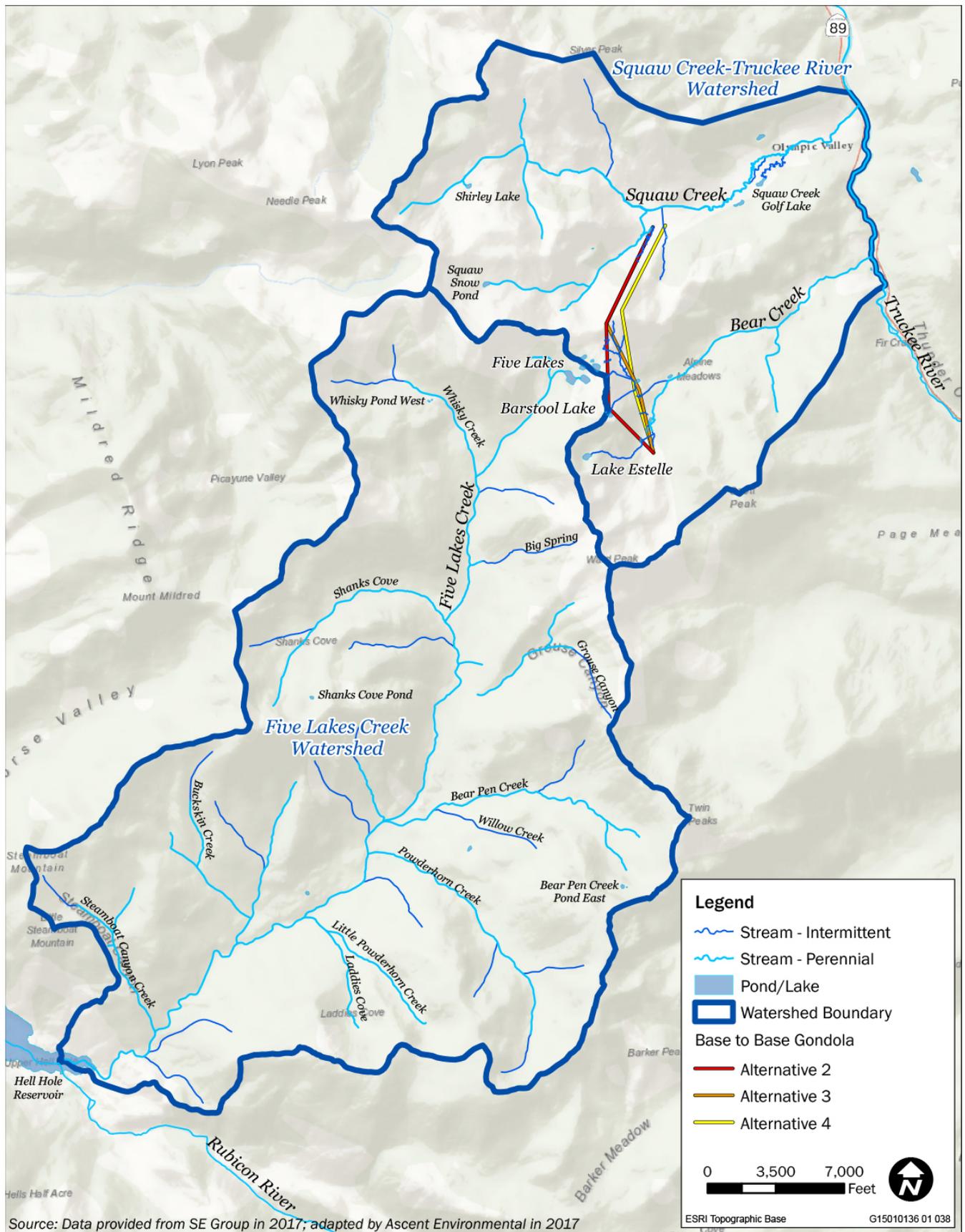
Roads in the Squaw Creek watershed produce both sediment and accelerated runoff and contribute sediment load to the stream network. Nearly all roads connect either directly or indirectly with streams and therefore act as extensions of stream networks and effectively increase watershed drainage density. The increase in effective drainage density has caused sediment from hillslopes to be transported more rapidly to streams. Roads can circumvent natural hillslope sediment transport processes and accelerate erosion, produce sediment through rills and gulying, and alter the magnitude, timing, and peak discharge of streams.

Bear Creek and the Bear Creek Watershed

Like Squaw Valley, the hydrology at Alpine Meadows is primarily influenced by snowmelt runoff, with summer thunderstorms playing an important role in influencing increased flow rates. Alpine Meadows averages around 370 inches of annual snowfall at the base, and over 450 inches at the upper elevations. Snowmelt occurs rapidly and drains on the north side of the resort to Bear Creek and to Ward Creek on the south side. Ward Creek is a tributary to Lake Tahoe. Bear Creek is a tributary to the Truckee River. Some percolation of snowmelt into soil layers occurs. Wetland and riparian areas are found along drainages, springs, and in valley areas north of the base lodge.

Bear Creek, also a tributary to the Truckee River in Placer County, is located 6 miles northwest of Tahoe City. The watershed is approximately 9 square miles, encompassing National Forest System (NFS), California Tahoe Conservancy, and private land holdings. The southern portion of all project alternatives is located in the Bear Creek watershed. The upper reaches of this watershed primarily consist of bedrock with wide bowls of alluvial deposits that are volcanically derived. Bear Creek drains Alpine Meadows and flows southeast from its headwaters to its confluence with the Truckee River approximately 3 miles downstream. Tributaries to Bear Creek originate in Alpine Meadows at elevations of approximately 8,600 feet amsl. Flow rates in Bear Creek are highly variable throughout the year, with peak flows during freshet and significant precipitation events in fall and winter. Almost all peak flow events take place between late fall and early spring.

Alpine Meadows, surrounding the headwaters of Bear Creek, on NFS and California Tahoe Conservancy land, is one of the principal land users of the upper Bear Creek watershed. Alpine Meadows has 14 lifts in operation, 2,000 acres of skiable terrain, three snowmaking ponds, a base lodge development, and two parking areas that are connected by development. At the mid-stream location, private land holdings and housing developments span more than half the reach of Bear Creek.



Source: Data provided from SE Group in 2017; adapted by Ascent Environmental in 2017

Exhibit 4.17-1 Watershed

Aquatic Resources Survey

An aquatic resources survey was carried out in the Bear Creek and Squaw Creek watersheds to identify hydrological resources that could be affected by the various Base-to-Base Gondola alignment alternatives. The survey area consisted of a 100-foot-wide area on either side of the centerline of each of the action alternatives. Resources were mapped by Hydro Restoration (Hydro Restoration 2016, 2017) and supplemented by Ascent Environmental through later field surveys and review of available materials to confirm the locations of features and establish connectivity with existing hydrologic datasets. Aquatic resources identified within the survey area include lacustrine, palustrine, and riverine features.

A total of 1.65 acres of aquatic resources were mapped in the survey area for Alternative 2, 3.62 acres in the survey area for Alternative 3, and 4.13 acres for the survey area for Alternative 4 (Table 4.17-1). These categories correspond to those used in Section 4.15, “Wetlands,” and are intended to represent aquatic habitats that could fall under the jurisdiction of Section 404 of the Clean Water Act (CWA), the Porter-Cologne Water Quality Control Act, and California Fish and Game Code Section 1602. (For a description of the CWA and the Porter-Cologne Water Quality Control Act, see Section 4.17.1.2, “Regulatory Setting,” below; for information on the California Fish and Game Code Section 1602, see Section 4.15, “Wetlands.”)

Table 4.17-1 Aquatic Resources in the Study Area

Action Alternative	Ownership	Feature Type (acres)							Total
		Riverine			Lacustrine	Palustrine			
		Perennial	Ephemeral	Roadside Ditch	Pond	Mountain Alder Thicket	Wetlands	Freshwater Emergent Wetland	
2	Private	0	0.22	0.04	0.25	0	0	0.89	1.40
	Alpine Meadows SUP Area	0.10	0.07	0	0	0.64	0.07	0	0.89
	Total	0.10	0.30	0.04	0.25	0.64	0.07	0.89	2.29
3	Private	0	0.26	0.04	0.51	0.14	0.088	0.16	1.98
	Alpine Meadows SUP Area	0.35	0.01	0.04	0.52	0	0.16	0.71	1.78
	Total	0.35	0.27	0.08	1.03	0.14	1.04	0.87	3.76
4	Private	0	0.04	0	0.02	0.48	2.53	0.07	3.14
	Alpine Meadows SUP Area	0.35	0.01	0.02	0.64	0	0.07	0.37	1.47
	Total	0.35	0.05	0.02	0.66	0.48	2.60	0.44	4.61

Notes: SUP = special use permit.

Totals may not equal sum of numbers because of independent rounding.

Sources: Hydro Restoration 2016, 2017; adapted by Ascent Environmental in 2018

The acreage values provided in Table 4.17-1 correspond to an initial estimate of the portions of aquatic habitats in the study area that may be subject to Section 404 of the CWA, the Porter-Cologne Water Quality Control Act, and/or California Fish and Game Code Section 1602. A formal delineation of jurisdictional features associated with each action alternative has not been conducted to confirm the exact boundaries of waters and wetlands consistent with the criteria provided in each of these laws. Such a delineation would be conducted after a single alternative is approved to focus the effort on a limited number of aquatic features.

Mapped aquatic resources features are presented in Exhibit 4.17-2. Riverine features in the survey area consist of ephemeral, intermittent, and perennial streams, and ditches. Several unnamed seasonal (ephemeral and intermittent) tributary streams cross the survey area. They are recognizable primarily from exposures of rounded or subangular (alluvial) gravels, deposits of transported sand and from “water staining” (blackish growth of cyanobacteria, and/or deposition of orangish oxidized iron compounds) on bedrock and boulders, but also occasionally from the presence of hydrophytic plant species. Vegetation of

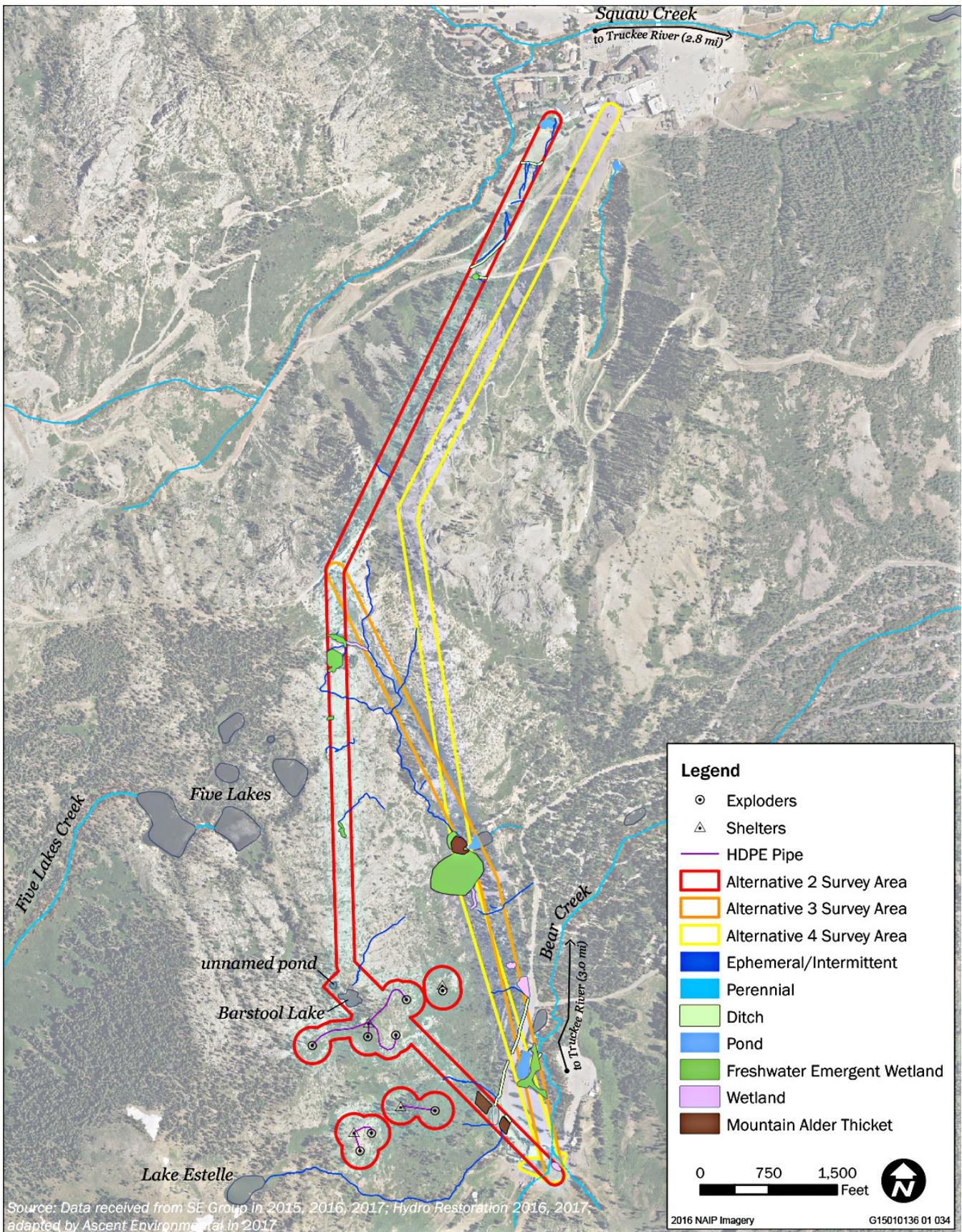


Exhibit 4.17-2 Hydrology Features

riverine habitat within the survey area includes areas of cover by mosses (and nonvascular plants) growing on sand or bedrock, and areas of hydrophytic vascular plants (EcoSynthesis 2017). Perennial streams cross the lower portion of the northern face of the alignments on Squaw Valley and southern face along Alpine Meadows Road. Several roadside ditches were also mapped as riverine features near existing roadways. Many of the features are ditches dug in uplands that concentrate flow off roadways. Bear Creek, a perennial stream that flows from Alpine Meadows to the Truckee River, is near the Alpine Meadows base area. Riparian scrub habitat, adjacent to Bear Creek was mapped within the study area, on the southern segment of the action alternatives prior to the lower terminal at Alpine Meadows. Areas adjacent to Bear Creek exhibit typical alpine riparian floodplain with alder scrub-shrub habitat.

Lacustrine habitats within the study area consist of constructed open water ponds. The constructed ponds include Cushing Pond at Squaw Valley, Caldwell Pond on private property, and a detention pond near the base of Alpine Meadows. Naturally occurring ponds occur adjacent to, but not within the wetlands study area and are not included in Table 4.17-1. Adjacent natural ponds include Barstool Lake, which is located northwest of the base of Alpine Meadows, and just south of the Alpine Meadows mid-station proposed under Alternative 2, and an unnamed pond adjacent to Barstool Lake. Other naturally occurring lacustrine features in the project vicinity include Five Lakes, which is a cluster of five small lakes located west of the Alternative 2 alignment. Naturally occurring ponds are addressed in Section 4.14, "Wildlife and Aquatics," as habitat for Sierra Nevada yellow-legged frog and long-toed salamander. Lacustrine features are classified as "freshwater ponds" in Section 4.12, "Vegetation."

Palustrine habitats exist along topographic benches in the ephemeral drainages and at the edges of lakes and streams. A small fen exists on the southern exposure of Skunk Rock (near the northern mid-station for Alternatives 2 and 3), where several ephemeral tributaries convene. The southern portion of the project descends over a mountain flank spring seep, typical of alpine wetland features. The determination of wetland hydrology was based on observed inundation and saturation in the upper 12–24 inches of soil, watermarks on nearby banks of canals, drift lines on vegetation, and sediment deposits. The natural hydrology of the site consists of the unnamed ephemeral tributaries, recognizable primarily from deposits of transported sand and from "water staining" (blackish growth of cyanobacteria and/or deposition of orange oxidized iron compounds) on bedrock and boulders but also occasionally from the presence of hydrophytic plant species (Hydro Restoration 2017).

Groundwater

The alluvial aquifer underlying Olympic Valley is the Olympic Valley Groundwater Basin as designated by the California Department of Water Resources (DWR) (DWR basin No. 6-108). It has a surface area of slightly over 1 square mile (700 acres). The geohydrology of the basin has been characterized multiple times by several investigators over the decades and these data have been integrated in the *Squaw Valley Public Service District Olympic Valley Groundwater Management Plan* (HydroMetrics WRI 2007).

The bedrock beneath Olympic Valley forms a trough that trends generally east of northeast, carved in igneous bedrock that is not porous, but may hold some groundwater in vertical fractures. The unconsolidated sediments filling the bedrock trough were deposited by a combination of glacial, fluvial, and lacustrine processes and have varied composition and extent. The lateral and vertical variation in materials has complicated mapping and correlation of rock formations (Farr West Engineering et al. 2014). Recent analyses characterize three hydrogeologic units:

- ▲ Unit 1 is the surface unit approximately the 5–25 feet of soil/sediment closest to the ground surface), comprised of fine sands and silts in the west with increasing fines (clay, silts, peaty organics) to the east;
- ▲ Unit 2 is the underlying layer, which has a wide range of depth and thickness but is the primary water-bearing unit of sands and gravels, with increasing silt and clay to the east; and
- ▲ Unit 3 is the base layer, comprised of fine materials and occasional sand and gravel, occurring primarily in the east and having low production capacity.

Generally, materials in the western portions of the basin are coarser and have higher groundwater storage and transmission capability. Groundwater in the Olympic Valley Groundwater Basin generally flows from west to east, with some flow towards the center of the basin off the north and south side slopes. Flow patterns are also affected by local depressions around production wells during pumping. While complex and not fully mapped or quantified, the existing groundwater recharge conditions are not pristine. Historical development on the valley floor may have reduced direct infiltration opportunities where soils have been covered by impervious surfaces. Conversely, vegetation and soil cover management on ski slopes may have increased potential hill slope or mountain front infiltration. Groundwater is the major source of domestic and irrigation water supply in Olympic Valley, with an existing network of nine vertical wells in the alluvial aquifer and five horizontal wells into fractured bedrock.

The Alpine Springs County Water District provides potable water within the Bear Creek subwatershed. Water supplies for the Alpine Springs County Water District are provided by seven groundwater wells, six of which are suitable for potable water, with a combined production capacity of 567 gallons per minute (Placer County 2017).

Storm Drainage

Olympic Valley

About 5.3 square miles (approximately 88 percent) of the 6.0-square-mile watershed draining to Squaw Creek at the downstream end of the main Village area lacks any engineered stormwater drainage systems. The remaining 0.73-square-mile area has been modified for recreation, commercial, residential, and related developed land uses and is served by a drainage system comprised of various open channels, pipes, and culverts that discharge to the stream channels, and were installed by several parties over many decades.

Cushing Pond drain conveys mountain runoff along with runoff from existing commercial areas through a 36-inch pipe to an outfall downstream of the confluence. The Intrawest Drain System serves the existing developed uses in the Village complex and conveys runoff via pipes under a portion of the east parking lot to underground filtration systems (but these are of uncertain sizing, type, efficiency or maintenance status) before discharging to Squaw Creek upstream of the East Village Bridge.

Existing snow storage practices and locations may have an influence on the volume and peak runoff during snow melt. Field observations suggest that the south margin of the west parking lot along Squaw Creek and the east margin of the east parking lot along the Olympic Channel are active snow storage areas. However, little information documents the existing locations and/or methods of snow storage, or its relationship to the existing plow areas (MacKay & Soms 2014).

Bear Creek Valley

The Alpine Meadows portion of the project site drains into Bear Creek, which drains into the Truckee River. There are a series of artificial ditches that collect runoff at the bottom of the ski area, all of which ultimately convey drainage to Bear Creek. Ditches line all sides of the ski area parking lots, and culverts help convey runoff around the lodge, visitor facilities, and some of the base lifts. Although a portion of the Alpine Meadows Ski Area drains to Ward Creek, which is a tributary to Lake Tahoe, no part of the project area is within the Ward Creek watershed.

Water Quality and Impairment

Truckee River

The Truckee River total maximum daily load (TMDL) for sediment establishes sediment load allocations for subwatersheds and intervening areas along the Middle Truckee River, from Tahoe City to the California-Nevada state line (Lahontan RWQCB 2008). The total sediment load allocation for the entire Middle Truckee River watershed is set at 40,329 tons per year (Lahontan RWQCB 2008). The total load allocation for Squaw Creek is 2,228 tons/year. The TMDL consists of several indirect indicators and target values for each indicator. The only direct indicator is suspended sediment concentration in the Truckee River, with a target

of less than or equal to 25 milligrams per liter as an annual 90th percentile loading, as measured in the Truckee River at Farad (USGS Station 10346000). Additional indirect indicators include successful implementation and maintenance of best management practices (BMPs) for road sand application, BMPs for ski runs, and restoration activities such as decommissioning of dirt roads and repair of legacy sites. It is important to highlight the distinction between the Truckee River and Squaw Creek TMDL requirements. While the Squaw Creek TMDL specifically targets sediment that is deposited on the river bed, the Truckee River TMDL targets finer sediment that moves in suspension to downstream areas.

Squaw Creek

Squaw Creek is listed as impaired by the Lahontan Regional Water Quality Control Board (RWQCB) because of sediment (Lahontan RWQCB 2012). The TMDL for sediment recognizes ski-runs and dirt roads as primary controllable sediment sources, with urban runoff and road sand as secondary sources. The necessary percent load reductions and load allocations have been designated by source category. Implementation of the TMDL focuses on tracking compliance with existing regulatory actions, and monitoring channel bed conditions in the meadow reach of Squaw Creek (downstream of the trapezoidal channel). Target instream conditions include an increase in perennial flow, relative decrease in fines and sand, increased size of bed material, and higher scores on bioassessments. The numeric targets are reflected in updates of monitoring programs in WDRs issued by the Lahontan RWQCB in the watershed

Bear Creek

Bear Creek was formerly listed on the Section 303(d) List for sedimentation/siltation but was recommended for delisting in 2006 and has not since been relisted for sedimentation or any other chemical constituents or parameters (Lahontan RWQCB 2012).

4.17.1.2 REGULATORY SETTING

Federal

Tahoe National Forest Land and Resource Management Plan and Sierra Nevada Forest Plan Amendment Record of Decision

The purpose of the *Tahoe National Forest Land and Resource Management Plan* (LRMP) is to “direct the management of the Tahoe National Forest (TNF) for the next 10 to 15 years. Its goals are to ensure the wise use and protection of TNF resources, fulfill legislative requirements, and address local, Regional, and National issues” (U.S. Forest Service 1990). The Sierra Nevada Forest Plan Amendment Record of Decision (SNFPA) amended the LRMP in 2004 to improve protection of old forests, wildlife habitats, watersheds, and communities in the Sierra Nevada (U.S. Forest Service 2004). The LRMP and SNFPA, collectively referred to as the Forest Plan, provide protection of water quality through policies, standards, and guidelines that maintain water quality where it meets or exceeds state objectives and improve water quality where it does not meet state objectives. Water quality standards established in the Forest Plan are intended to meet the goals of the Clean Water Act and Safe Drinking Water Act and to preserve beneficial uses. As part of the analysis conducted for this Draft EIS/EIR, specific standards and guidelines identified in the Forest Plan related to hydrology and water quality were applied and evaluated for consistency.

Forest Service Handbook

Best Hydrologic Management Practices are provided in the Forest Service Region 5 (R5) Forest Service Handbook (FSH) 2509.22 – Soil and Water Conservation Handbook (Handbook) (U.S. Forest Service 2011). Those BMPs that are applicable to the project are identified in Appendix B, which also identifies the RPMs that are part of the project (see Section 4.17.2.1, “Methods and Assumptions,” for additional details related to RPMs). These BMPs will be implemented with the RPMs. The BMPs are associated with the particular RPMs because the RPM itself satisfies all or part of the applicable elements of the BMP, or the RPM and BMP address similar resources. The Soil and Water Conservation Handbook provides BMPs for a broad range of activities undertaken on R5 forests, such as grazing, timber harvests, and facility development. Implementation of the BMPs that are applicable to the project are required to meet R5 policies and to be consistent with the provisions of the 1981 Management Agency Agreement between the State Water

Resources Control Board (SWRCB) and the Forest Service as the designated Water Quality Management Agency on NFS lands.

Clean Water Act

The U.S. Environmental Protection Agency (EPA) is the lead federal agency responsible for water quality management. The CWA is the primary federal law that governs and authorizes water quality control activities by EPA as well as the states. Various elements of the CWA address water quality. These are discussed below.

CWA Water Quality Criteria/Standards

Pursuant to federal law, EPA has published water quality regulations under Title 40 of the CFR. Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the act, water quality standards consist of designated beneficial uses of the waterbody in question and criteria that protect the designated uses. Section 304(a) requires EPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. As described in the discussion of state regulations below, the SWRCB and its nine RWQCBs have designated authority in California to identify beneficial uses and adopt applicable water quality objectives.

CWA Section 303(d) Impaired Waters List

Under Section 303(d) of the CWA, states are required to develop lists of waterbodies that do not attain water quality objectives after implementation of required levels of treatment by point source dischargers (municipalities and industries). Section 303(d) requires that the state develop a TMDL for each of the listed pollutants. The TMDL is the amount of the pollutant that the waterbody can receive and still be in compliance with water quality objectives. The TMDL is also a plan to reduce loading of a specific pollutant from various sources to achieve compliance with water quality objectives. EPA must either approve a TMDL prepared by the state or disapprove the state's TMDL and issue its own. National Pollutant Discharge Elimination System (NPDES) permit limits for listed pollutants must be consistent with the waste load allocation prescribed in the TMDL. After implementation of the TMDL, it is anticipated that the problems that led to placement of a given pollutant on the Section 303(d) list would be remediated.

CWA Section 404

In accordance with Section 404 of the CWA, the U.S. Army Corps of Engineers (USACE) regulates discharge of dredged or fill material into waters of the United States. Waters of the United States and their lateral limits are defined in Title 33, Part 328.3(a) of the CFR to include navigable waters of the United States, interstate waters, all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Any activity resulting in the placement of dredged or fill material within waters of the United States requires a permit from USACE. In accordance with Section 401 of the CWA, projects that apply for a USACE permit for discharge of dredged or fill material must obtain water quality certification from the appropriate RWQCB indicating that the project will uphold water quality standards. Wetland protection elements of the CWA administered by USACE are further discussed in Section 4.15, "Wetlands."

CWA Section 401 and 402 National Pollutant Discharge Elimination System

The NPDES permit program was established in the CWA to regulate municipal and industrial discharges to surface waters of the United States. NPDES permit regulations have been established for broad categories of discharges including point source waste discharges and nonpoint source stormwater runoff. Each NPDES permit identifies limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits.

"Nonpoint source" pollution originates over a wide area rather than from a definable point. Nonpoint source pollution often enters receiving water in the form of surface runoff and is not conveyed by way of pipelines or discrete conveyances. Two types of nonpoint source discharges are controlled by the NPDES program: discharges caused by general construction activities and the general quality of stormwater in municipal

stormwater systems. The goal of the NPDES nonpoint source regulations is to improve the quality of stormwater discharged to receiving waters to the maximum extent practicable. The RWQCBs in California are responsible for implementing the NPDES permit system (see the discussion of the state regulatory setting, below).

National Toxics Rule

In 1992, EPA issued the National Toxics Rule (NTR) (40 CFR 131.36) under the CWA to establish numeric criteria for priority toxic pollutants in 14 states and jurisdictions, including California, to protect human health and aquatic life. The NTR established water quality standards for 42 pollutants for which water quality criteria exist under CWA Section 304(a) but for which the respective states had not adopted adequate numeric criteria. EPA issued the California Toxics Rule (CTR) in May 2000. The CTR establishes numeric water quality criteria for 130 priority pollutants for which EPA has issued Section 304(a) numeric criteria that were not included in the NTR.

Federal Antidegradation Policy

The federal antidegradation policy, established in 1968, is designed to protect existing uses of waters and water quality and national water resources. The federal policy directs states to adopt a statewide policy that includes the following primary provisions:

- ▲ existing instream uses and the water quality necessary to protect those uses shall be maintained and protected;
- ▲ where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development; and
- ▲ where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

National Flood Insurance Act

The Federal Emergency Management Agency (FEMA) is tasked with responding to, planning for, recovering from and mitigating against disasters. Formed in 1979 to merge many of the separate disaster related responsibilities of the federal government into one agency, FEMA is responsible for coordinating the federal response to floods, earthquakes, hurricanes, and other natural or man-made disasters and providing disaster assistance to states, communities and individuals. The Federal Insurance and Mitigation Administration within FEMA is responsible for administering the National Flood Insurance Program (NFIP) and administering programs that provide assistance for mitigating future damages from natural hazards. Established in 1968 with the passage of the National Flood Insurance Act, the NFIP is a federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the federal government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the federal government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods. Placer County participates in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage.

Safe Drinking Water Act

As mandated by the Safe Drinking Water Act (Public Law 93-523), passed in 1974, EPA regulates contaminants of concern to domestic water supply. Such contaminants are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by EPA primary and secondary maximum contaminant levels (MCLs). MCLs and the process for setting these standards are reviewed triennially. Amendments to the Safe Drinking Water Act enacted in

1986 established an accelerated schedule for setting drinking water MCLs. EPA has delegated responsibility for California's drinking water program to the California Department of Health Services. The California Department of Health Services is accountable to EPA for program implementation and for adoption of standards and regulations that are at least as stringent as those developed by EPA.

Truckee River Operating Agreement

The Olympic Valley Groundwater Basin is located within the Truckee River basin or watershed. In 1990, to resolve litigation involving claims to the Truckee River, Congress passed the Truckee-Carson-Pyramid Lake Water Rights Settlement Act (the Settlement Act). The Settlement Act mandated that the States of Nevada and California negotiate an agreement for Truckee River operations, and that the resulting operating agreement be promulgated as a federal regulation. After almost 20 years of negotiations between the states and Truckee River stakeholders, the Truckee River Operating Agreement (TROA) was executed in September 2008. The TROA was first published in December 2008 and its promulgation as a federal regulation became final in January 2009. However, due to ongoing litigation, tribal considerations, and a requirement to extend TROA, the TROA is not yet effective.

If the TROA becomes effective, two elements of the Settlement Act and the TROA are relevant to new groundwater production and uses within the Truckee River Basin. First, the Settlement Act allocates 32,000 acre-feet annually of total water diversions from all sources—both surface water and groundwater—to California for use in the Truckee River basin. In its analysis of predicted water usage in California through 2033, the EIS/EIR for the TROA included water use projections from DWR. The TROA EIS/EIR analysis predicted that California's Truckee River basin total water usage (surface water and groundwater) would not exceed 22,700 acre-feet annually by 2033 (Reclamation et al. 2008). Second, the TROA, when effective, would include specifications for new wells constructed in the Truckee River basin. New wells would need to be designed to minimize any short-term surface water streamflow reductions to the maximum extent possible. To that end, TROA designates "special zones" and criteria for each of those zones that, if observed, will lead to a presumption of compliance with the Settlement Act's mandate. Special zones include the Alpine Meadows Special Zone, and the Squaw Valley Special Zone. Criteria for those zones require that any well to be constructed within the watershed be drilled more than 500 feet from the centerline of the Truckee River or any Truckee River lake, and comply with specific, defined setbacks from other waterbodies.

To ensure that all new wells comply with the Settlement Act, TROA requires that a "Notice of Intent to Construct a Well" to be filed with the TROA Administrator prior to drilling. If the Notice is properly filed, it will operate to provide presumptive compliance with the TROA and the Settlement Act, and the well may be drilled once the County issues a permit pursuant to local regulations. Although the TROA is not yet in effect, DWR has developed a well notice form to be used during the interim period before the TROA is implemented. Parties who plan to drill a well in the TROA coverage area could complete the form and submit it to DWR and the TROA parties to confirm compliance with TROA terms. If no objections are raised by the TROA signatories within 90 days, the documentation is submitted to the TROA Administrator, and the well is presumed to be in compliance when the TROA comes into effect. If such a pre-TROA Notice of Intent is not filed before the TROA becomes effective, for all new wells drilled after May 1, 1996, a Notice of Intent must be filed within 30 days of the date the TROA becomes effective.

Neither the Settlement Agreement nor the TROA, when effective, will limit the project applicant's, the Squaw Valley Public Service District's, or the Alpine Springs County Water District's right to construct wells, subject to the conditions for presumptive compliance.

State

California Porter-Cologne Water Quality Control Act

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Porter-Cologne Act). The Porter-Cologne Act grants SWRCB and each of the nine RWQCBs power to protect water quality and is the primary vehicle for implementation of California's responsibilities under the CWA. The applicable RWQCB is

the Lahontan RWQCB. SWRCB and the Lahontan RWQCB have the authority and responsibility to adopt plans and policies, regulate discharges to surface water and groundwater, regulate waste disposal sites, and require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substances, sewage, or oil or petroleum products.

Each RWQCB must formulate and adopt a water quality control plan (Basin Plan) for its region. The Basin Plans must conform to the policies set forth in the Porter-Cologne Act and established by SWRCB in its state water policy. The Porter-Cologne Act also provides that a RWQCB may include within its Basin Plan water discharge prohibitions applicable to particular conditions, areas, or types of waste. The Lahontan RWQCB is responsible for the waterbodies in the study area.

Water Quality Control Plan for the Lahontan Basin

The Basin Plan presents water quality standards and control measures for surface water and groundwater of the region. The Basin Plan designates beneficial uses for waterbodies and establishes water quality objectives, waste discharge prohibitions, and other implementation measures to protect those beneficial uses. The Basin Plan contains both narrative and numeric water quality objectives for the region. Ambient water quality standards are set as objectives for a body of water and effluent limits (or discharge standards) are conditions in state or federal wastewater discharge permits, such as the NPDES permits. Land uses and activities that could degrade water quality and BMPs that could be used to address various nonpoint sources of pollution are identified in the Basin Plan.

Beneficial Uses

The Basin Plan defines and designates the existing beneficial uses for surface water and groundwater in the study area. Beneficial uses for receiving waters of the project study area are identified in Table 4.17-2.

Table 4.17-2 Designated Beneficial Uses for Waterbodies in the Study Area

Beneficial Use	Definition of Use	Truckee River	Squaw Creek	Bear Creek
Surface Water				
Municipal and Domestic Supply	Community, military, or individual water supply, including drinking water supply.	X	X	X
Agricultural Supply	Farming, horticulture, or ranching activities, including irrigation, stock watering, and support of vegetation for range grazing.	X	X	X
Industrial Service Supply	Beneficial uses of waters used for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, geothermal energy production, hydraulic conveyance, gravel washing, fire protection, and oil well repressurization.	X	X	X
Groundwater Recharge	Uses of waters used for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.	X		X
Freshwater Replenishment	Uses of waters used for natural or artificial maintenance of surface water quantity or quality (e.g., salinity).	X		
Hydropower Generation	Hydroelectric power generation.	X		
Contact Recreation	Recreational activities involving body contact with water where ingestion of water is reasonably possible. These include, for example, swimming, water-skiing, or fishing.	X	X	X
Noncontact Recreation	Recreational activities involving proximity to water, but not normally involving body contact with water. These uses include picnicking, sunbathing, hiking, beachcombing, camping, boating, and others.	X	X	X
Commercial and Sport Fishing	Commercial or recreational collection of fish or other organisms including, but not limited to, uses involving organisms intended for human consumption.	X	X	X

Table 4.17-2 Designated Beneficial Uses for Waterbodies in the Study Area

Beneficial Use	Definition of Use	Truckee River	Squaw Creek	Bear Creek
Cold Freshwater Habitat	Beneficial uses of waters that support cold water ecosystems including, but not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.	X	X	X
Wildlife Habitat	Uses of waters that support wildlife habitat including preservation and enhancement of vegetation and prey species such as waterfowl.	X	X	X
Rare, Threatened, or Endangered Species	Beneficial uses of waters that support habitat necessary for the survival and successful maintenance of plant or animal species established under state and/or federal law as rare, threatened or endangered.	X	X	X
Migration of Aquatic Organisms	Beneficial uses of waters that support habitats necessary for migration, acclimatization between fresh and salt water, or temporary activities by aquatic organisms, such as anadromous fish.	X	X	X
Spawning, Reproduction, and Development	Beneficial uses of waters that support high quality aquatic habitat necessary for reproduction and early development of fish and wildlife.	X	X	X
Warmwater Spawning, Reproduction, and Development	Uses of water that support high quality aquatic habitat necessary for reproduction and early development of fish and wildlife.	X	X	X
Groundwater – All Groundwaters of the Lahontan Region				
Municipal and Domestic Supply	Community, military, or individual water supply, including drinking water supply.	n/a	n/a	n/a
Agriculture Supply	Farming, horticulture, or ranching activities, including irrigation, stock watering, and support of vegetation for range grazing.	n/a	n/a	n/a
Industrial Service Supply	Uses of water for industrial activities that do not depend primarily on water quality, including mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization.	n/a	n/a	n/a
Industrial Process Supply	Uses of water for industrial activities that depend primarily on water quality.	n/a	n/a	n/a

Source: Lahontan RWQCB 2016

TMDL for Middle Truckee River

The Truckee River and Squaw Creek TMDLs are discussed above (see discussion of water quality and impairment) but are repeated and expanded here for context. TMDL for sediment establishes sediment load allocations for subwatersheds and intervening areas along the Middle Truckee River, from Tahoe City to the California-Nevada state line (Lahontan RWQCB 2008). The tributary rule establishes that for tributary watersheds, activities must consider and protect downstream uses. Therefore, actions taken in tributaries to Squaw Creek or Bear Creek must be sufficiently protective that they do not contribute to an exceedance of the load allocation for subwatersheds of the Middle Truckee River. The total sediment load allocation for the entire Middle Truckee River watershed is set at 40,329 tons per year (Lahontan RWQCB 2008). The total load allocation for Squaw Creek is 2,228 tons per year, or 5.5 percent of the total, and the total load allocation for Bear Creek is 321 tons per year, or 0.8 percent of the total (Lahontan RWQCB 2008). The TMDL consists of several indirect indicators and target values for each indicator. The only direct indicator is suspended sediment concentration in the Truckee River, with a target of less than or equal to 25 milligrams per liter as an annual 90th percentile loading, as measured in the Truckee River at Farad (USGS Station 10346000). Additional indirect indicators include successful implementation and maintenance of BMPs for road sand application, BMPs for ski runs, and restoration activities such as decommissioning of dirt roads and repair of legacy sites. It is important to highlight the distinction between the Truckee River and Squaw Creek TMDL requirements. While the Squaw Creek TMDL specifically targets sediment that is deposited on the bed, the Truckee River TMDL targets finer sediment that moves in suspension to downstream areas. Proposed project elements and watershed management strategies must focus on both suspended sediment as well as the sand-size portion of bedload sediment, which rarely moves in suspension.

NPDES Permits

SWRCB and the RWQCBs, through powers granted by the federal CWA, require specific permits for a variety of activities that have potential to discharge pollutants to waters of the state and adversely affect water quality. To receive an NPDES permit a Notice of Intent to discharge must be submitted to the RWQCB and design and operational BMPs must be implemented to reduce the level of contaminated runoff. BMPs can include the development and implementation of regulatory measures (local authority of drainage facility design) various practices, including educational measures (workshops informing public of what impacts result when household chemicals are dumped into storm drains), regulatory measures (local authority of drainage facility design), public policy measures (label storm drain inlets as to impacts of dumping on receiving waters), and structural measures (filter strips, grass swales, and retention basins). All NPDES permits also have inspection, monitoring, and reporting requirements.

General Permit for Storm Water Discharges Associated with Construction Activity

SWRCB adopted the statewide NPDES General Permit for Storm Water Discharges Associated with Construction Activity (General Construction Permit) in August 1999. The state requires that projects disturbing more than 1 acre of land during construction file a Notice of Intent with the RWQCB to be covered under this permit. Construction activities subject to the General Construction Permit include clearing, grading, stockpiling, and excavation. Dischargers are required to eliminate or reduce non-stormwater discharges to storm sewer systems and other waters. A stormwater pollution prevention plan (SWPPP) must be developed and implemented for each site covered by the permit. The SWPPP must include BMPs designed to prevent construction pollutants from contacting stormwater and keep products of erosion from moving off-site into receiving waters throughout the construction and life of the project; the BMPs must address source control and, if necessary, pollutant control.

General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems

The Municipal Stormwater Permitting Program regulates stormwater discharges from municipal separate storm sewer systems (MS4s), which includes development within Olympic Valley. Stormwater is runoff from rain or snow melt that runs off surfaces such as rooftops, paved streets, highways or parking lots and can carry with it pollutants such as oil, pesticides, herbicides, sediment, trash, bacteria and metals. The runoff can then drain directly into local natural and man-made waterbodies. Often, the runoff drains into storm drains which eventually drain, untreated, into a waterbody.

MS4 permits were issued in two phases: Phase I, for medium and large municipalities, and Phase II for small ones. The Phase II Small MS4 General Permit provides coverage for small municipalities and covers permittees statewide. The Phase II Small MS4 General Permit requires the discharger to develop and implement a stormwater management plan (SWMP) with the goal of reducing the discharge of pollutants to the maximum extent practicable, which is the performance standard specified in Section 402(p) of the CWA. The SWMPs specify what BMPs will be used to address certain program areas. The Phase II Small MS4 General Permit was updated in 2013 with permit language containing reporting requirements, clear performance standards, and measurable and quantifiable targets for implementation. This specificity was intended to establish required outcomes that were not achievable with the previous iteration of the permit.

California Water Code, Water Supply Wells and Groundwater Management

The California Water Code is enforced by DWR. The mission of the DWR is “to manage the water resources of California in cooperation with other agencies, to benefit the State’s people, and to protect, restore, and enhance the natural and human environments” DWR is responsible for promoting California’s general welfare by ensuring beneficial water use and development statewide. The laws regarding groundwater wells are addressed in the California Water Code: Division 1, Article 2 and Articles 4.300 to 4.311; and Division 7, Articles 1-4. The Water Code also includes provisions for water supply assessments, but the project is not of sufficient size (e.g., 500 employees and other similar water demand parameters) to require one.

Groundwater Management is outlined in the California Water Code, Division 6, Part 2.75, Chapters 1–5, Sections 10750 through 10755.4. The Groundwater Management Act was first introduced in 1992 as Assembly Bill (AB) 3030 and has since been modified by Senate Bill (SB) 1938 in 2002, AB 359 in 2011, and the Sustainable Groundwater Management Act (SB 1168, SB 1319, and AB 1739) in 2014. The intent

of the acts is to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdictions and to provide a methodology for developing a groundwater management plan.

California Nondegradation Policy

In 1968, as required under the federal antidegradation policy described previously, SWRCB adopted a nondegradation policy aimed at maintaining high quality for waters in California. The nondegradation policy states that the disposal of wastes into state waters shall be regulated to achieve the highest water quality consistent with maximum benefit to the people of the state and to promote the peace, health, safety, and welfare of the people of the state. The policy provides as follows:

- a) Where the existing quality of water is better than required under existing water quality control plans, such quality would be maintained until it has been demonstrated that any change would be consistent with maximum benefit to the people of the state and would not unreasonably affect present and anticipated beneficial uses of such water.
- b) Any activity which produces waste or increases the volume or concentration of waste and which discharges to existing high-quality waters would be required to meet waste discharge requirements.

Low Impact Development – Sustainable Stormwater Management

On January 20, 2005, SWRCB adopted sustainability as a core value for all California Water Boards' activities and programs and directed RQWCB staff to consider sustainability in all future policies, guidelines, and regulatory actions. As part of the effort to promote sustainability, the RWQCBs are advancing Low Impact Development (LID) principles in California in various ways. LID is a sustainability promoting practice that benefits water supply and contributes to water quality protection. Unlike traditional stormwater management, LID uses site design and stormwater management to maintain the site's pre-development runoff rates and volumes. The goal of LID is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to the source of rainfall. LID has been a proven approach in other parts of the country and is seen in California as an alternative to conventional stormwater management.

Local

Placer County General Plan

The following *Placer County General Plan* (Placer County 2013) policies pertaining to sewage conveyance, treatment, and disposal; drainage and water quality; flood protection; water resources; and wetland and riparian areas are most relevant for the alternatives.

Sewage Conveyance, Treatment, and Disposal

- ▲ **Policy 4.D.10.** The County shall require all public wastewater facilities to be designed and built to the current standards of the agency providing service.

Drainage and Water Quality

- ▲ **Policy 4.E.1.** The County shall encourage the use of natural stormwater drainage systems to preserve and enhance natural features.
- ▲ **Policy 4.E.3.** The County shall consider using stormwater of adequate quality to replenish local groundwater basins, restore wetlands and riparian habitat, and irrigate agricultural lands.
- ▲ **Policy 4.E.4.** The County shall ensure that new storm drainage systems are designed in conformance with the Placer County Flood Control and Water Conservation District's Stormwater Management Manual and the County Land Development Manual.
- ▲ **Policy 4.E.5.** The County shall continue to implement and enforce its Grading, Erosion and Sediment Control Ordinance and Flood Damage Prevention Ordinance.

- ▲ **Policy 4.E.10.** The County shall strive to improve the quality of runoff from urban and suburban development through use of appropriate site design measures including, but not limited to vegetated swales, infiltration/sedimentation basins, riparian setbacks, oil/grit separators, rooftop and impervious area disconnection, porous pavement, and other best management practices (BMPs).
- ▲ **Policy 4.E.11.** The County shall require new development to adequately mitigate increases in stormwater peak flows and/or volume. Mitigation measures should take into consideration impacts on adjoining lands in the unincorporated area and on properties in jurisdictions within and immediately adjacent to Placer County.
- ▲ **Policy 4.E.12.** The County shall encourage project designs that minimize drainage concentrations and impervious coverage and maintain, to the extent feasible, natural site drainage conditions.
- ▲ **Policy 4.E.13.** The County shall require that new development conforms with the applicable programs, policies, recommendations, and plans of the Placer County Flood Control and Water Conservation District.
- ▲ **Policy 4.E.14.** The County shall require projects that have significant impacts on the quantity and quality of surface water runoff to allocate land as necessary for the purpose of detaining post-project flows, evapotranspiring, infiltrating, harvesting/using, and biotreating stormwater, and/or for the incorporation of mitigation measures for water quality impacts related to urban runoff.
- ▲ **Policy 4.E.15.** The County shall require that new development in primarily urban development areas incorporate low impact development measures to reduce the amount of runoff, to the maximum extent practicable, for which retention and treatment is required.
- ▲ **Policy 4.E.16.** The County shall identify and coordinate mitigation measures with responsible agencies for the control of storm drainage systems, monitoring of discharges, and implementation of measures to control pollutant loads in urban storm water runoff (e.g., California Regional Water Quality Control Board, Placer County Environmental Health Division, Placer County Department of Public Works, CDRA Engineering and Surveying Division, Placer County Flood Control and Water Conservation District).
- ▲ **Policy 4.E.20.** The County shall continue to implement and enforce its Stormwater Quality Ordinance.

Flood Protection

- ▲ **Policy 4.F.4.** The County shall require evaluation of potential flood hazards prior to approval of development projects. The County shall require proponents of new development to submit accurate topographic and flow characteristics information and depiction of the 100-year floodplain boundaries under fully developed, unmitigated runoff conditions.
- ▲ **Policy 4.F.5.** The County shall attempt to maintain natural conditions within the 100-year floodplain of all rivers and streams except under the following circumstances:
 - a. Where work is required to manage and maintain the stream's drainage characteristics and where such work is done in accordance with the Placer County Flood Damage Prevention Ordinance, California Department of Fish and Wildlife regulations, and Clean Water Act provisions administered by the U.S. Army Corps of Engineers.
- ▲ **Policy 4.F.10.** The County shall preserve or enhance the aesthetic qualities of natural drainage courses in their natural or improved state compatible with flood control requirements and economic, environmental, and ecological factors.
- ▲ **Policy 4.F.13.** The County shall continue to implement and enforce its Grading, Erosion and Sediment Control Ordinance and Flood Damage Prevention Ordinance.

- ▲ **Policy 4.F.14.** The County shall ensure that new storm drainage systems are designed in conformance with the Placer County Flood Control and Water Conservation District's Stormwater Management Manual and the County's Land Development Manual.

Natural Resources

- ▲ **Policy 6.A.1.** The County shall require the provision of sensitive habitat buffers which shall, at a minimum, be measured as follows: 100 feet from the centerline of perennial streams, 50 feet from centerline of intermittent streams, and 50 feet from the edge of sensitive habitats to be protected, including riparian zones, wetlands, old growth woodlands, and the habitat of special status, threatened or endangered species (see discussion of sensitive habitat buffers in Part I of this Policy Document). Based on more detailed information supplied as a part of the review for a specific project or input from state or federal regulatory agency, the County may determine that such setbacks are not applicable in a particular instance or should be modified based on the new information provided. The County may, however, allow exceptions, such as in the following cases:
 1. Reasonable use of the property would otherwise be denied;
 2. The location is necessary to avoid or mitigate hazards to the public;
 3. The location is necessary for the repair of roads, bridges, trails, or similar infrastructure; or,
 4. The location is necessary for the construction of new roads, bridges, trails, or similar infrastructure where the County determines there is no feasible alternative and the project has minimized environmental impacts through project design and infrastructure placement.
- ▲ **Policy 6.A.2.** The County shall require all development in the 100-year floodplain to comply with the provisions of the Placer County Flood Damage Prevention Ordinance.
- ▲ **Policy 6.A.3.** The County shall require development projects proposing to encroach into a stream zone or stream setback to do one or more of the following, in descending order of desirability:
 - a. Avoid the disturbance of riparian vegetation;
 - b. Replace all functions of the existing riparian vegetation (on-site, in-kind);
 - c. Restore another section of stream (in-kind); and/or
 - d. Pay a mitigation fee for in-kind restoration elsewhere (e.g., mitigation banks).
- ▲ **Policy 6.A.4.** Where stream protection is required or proposed, the County should require public and private development to:
 - a. Preserve stream zones and stream setback areas through easements or dedications. Parcel lines (in the case of a subdivision) or easements (in the case of a subdivision or other development) shall be located to optimize resource protection. If a stream is proposed to be included within an open space parcel or easement, allowed uses and maintenance responsibilities within that parcel or easement should be clearly defined and conditioned prior to map or project approval;
 - b. Designate such easement or dedication areas (as described in a. above) as open space;
 - c. Protect stream zones and their habitat value by actions such as: 1) providing an adequate stream setback, 2) maintaining creek corridors in an essentially natural state, 3) employing stream restoration techniques where restoration is needed to achieve a natural stream zone, 4) utilizing riparian vegetation within stream zones, and where possible, within stream setback areas, 5) prohibiting the planting of invasive, non-native plants (such as Vinca major and eucalyptus) within stream zones or stream setbacks, and 6) avoiding tree removal within stream zones;
 - d. Provide recreation and public access near streams consistent with other General Plan policies;

- e. Use design, construction, and maintenance techniques that ensure development near a creek will not cause or worsen natural hazards (such as erosion, sedimentation, flooding, or water pollution) and will include erosion and sediment control practices such as: 1) turbidity screens and other management practices, which shall be used as necessary to minimize siltation, sedimentation, and erosion, and shall be left in place until disturbed areas; and/or are stabilized with permanent vegetation that will prevent the transport of sediment off site; and 2) temporary vegetation sufficient to stabilize disturbed areas.
 - f. Provide for long-term stream zone maintenance by providing a guaranteed financial commitment to the County which accounts for all anticipated maintenance activities.
- ▲ **Policy 6.A.5.** The County shall continue to require the use of feasible and practical best management practices (BMPs) to protect streams from the adverse effects of construction activities and urban runoff and to encourage the use of BMPs for agricultural activities.
 - ▲ **Policy 6.A.6.** The County shall require development projects to comply with the municipal and construction stormwater permit requirements of the Federal Clean Water Act National Pollutant Discharge Elimination System (NPDES) Phase I and II programs and the State General Municipal and Construction permits. Municipal requirements affecting project design and construction practices are enacted through the County's Stormwater Quality Ordinance. Separate construction permits may be required by and obtained through the State Water Resources Control Board.
 - ▲ **Policy 6.A.7.** All new development and redevelopment projects shall be designed so as to minimize the introduction of pollutants into stormwater runoff, to the maximum extent practicable, as well as minimize the amount of runoff through the incorporation of appropriate Best Management Practices.
 - ▲ **Policy 6.A.8.** The County shall support implementation of Low Impact Development site design and Watershed Process Management requirements for new and redevelopment projects in accordance with the NPDES Phase I and II programs, and applicable NPDES permits.
 - ▲ **Policy 6.A.9.** The County shall require that natural watercourses be integrated into new development in such a way that they are accessible to the public and provide a positive visual element.
 - ▲ **Policy 6.A.10.** The County shall discourage grading activities during the rainy season, unless adequately mitigated, to avoid sedimentation of creeks and damage to riparian habitat.
 - ▲ **Policy 6.A.11.** Where the stream zone has previously been modified by channelization, fill, or other human activity, the County shall require project proponents to restore such areas by means of landscaping, revegetation, or similar stabilization techniques as a part of development activities.
 - ▲ **Policy 6.A.13.** The County shall protect groundwater resources from contamination and further overdraft by pursuing the following efforts:
 - a. Identifying and controlling sources of potential contamination;
 - b. Protecting important groundwater recharge areas;
 - c. Encouraging the use of surface water to supply major municipal and industrial consumptive demands;
 - d. Encouraging the use of treated wastewater for groundwater recharge; and
 - e. Supporting major consumptive use of groundwater aquifer(s) in the western part of the County only where it can be demonstrated that this use does not exceed safe yield and is appropriately balanced with surface water supply to the same area.

Wetland and Riparian Areas

- ▲ **Policy 6.B.1.** The County shall support the “no net loss” policy for wetland areas regulated by the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and the California Department of Fish and Wildlife. Coordination with these agencies at all levels of project review shall continue to ensure that appropriate mitigation measures and the concerns of these agencies are adequately addressed.
- ▲ **Policy 6.B.2.** The County shall require new development to mitigate wetland loss in both federal jurisdictional and non-jurisdictional wetlands to achieve “no net loss” through any combination of the following, in descending order of desirability: (1) avoidance; (2) where avoidance is not possible, minimization of impacts on the resource; or (3) compensation, including use of a mitigation and conservation banking program that provides the opportunity to mitigate impacts to special status, threatened, and endangered species and/or the habitat which supports these species in wetland and riparian areas. Non-jurisdictional wetlands may include riparian areas that are not federal “waters of the United States” as defined by the Clean Water Act.
- ▲ **Policy 6.B.3.** The County shall discourage direct runoff of pollutants and siltation into wetland areas from outfalls serving nearby urban development. Development shall be designed in such a manner that pollutants and siltation will not significantly adversely affect the value or function of wetlands.
- ▲ **Policy 6.B.5.** The County shall require development that may affect a wetland to employ avoidance, minimization, and/or compensatory mitigation techniques. In evaluating the level of compensation to be required with respect to any given project, (a) on-site mitigation shall be preferred to off-site, and in-kind mitigation shall be preferred to out-of-kind; (b) functional replacement ratios may vary to the extent necessary to incorporate a margin of safety reflecting the expected degree of success associated with the mitigation plan; and (c) acreage replacement ratios may vary depending on the relative functions and values of those wetlands being lost and those being supplied, including compensation for temporal losses. The County shall continue to implement and refine criteria for determining when an alteration to a wetland is considered a less-than-significant impact under CEQA.

Placer County NPDES Municipal Stormwater Permit

Placer County has a Stormwater Management Program in compliance with a NPDES Phase II (“Small MS4”) municipal stormwater permit (SWRCB NPDES General Permit No. CAS000004, Board Order 2003-005-DWQ). Project-related stormwater discharges are subject to all applicable requirements of the permit.

Placer County Truckee River Basin Stormwater Management Plan

Placer County published the *Stormwater Management Manual* in 1990 and the *Land Development Manual* in 2006. Building on those efforts, in 2007 the *Truckee River Basin Stormwater Management Plan* was published in 2007. This plan provides a comprehensive program to reduce pollution in stormwater runoff located in the Placer County portion of the Middle Truckee River watershed. The plan is implemented in compliance with NPDES Phase II General Municipal Permit No. CAS000004 and WQCB Order No. 2003-005-DWQ.

Town of Truckee and Placer County Truckee River Water Quality Monitoring Plan

The *Truckee River Water Quality Monitoring Plan* (TRWQMP) has been created in response to an order issued by the Lahontan RWQCB. The California Water Code Section 13267 Lahontan RWQCB order, issued to both Placer County and the Town of Truckee on March 9, 2007 and July 3, 2007, respectively, requires the creation of a comprehensive monitoring program for the middle Truckee River. Although regulated under separate Lahontan RWQCB orders, Placer County and Truckee chose to coordinate efforts in the development of a monitoring program to ensure the cost-effective collection, integration and analysis of water quality data within the watershed.

The TRWQMP is just one element of a much larger stormwater program in the Truckee River watershed. Both Placer County and the Town of Truckee have developed and are implementing SWMPs. The respective SWMPs detail the specific actions each jurisdiction (County and Town) will implement to protect surface water. The purpose of the TRWQMP is to design a strategy which will allow the County and Town to assess the effectiveness of their ongoing SWMPs with respect to protecting downstream water resources.

Squaw Valley General Plan and Land Use Ordinance

The *Squaw Valley General Plan and Land Use Ordinance* (SVGPLUO) was adopted in 1983 as part of Placer County code.

Section V, “Environmental Resources Element,” Subsection F, “Streams and Waterways,” establishes goals to restore already disturbed drainage areas and to prevent further disturbance, specifically relating to Sections 115, 118, and 121 of the SVGPLUO listed below.

Section 115 of the SVGPLUO addresses drainage/water quality, including: Section 115.14 requiring drainage systems to prevent water quality degradation; limiting work within the 100-year floodplain aside from actions to restore areas previously modified by channelization, fill, or other human activities (Section 115.20); and Section 115.23 that adds additional beneficial function requirements on restoration.

Section 118 of the SVGPLUO addresses erosion control and requires a sedimentation and erosion control plan (Section 118.12) including both construction and long-term measures (Section 118.14) as part of grading, drainage, or improvement plans reviewed by the Placer County Department of Public Works. It does not specify the types of measures to be used but recommends suitable measures and requires revegetation of all disturbed surfaces that will not be part of the approved final impervious surfaces (Section 118.18).

Section 121 of the SVGPLUO, requires that adequate space be provided for storage of snow, and considers that a functional area be 20 percent of the clearable area not including storage along public roads, and that storage may not be within the 100-year floodplain.

Section 139 of the SVGPLUO addresses setbacks for residential structures (Section 139.10) and commercial structures (Section 139.12), setbacks in areas where the floodplain has not been established (Section 139.14), and additional special setbacks (Section 139.10).

Alpine Meadows General Plan

The *Alpine Meadows General Plan* was approved by the Placer County Board of Supervisors on May 1, 1968. It establishes policies specific to Alpine Meadows that build on the general policies found in the *Placer County General Plan* and *Placer County Zoning Ordinance*, similar to the SVGPLUO. California planning law dictates that all land use decisions be consistent with the implementing jurisdiction’s adopted general plans; accordingly, the *Alpine Meadows General Plan* is the primary existing document governing land use development in Alpine Meadows, and it includes additional goals and policies that further refine the goals and policies of the *Placer County General Plan*.

The *Alpine Meadows General Plan* is the community plan for the approximately 2,278-acre Alpine Meadows Ski Area, which comprises 1,407 acres of NFS lands, 444 acres of private land, and 427 acres of state lands. While there are no specific goals related to environmental and hydrological preservation identified within the plan, the plan contains a thread of focus on preservation of open space. Specifically, the Land Use element states that “[o]pen space and the watershed classifications provide the first essential step in preserving the natural resource base and appearance.... The compelling reason for [large lot acreages] is to protect the watershed from pollution and siltation.”

4.17.2 Analysis Methods

4.17.2.1 METHODS AND ASSUMPTIONS

This section addresses effects on hydrology and water quality from the project within the study area. Evaluation of hydrologic and water quality impacts was based on a review of general and project-specific studies that document water resource and stream corridor conditions and address possible effects of the project. The information obtained from these sources was reviewed and summarized to establish existing conditions and to independently identify potential environmental impacts, based on the standards of

significance presented below. In determining the level of significance, the analysis assumes that the project would comply with relevant federal, state, and local ordinances and regulations.

To carry out the impact analysis and determine project-related effects, data relating to the type and location of water quality features in the project vicinity were collected, synthesized, and summarized. Information on drainage and wetland features was collected at a local level for each of the three action alternatives, and this information was used to establish how widespread disturbance impacts would be on riparian environments. These data were combined with watershed-level drainage information to provide an analysis of downstream effects on waterbodies. Local drainage and wetland information was collected from several sources, including aquatic resource delineation surveys, wildlife surveys, National Hydrologic Dataset spatial data, topographic investigations, and satellite imagery. These data were combined to create a single dataset representing drainage features and connectivity in the area where the alternative alignments would cross. For the analysis in Riparian Conservation Areas (RCAs), aquatic features were further categorized based on their characteristics, and appropriate buffers were applied according to the SNFPA land allocations (U.S. Forest Service 2004).

As described in Section 2.2.6, “Resource Protection Measures,” the project incorporates a list of RPMs designed to avoid and minimize environmental effects. These RPMs are considered part of the project by the Forest Service and will be conditions of approval of the Placer County Conditional Use Permit (CUP). The text of all RPMs is provided in Appendix B. The potential effects of implementing the action alternatives are analyzed as follows: The effect of the action alternatives was determined, relevant RPMs were applied, and the effectiveness of reducing adverse effects was determined. If additional measures were needed to further reduce effects, they were identified.

As it relates to CEQA, the significance of impacts is determined before RPMs are implemented. The analysis then determines whether the RPMs would reduce significant impacts to a less-than-significant level. If significant impacts would remain, mitigation measures are added, as feasible, to further reduce the significant impact. All RPMs, as well as additional mitigation measures, would be included in the Placer County mitigation monitoring and reporting program, and their implementation would be ensured by the CUP’s conditions of approval. All RPMs are considered roughly proportional and have an essential nexus to the impacts they reduce.

4.17.2.2 EFFECTS ANALYSIS AND SIGNIFICANCE CRITERIA

NEPA Indicators

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 action alternatives. Under NEPA, impacts should be addressed in proportion to their significance (40 CFR 1502.2[b]), meaning that severe impacts should be described in more detail than less consequential impacts. This is intended to help decision makers and the public focus on the project’s key effects. The evaluation of effects considers the magnitude, duration, and significance of the changes. Changes that would improve the existing condition if they occur are noted and considered beneficial, and detrimental impacts are characterized as adverse. Where there would be no change, a “no effect” conclusion is used. The Forest Service has determined that the action alternatives could have an impact on hydrology and water quality. The following analytical indicators are used to inform the Forest Service’s determination of impacts:

- ▲ Description of existing surface and groundwater hydrology in the study area, including locations and drainage patterns of wetlands, riparian areas, and waterbodies within the study area (**Section 4.17.1.1, “Environmental Setting”**)
- ▲ Quantification (acres) of ground disturbance resulting from the projects and discussion of impacts on water quality, hydrologic function, drainage patterns, stream health, rate and amount of runoff, stream sedimentation, slope stability, and water quality standards of receiving waters (**Impacts 4.17-1 and 4.17-2**)

- ▲ Discuss particularly impacts of the temporary construction access route on water resources (**Impact 4.17-1**)
- ▲ Identification of any Clean Water Act (CWA) impaired or threatened waterbody segments in the Study Area, including Squaw Creek and the Truckee River (**Section 4.17.1.1, “Environmental Setting”**)
- ▲ Discussion of Total Maximum Daily Load (TMDL) adopted for sediment in Squaw Creek (**Section 4.17.1.1, “Environmental Setting,” and Impact 4.17-1**)
- ▲ Qualitative discussion of existing and proposed groundwater supply and potential changes to groundwater recharge due to increased visitation (**Section 4.17.1.1 and Impact 4.17-4**)
- ▲ Completion of a Riparian Conservation Objective (RCO) analysis, including identification of Riparian Conservation Areas (RCAs) and restrictions for RCAs (**Impact 4.17-6 and the Riparian Conservation Objectives Analysis Report [U.S. Forest Service 2018]**)
- ▲ Narrative discussion of BMPs and mitigation techniques to minimize adverse effects to watershed health (specifically measures to minimize erosion and the creation of a stormwater management plan) (**Impacts 4.17-1 and 4.17-2**)

CEQA Criteria

Based on the Placer County CEQA checklist, Appendix G of the State CEQA Guidelines, and hydrology and water quality policies and standards in the *Placer County General Plan*, implementing any of the alternatives would result in a significant impact related to hydrology and water quality if it would:

- ▲ violate any federal, state or county potable water quality standards (**Impacts 4.17-1, 4.17-2, and 4.17-3**);
- ▲ 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 pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted) (**Impact 4.17-4**);
- ▲ substantially alter the existing drainage pattern of the site or area (**Impact 4.17-5**);
- ▲ place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map (**Section 4.17.2.3, “Issues Not Discussed Further”**);
- ▲ place within a 100-year flood hazard area structures that would impede or redirect flood flows (**Section 4.17.2.3, “Issues Not Discussed Further”**);
- ▲ 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 (**Section 4.17.2.3, “Issues Not Discussed Further”**);
- ▲ result in inundation by seiche, tsunami, or mudflow (**Section 4.17.2.3, “Issues Not Discussed Further”**);
- ▲ increase the rate or amount of surface runoff (**Impact 4.17-5**);
- ▲ create or contribute runoff water which would include substantial additional sources of polluted water (**Impacts 4.17-1, 4.17-2, and 4.17-3**);
- ▲ otherwise substantially degrade surface water quality (**Impacts 4.17-1, 4.17-2, and 4.17-3**);
- ▲ alter the direction or rate of flow of groundwater (**Impact 4.17-4**); or

- ▲ impact the watershed of important surface water resources, including but not limited to Lake Tahoe, Folsom Lake, Hell Hole Reservoir, Rock Creek Reservoir, Sugar Pine Reservoir, French Meadows Reservoir, Combie Lake, and Rollins Lake (**Section 4.17.2.3, “Issues Not Discussed Further”**).

4.17.2.3 ISSUES NOT DISCUSSED FURTHER

As discussed in the Initial Study prepared for the project (Appendix A), the project site is not within a 100-year floodplain and no housing would be constructed as part of any of the alternatives. Therefore, none of the alternatives would impede or redirect flood flows, place housing within a floodplain, or expose people or structures to flooding. Because of the distance from the nearest large body of water—Lake Tahoe (approximately 7 miles to the east)—and the elevation of the project site, none of the alternatives would be affected by inundation as a result of seiche or tsunami. There would be no impact related to flooding. These issues are not discussed further in this Draft EIS/EIR.

The project would not affect the watersheds of important surface water resources, including but not limited to Lake Tahoe, Folsom Lake, Hell Hole Reservoir, Rock Creek Reservoir, Sugar Pine Reservoir, French Meadows Reservoir, Combie Lake, and Rollins Lake, because the hydrological effects of the project would not be hydrologically upstream of these waterbodies, nor is there known connectivity with the groundwater flow regime of the local groundwater resources for the project and these basins. Therefore, there would be no impact related to watershed effects on these waterbodies. This issue is not discussed further in this Draft EIS/EIR.

This section does not analyze indirect effects on Lake Tahoe water quality associated with additional vehicular trips to and from the Lake Tahoe Basin, because the effects would be minor and would be within thresholds established for the protection of lake water quality. Vehicles traveling in the basin can affect lake clarity through emissions of nitrogen and phosphorus and through sediment discharge, such as from driving on snowy roads where sand has been added for traction and which can run off into the lake. The Tahoe Regional Planning Agency (TRPA) established a carrying capacity threshold in 1982 of 2,067,000 vehicle miles traveled (VMT) on a peak summer day as a target to improve air quality. TRPA has begun to consider this threshold as also having an application to water clarity, although TRPA has acknowledged that the relationship between VMT and lake clarity warrants additional study. Existing and cumulative VMT in the basin projected through 2035 was estimated to be below 2,000,000 VMT on a peak summer day (including the Village at Squaw Valley Specific Plan project), which is below the 2,067,000 VMT threshold (Placer County 2016). The gondola project is estimated to generate only a small amount of VMT in the Lake Tahoe Basin, and only in winter. Because it does not include summer operations, the project cannot be compared directly against the carrying capacity threshold established by TRPA. However, for context, the project would generate 1,956 VMT in the basin on a peak winter Saturday and 1,768 VMT on a peak winter Sunday (see Section 4.7, “Transportation and Circulation”), and even if they were added to the summer peak VMT, they would not cause VMT to exceed carrying capacity thresholds. Therefore, it would not substantially affect water quality.

4.17.3 Direct and Indirect Environmental Consequences

4.17.3.1 ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Impact 4.17-1 (Alt. 1): Impacts from Erosion and Sedimentation Caused by Construction-Related Activities

Alternative 1 – The No Action Alternative would result in a continuation of existing conditions. There would be no new construction, and therefore, no generation of erosion or sedimentation. There would be **no effect** under both NEPA and CEQA.

Under Alternative 1 – No Action Alternative, TNF and Placer County would not provide the necessary authorizations to allow construction of a gondola or Gazex facilities. The outcome would be a continuation of existing conditions, and no construction or installation and operation of new facilities would take place. Therefore, there would be no generation of erosion or sedimentation.

NEPA Effects Conclusion

With no construction activities under Alternative 1, there would be **no effect** related to this issue.

CEQA Determination of Effects

With no construction activities under Alternative 1, there would be **no effect** related to this issue.

Mitigation Measures

No mitigation measures are required.

Impact 4.17-2 (Alt. 1): Impacts from Erosion and Sedimentation Caused by Long-Term Implementation of the Project

Alternative 1 – The No Action Alternative would result in a continuation of existing conditions. No new facilities would be installed, and therefore, no generation of erosion or sedimentation associated with them. There would be **no effect** under both NEPA and CEQA.

Under Alternative 1 – No Action Alternative, TNF and Placer County would not provide the necessary authorizations to allow construction of a gondola or Gazex facilities. The outcome would be a continuation of existing conditions. Therefore, there would be no generation of erosion or sedimentation.

NEPA Effects Conclusion

With no new facilities under Alternative 1, there would be **no effect** related to this issue.

CEQA Determination of Effects

With no new facilities under Alternative 1, there would be **no effect** related to this issue.

Mitigation Measures

No mitigation measures are required.

Impact 4.17-3 (Alt. 1): Water Quality Impacts from Acute or Diffuse Releases of Contaminants Used during Project Implementation

Alternative 1 – The No Action Alternative would result in a continuation of existing conditions. No new construction would take place and no facilities would be installed. Therefore, there would be not be any products or materials containing contaminants that would risk exposure to water associated with this alternative. There would be **no effect** under both NEPA and CEQA.

Under Alternative 1 – No Action Alternative, TNF and Placer County would not provide the necessary authorizations to allow construction of a gondola or Gazex facilities. The outcome would be a continuation of existing conditions. With no construction and no new facilities, there would not be any risk of exposure to contaminants, because no hazardous products or materials would be used.

NEPA Effects Conclusion

With no construction, or new facilities under Alternative 1, there would be **no effect** related to this issue.

CEQA Determination of Effects

With no construction, or new facilities under Alternative 1, there would be **no effect** related to this issue.

Mitigation Measures

No mitigation measures are required.

Impact 4.17-4 (Alt. 1): Impacts on Groundwater from Increased Visitation and Groundwater Demand

Alternative 1 – The No Action Alternative would result in a continuation of existing conditions. No new facilities would be installed, and there would not be an increase in visitation to the ski areas. Therefore, there would be no construction activities, facilities, or changes in visitor numbers that could affect groundwater supplies. There would be **no effect** under both NEPA and CEQA.

Under Alternative 1 – No Action Alternative, TNF and Placer County would not provide the necessary authorizations to allow construction of a gondola or Gazex facilities. The outcome would be a continuation of existing conditions. With no construction, no new facilities, and no increase in visitation, there would be no change in groundwater recharge or consumption within the study area.

NEPA Effects Conclusion

With no new facilities under Alternative 1, there would be **no effect** related to this issue.

CEQA Determination of Effects

With no new facilities under Alternative 1, there would be **no effect** related to this issue.

Mitigation Measures

No mitigation measures are required.

Impact 4.17-5 (Alt. 1): Localized Flooding from Changes in Site Drainage Patterns

Alternative 1 – The No Action Alternative would result in a continuation of existing conditions. No new facilities would be installed; therefore, there would be no changes to existing site drainage. There would be **no effect** under both NEPA and CEQA.

Under Alternative 1 – No Action Alternative, TNF and Placer County would not provide the necessary authorizations to allow construction of a gondola or Gazex facilities. The outcome would be a continuation of existing conditions. Facilities that could reroute drainage or impede flows would not be installed, and no construction would take place with the potential to modify overland flows on either a temporary or permanent basis.

NEPA Effects Conclusion

With no new facilities under Alternative 1, there would be **no effect** related to this issue.

CEQA Determination of Effects

With no new facilities under Alternative 1, there would be **no effect** related to this issue.

Mitigation Measures

No mitigation measures are required.

Impact 4.17-6 (Alt. 1): Impacts on Riparian Conservation Objectives in Riparian Conservation Areas

Alternative 1 – The No Action Alternative would result in a continuation of existing conditions. No new facilities would be installed; therefore, there would be no impacts on RCOs in RCAs. There would be **no effect** under NEPA. This impact analysis is specific to a NEPA analytical indicator and is not responsive to a CEQA criterion. No CEQA effects conclusion is provided.

Under Alternative 1 – No Action Alternative, TNF and Placer County would not provide the necessary authorizations to allow construction of a gondola or Gazex facilities. The outcome would be a continuation of existing conditions. Since no facilities would be installed, no RCAs, and no RCOs designed to protect downstream beneficial water uses, would be affected.

NEPA Effects Conclusion

With no new facilities under Alternative 1, there would be **no effect** related to this issue.

CEQA Determination of Effects

This impact analysis is specific to a NEPA analytical indicator and is not responsive to a CEQA criterion. No CEQA effects conclusion is provided.

4.17.3.2 ALTERNATIVE 2

Impact 4.17-1 (Alt. 2): Impacts from Erosion and Sedimentation Caused by Construction-Related Activities

Activities associated with construction of Alternative 2 such as clearing, grading, log skidding, and travel over temporary roadways could cause localized erosion and sedimentation of waterways, resulting in downstream water quality degradation. The project applicant would be required to adhere to local, state, and federal regulations that safeguard against erosion and sedimentation. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to erosion and sedimentation during project construction would be **adverse** because project construction could cause localized erosion and sedimentation of waterways, resulting in downstream water quality degradation. Implementation of RPMs REV-1 through REV-3, MUL-1, MUL-3 through MUL-7, BIO-1, BIO-19, BIO-23 through BIO-26, BIO-30, BIO-31, BIO-33 through BIO-36, BIO-38 through BIO-40, HAZ-1, HAZ-5, HAZ-7, SOILS-1 through SOILS-6, SOILS-9 through SOILS-12, WQ-1, WQ-3 through WQ-21, TREE-1 through TREE-7, and TREE-10 would mitigate this effect. Under CEQA, and using the CEQA criteria, effects related to erosion and sedimentation during project construction would be **potentially significant**, despite compliance with regulatory requirements that would minimize the potential for soil erosion and downstream sedimentation and associated effects on water quality. However, RPMs REV-1 through REV-3, MUL-1, MUL-3 through MUL-7, BIO-1, BIO-19, BIO-23 through BIO-26, BIO-30, BIO-31, BIO-33 through BIO-36, BIO-38 through BIO-40, HAZ-1, HAZ-5, HAZ-7, SOILS-1 through SOILS-6, SOILS-9 through SOILS-12, WQ-1, WQ-3 through WQ-21, TREE-1 through TREE-7, and TREE-10 provide a robust program to protect soils and water quality. Among other details, these RPMs would include development of plans for the project and review and approval by the lead agencies if an alternative is approved and adopted; require the use of silt fencing, straw mulch, waddles, straw bale check dams, sediment traps or sedimentation basins, stabilized construction areas, material management protocols, and other soil stabilization measures during construction; and require equipment avoidance areas, erosion control measures, limits on operations based on slope, springs, drainages, etc., stream crossing details, rehabilitation of temporary disturbance areas such as staging areas and temporary routes, and timing of operations based on soil moisture, sediment transport, and transportation routes. With implementation of these RPMs, this impact would be reduced to a **less-than-significant** level.

Erosion of soil and sediment on the project site, and in nearby or adjacent areas, is a likely outcome of construction of the project. Erosion of soil and sediment ultimately leads to effects on downstream receiving waters as eroded material is transported by stormwater and makes its way into receiving waterbodies. Sedimentation of waterbodies may threaten ecosystem health by producing effects on natural functions such as light penetration, temperature adjustment, bottom conditions, and retention of organic matter (NRCS 2017). Imbalances in these functions can lead to a degradation of hydrological conditions, producing detrimental effects on aquatic species such as increased mortality or chronic toxicity.

The potential magnitude of erosion in an area is dependent on a number of factors, including the degree of susceptibility of the local substrate to erosive forces, the level of activity or disturbance associated with

construction, the steepness of the slope, and local meteorological conditions. Observed erodibility is ultimately dependent on the confluence of these factors working together. Meanwhile, the impact that erosion has on downstream sedimentation depends on the degree of erosion and the sensitivity of the receiving waterbody.

The susceptibility to detachment of soils within the project area is discussed in detail in Section 4.16, “Soils, Geology, and Seismicity.” Soils on the project site are loose and poorly developed, and while these types of soils are generally thin (in some places comprising only a veneer of material over bedrock), some soil types within the study area are highly susceptible to erosion by rain and wind. Steep slopes on the project site, often in excess of 45 degrees, help facilitate movement of sediments downslope and into waterways.

The level of activity expected during construction of project-related facilities would be vigorous during the summer months. Project-related construction would involve clearing vegetation, placement of temporary access roads, grading, earth moving, excavation, tower and station placement, and Gazex installation. As construction advances, various portions of the project area would be cleared, exposed, and disturbed; these areas would be more susceptible during this vulnerable time to forces exerted by wind, rainfall, and overland stormwater runoff flows than during steady state conditions without the project. The amount and type of disturbance associated with implementation of Alternative 2 is presented in Table 4.17-3.

In addition to construction of facilities, another significant source of ground disturbance that would occur with implementation of the project is road travel. Truck and equipment access over temporary and/or permanent roads has the potential to dislodge soil particles and accelerate erosion. Vehicular travel exerts force on soil particles, which can cause them to separate and become unstable. This accelerates the rate at which normal erosive forces (such as wind and water) can move soil material. Road networks tend to connect either directly or indirectly with streams, and therefore act as an extension of stream networks and effectively increase watershed drainage density. The increase in drainage density decreases the distance over which water must travel to connect to streams, and therefore reduces opportunity for sediment detention during transport.

Table 4.17-3 Projected Ground Disturbance on National Forest System and Private Lands under Alternative 2, by Type

Type of Disturbance	Acres of Disturbance			
	Alternative 1	Alternative 2		
		National Forest System	Private	Total
Temporary Ground Disturbance				
Overstory vegetation removal	None	3.68	9.05	12.73
Tower footing construction area	None	0.16	0.35	0.51
Access roads	None	0.24	3.15	3.40
Total temporary disturbance	None	4.08	12.56	16.63
Permanent Ground Disturbance				
Mid-station/terminal	None	2.37	2.54	4.91
Gazex shelter	None	0.01	0.00	0.01
Gazex exploder	None	0.05	0.01	0.05
Total permanent disturbance	None	2.43	2.55	4.97
Grand total	None	6.51	15.10	21.61

Note: Totals may not equal sum of numbers because of independent rounding.

Sources: Data provided by SE Group in 2015, 2016, 2017; adapted by Ascent Environmental in 2018

There are an estimated 3.4 acres of temporary access road that would be required for project construction under Alternative 2 (Table 4.17-3). This length of road would be required within Alpine Meadows to connect existing, permanent local roads to areas of the gondola alignment that would require a crawler for construction access. While this represents a small amount of disturbance relative to the overall amount of disturbance in the Bear Creek watershed, sensitive soils and hydrologic features in the area could magnify potential disturbance impacts. Where stream crossings are needed, these areas represent a direct connection to project-related erosion and are therefore especially sensitive. Placement of the temporary access road would create an opportunity to circumvent natural hillslope processes and accelerate erosion.

Once eroded, soil and sediment travels downstream in suspension until particle size equilibrates with erosive force to deposit materials within stream channels. Depending on the rate of erosion and efficiency with which sediment is transported, sizable amounts of sediment and soil material can either remain in suspension or accumulate within channels or abrade stream banks. The net effects of this are twofold: (1) a deterioration of water quality due to an increase in stream sediment loads and (2) an alteration in stream morphology and consequent impacts on hydrologic function (see Impact 4.17-5). These processes have been apparent within Squaw Creek over the years, because of upstream development and clearing of vegetation (Lahontan RWQCB 2002). While the project does not involve extensive amounts of disturbance, relative to existing ski area and other nearby disturbance, even small amounts of sedimentation could contribute to degradation of receiving water quality due to the sensitivity of these streams.

An increase in suspended sediment loads from accelerated erosion during construction could degrade water quality in all the receiving waterbodies of the project area. While Bear Creek is not currently Section 303(d)-listed, it has been listed in the past for sedimentation (delisting date 2006). Both Squaw Creek and the Truckee River are on the current Section 303(d) list for sedimentation, with TMDL targets (see Section 4.17.1.1). Site grading and construction activities would increase the potential for soil erosion and sediment transport and delivery to Squaw Creek, Bear Creek and the Truckee River by decreasing vegetative cover, breaking up consolidated soils, and potentially modifying overland drainage. The sensitivity of these receiving waterbodies and their upland environs to erosion and sedimentation indicate that even small amounts of activity could have harmful downstream effects.

While the threat of stormwater and receiving water contamination during construction activities can pose a serious risk to receiving waterbodies as described above, Alternative 2 includes multiple layers of regulatory protections that the applicant and contractor(s) must abide by when executing construction activities. Regulatory protection measures include requirements regarding the maintenance of beneficial uses of water (Table 4.17-1), consistency with Section 404 of the CWA (including the federal NPDES Program that was established through the CWA), compliance with the statewide General Construction Permit, adherence to the Forest Service and SWRCB joint stormwater protection plan (Forest Service Region 5 Forest Service Handbook 2509.22 – Soil and Water Conservation Handbook [Handbook; see Section 4.17.1.2, “Regulatory Setting,” above]) and the national BMP handbook (National Best Management Practices for Water Quality Management on National Forest System Lands), compliance with measures that would be prescribed by the Forest Service in the special use permit (SUP) congruent with the Handbook, and compliance with the *Placer County Truckee River Basin Stormwater Management Plan*. Additionally, the project includes RPMs specifically crafted to avoid and minimize environmental effects potentially resulting from project implementation (the text of all RPMs is provided in Appendix B). The RPMs relevant to erosion and sedimentation are identified below, following the description of the federal NPDES Program.

Runoff water quality for all development in California is regulated by the federal NPDES Program (established through the CWA). The NPDES program objective is to control and reduce pollutant discharges to surface waterbodies. Compliance with NPDES permits is mandated by state and federal statutes and regulations. Locally, the NPDES Program is administered by the Lahontan RWQCB. According to the water quality control plans of the Lahontan RWQCB, any construction activities, such as grading and earth work, that would result in the disturbance of 1 acre or more (regardless of whether the disturbance is temporary or permanent) would require compliance with the General Construction Permit. Alternative 2 would require a

minimum total disturbance area of approximately 21 acres and would therefore be subject to compliance with the General Construction Permit.

To comply with the General Construction Permit, a SWPPP would be prepared detailing measures to control soil erosion and waste discharges from project construction areas. All contractors conducting construction-related work would be required to implement the SWPPP to control soil erosion and waste discharges. The general contractor(s) and/or subcontractor(s) conducting the work would be responsible for implementing all BMPs detailed in the SWPPP. The SWPPP would include the following four major elements:

- ▲ Identify pollutant sources, including sources of sediment, that may affect the quality of stormwater discharges from the construction site.
- ▲ Identify non-stormwater discharges.
- ▲ Identify, construct, implement in accordance with a time schedule, and maintain BMPs to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges, from the construction site during construction.
- ▲ Identify, construct, implement in accordance with a time schedule, and assign maintenance responsibilities for post-construction BMPs, which are measures to be installed during construction that are intended to reduce or eliminate pollutants after construction is completed.

The SWPPP would also identify the grading and erosion-control BMPs and specifications necessary to minimize or avoid water-quality impacts to the extent practicable. Standard erosion control measures (including management and structural controls) would be required to be implemented for all construction activities that expose soil. Grading operations would be required to eliminate direct routes for conveying potentially contaminated runoff natural watercourses (including ephemeral and intermittent drainages when they contain water). Erosion control barriers such as silt fences and mulching material would be installed. The SWPPP would contain specific measures for stabilizing soils before the onset of the winter season commencing on October 15. Implementation of these standard erosion control measures would reduce the potential for soil erosion and sedimentation of stormwater runoff during construction.

Examples of typical SWPPP BMPs that are employed in areas that are physiographically similar to the location of Alternative 2, and for similar activities include the following:

- ▲ conduct visual monitoring of on-site runoff quality;
- ▲ place fiber rolls along the perimeter of the site to reduce runoff flow velocities and prevent sediment from leaving the site, and sandbags around potentially affected storm inlets to prevent sediments from entering the inlets;
- ▲ place silt fences downgradient of disturbed areas to slow down runoff and retain sediment;
- ▲ establish a program of site inspections to ensure that BMPs are consistently implemented and effective; and
- ▲ specify that all disturbed soil will be seeded, mulched or otherwise protected by October 15.

In addition to basic SWPPP requirements, and county-level regulatory protections, RPMs have been included as part of the project. The RPMs have been developed in accordance with the process identified in the Handbook (U.S. Forest Service 2011), the *Placer County Truckee River Basin Stormwater Management Plan*, Placer County Code, and policies detailed in the *Placer County General Plan*.

Critically, RPMs include development of plans for the project and review and approval by the lead agencies if an alternative is approved and adopted (RPMs REV-1 through REV-3). The plans would show details on

physical improvements for all project components as well as on-site and off-site topography. The plans would provide the specificity to identify any potential conflicts with environmental resources that were identified during Forest Service specialist report preparation or wetland delineation. RPM SOILS-9 requires that improvement plans prepared for Placer County show all proposed grading, drainage improvements, vegetation and tree removal, and that all work conform with the Placer County Grading Ordinance and Stormwater Quality Ordinance.

Other RPMs relating to the protection of aquatic, soil, and water quality resources have been established, and these would be applied to the final disturbance areas identified in the project plans. These include RPMs REV-1 through REV-3, MUL-1, MUL-3 through MUL-7, BIO-1, BIO-19, BIO-23 through BIO-26, BIO-30, BIO-31, BIO-33 through BIO-36, BIO-38 through BIO-40, HAZ-1, HAZ-5, HAZ-7, SOILS-1 through SOILS-6, SOILS-9 through SOILS-12, WQ-1, WQ-3 through WQ-21, TREE-1 through TREE-7, and TREE-10. Examples of specific measures within the RPMs that would be implemented during construction include the use of silt fencing, straw mulch, wattles, straw bale check dams, sediment traps or sedimentation basins, stabilized construction areas, material management protocols, and other soil stabilization measures (Appendix B). RPMs relate to BMPs for soil and hydrology resources detailed in the Handbook, which requires equipment avoidance areas, erosion control measures, limits on operations based on slope, springs, drainages, etc., stream crossing details, rehabilitation of temporary disturbance areas such as staging areas and temporary routes, and timing of operations based on soil moisture, sediment transport, and transportation routes (see Appendix B for RPM and Handbook BMP cross references). The RCO analysis report has assessed proposed RPMs and evaluated if they are sufficient to meet the RCOs in the project area. RPMs have been found to be sufficiently protective of hydrologic functions of RCAs (U.S. Forest Service 2017).

While the full list of measures that would be implemented from the Handbook have not been prescribed or adopted for this project, the methodology detailed in that document would be used to develop additional measures that could be incorporated into the County CUP or the Forest Service SUP, if necessary. Additional measures would be prescribed in the SUP if Forest Service specialists deem it necessary following submission of improvement plans to Placer County and Lahontan RWQCB. Forest Service specialists may review the implementation plans developed by the project proponent and evaluate if additional measures would be appropriate prior to issuing the SUP. BMPs that have already been incorporated into RPMs from the Handbook are cross-referenced in Appendix B.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to erosion and sedimentation during project construction would be **adverse** because Alternative 2 would generate an increased level of soil disturbance and increased likelihood of sedimentation and water quality degradation in a highly sensitive hydrological environment. These effects would be mitigated through compliance with existing regulations and implementation of RPMs REV-1 through REV-3, MUL-1, MUL-3 through MUL-7, BIO-1, BIO-19, BIO-23 through BIO-26, BIO-30, BIO-31, BIO-33 through BIO-36, BIO-38 through BIO-40, HAZ-1, HAZ-5, HAZ-7, SOILS-1 through SOILS-6, SOILS-9 through SOILS-12, WQ-1, WQ-3 through WQ-21, TREE-1 through TREE-7, and TREE-10.

CEQA Determination of Effects

Under CEQA, using the CEQA criteria, and considering applicable regulatory requirements, effects related to erosion and sedimentation during project construction would be **potentially significant** because while Alternative 2 would comply with regulatory requirements to minimize the potential for soil erosion and downstream sedimentation and associated effects on water quality, the level of activity would increase soil disturbance and the likelihood of sedimentation and water quality degradation in a highly sensitive hydrological environment. Sensitive soil units exist within the project area, and two downstream waterbodies are TMDL listed for sedimentation. However, RPMs REV-1 through REV-3, MUL-1, MUL-3 through MUL-7, BIO-1, BIO-19, BIO-23 through BIO-26, BIO-30, BIO-31, BIO-33 through BIO-36, BIO-38 through BIO-40, HAZ-1, HAZ-5, HAZ-7, SOILS-1 through SOILS-6, SOILS-9 through SOILS-12, WQ-1, WQ-3 through WQ-21, TREE-1 through TREE-7, and TREE-10 provide a robust program to protect soils and water quality. Among other details, these RPMs would include development of plans for the project and review and approval by the lead

agencies if an alternative is approved and adopted; require the use of silt fencing, straw mulch, wattles, straw bale check dams, sediment traps or sedimentation basins, stabilized construction areas, material management protocols, and other soil stabilization measures during construction; and require equipment avoidance areas, erosion control measures, limits on operations based on slope, springs, drainages, etc., stream crossing details, rehabilitation of temporary disturbance areas such as staging areas and temporary routes, and timing of operations based on soil moisture, sediment transport, and transportation routes. With implementation of these RPMs, this impact would be reduced to a **less-than-significant** level.

Mitigation Measures

All RPMs provided in Appendix B are adopted by Placer County as mitigation measures and are included in the Mitigation Monitoring and Reporting Program for the project. The adoption of RPMs REV-1 through REV-3, MUL-1, MUL-3 through MUL-7, BIO-1, BIO-19, BIO-23 through BIO-26, BIO-30, BIO-31, BIO-33 through BIO-36, BIO-38 through BIO-40, HAZ-1, HAZ-5, HAZ-7, SOILS-1 through SOILS-6, SOILS-9 through SOILS-12, WQ-1, WQ-3 through WQ-21, TREE-1 through TREE-7, and TREE-10 as mitigation measures would reduce the effects related to erosion and sedimentation during project construction to a **less-than-significant** level.

Impact 4.17-2 (Alt. 2): Impacts from Erosion and Sedimentation Caused by Long-Term Implementation of the Project

Long-term implementation of Alternative 2 would result in placement of new structures that could alter the erosion and sedimentation regime, resulting in long-term downstream water quality degradation. The project applicant would be required to adhere to local, state, and federal regulations that safeguard against erosion and sedimentation. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to erosion and sedimentation during project operation would be **adverse** because Alternative 2 would create conditions that could increase the long-term susceptibility of soils to erosion, thereby increasing the possibility for sedimentation and water quality degradation. Implementation of RPMs SOILS-9, BIO-30, and BIO-38 would mitigate this effect. Under CEQA, and using the CEQA criteria, effects related to erosion and sedimentation during project operation would be **less than significant** because compliance with regulatory requirements would result in the minimization and containment of soil erosion and prevent downstream sedimentation and associated effects on water quality. In addition, RPMs SOILS-9, BIO-30, and BIO-38 would require revegetation on all disturbed areas; preparation of a Restoration Plan for both Forest Service and private land that would document pre-disturbance conditions and revegetation disturbed areas, including the implementation of long-term erosion and sediment control measures, slope stabilization, and monitoring procedures; and replacement of native trees that would need to be removed along the gondola alignment. With implementation of these RPMs, this impact would be reduced, although these RPMs are not necessary to reduce a significant impact to a less-than-significant level.

The permanent, long-term footprint of the project under Alternative 2 would be relatively small (5.0 acres; Table 4.17-3), but it would still have the potential to alter the drainage pattern of the project area sufficiently to result in increased erosion or susceptibility to erosion and sedimentation. Coverage associated with installation of new components such as gondola stations and Gazex platforms would create new impervious surfaces and obstacles that could modify surface water drainage characteristics locally at the site of the improvements, promoting erosion. Clearing vegetation along the gondola alignment and maintenance of low-profile vegetative cover would create conditions where soils are more susceptible to erosion than under natural forested conditions.

As discussed under Impact 4.16-4 in Section 4.16, "Soils, Geology, and Seismicity," average soil erosion hazard ratings along the alignments are low under steady state conditions. However, with prolonged exposure to rainfall and snowmelt, individual soil units may exhibit characteristics that create a proclivity to erosion from rain and runoff, which can affect soil productivity and stability. Severe erosion can exacerbate soil instability. Erosion could change the pattern of surface runoff or stormwater management such that areas that are susceptible to erosion are exposed to more runoff and experience increased rates of erosion.

Uncontrolled stormwater collection and confluence can lead to rill and gully effects and a positive feedback loop of erosion that can be problematic if left unchecked. During wet periods, sheet runoff can detach soils and result in sheet erosion, which in turn can produce an overall loss in soil and productivity. Variations in surface roughness can eventually lead to a preferred pathway for water to flow, and can create small incisions in the soil, known as rills. If these incisions are not remediated, they can further incise and lead to large-scale gully erosion. At a small and large scale, rill and gully erosion can reduce the quantity of stable soils by incising into land and/or depleting soil resources and speed up the rate of erosion by exposing subsoil. This generates sediment that can contribute to increased flooding, and ultimately generate suspended sediment that can degrade water quality.

The primary source of sedimentation related to long-term project implementation would be increased rates of erosion from clearing vegetation along the gondola alignment. Under Alternative 2, approximately 12.7 acres of vegetation would be permanently cleared/alterd for passage of gondola cars and placement of gondola towers (Table 4.17.3). While the cleared area would be recolonized with native vegetation following construction of the gondola, surface vegetation and root systems would be shallower and less dense than that associated with mature conifers. Maintenance of the gondola right-of-way would prevent a return to a natural, forested condition, and would therefore contribute to greater potential for soil erosion than under natural conditions.

Additionally, placement of permanent platforms for project components on steep mountain slopes would modify the local pattern of drainage around these new features. Surface water flows would collect on the upstream side of features, flowing around them in a channelized manner, potentially causing rill and gully effects on the downslope side, and disrupting the successful reestablishment of vegetation.

Many of the programs which provide protections for construction-related erosion and sedimentation provide protections for long-term operational impacts to a similar degree. Regulatory protection measures protecting beneficial uses of water (Table 4.17-1), and consistency with Section 404 of the CWA are applicable to long-term project implementation. The Forest Service Soil and Water Conservation Handbook, future provisions in the SUP, and the *Placer County Truckee River Basin Stormwater Management Plan* all contain requirements for the ongoing protection of water quality. Additionally, RPMs are included as part of the project that are consistent with Placer County requirements and the Forest Service Soil and Water Conservation Handbook that address the potential for long-term erosion and sedimentation effects of project implementation.

To avoid and minimize the effects of soil erosion and downstream sedimentation related to project implementation, RPMs have been developed to address soil erosion on a long-term basis. Specifically, RPM BIO-30 provides for a Restoration Plan for both Forest Service and private land that would document pre-disturbance conditions and revegetation disturbed areas, including the implementation of long-term erosion and sediment control measures, slope stabilization, and monitoring procedures. Per RPM SOILS-9, revegetation would be required on all disturbed areas. Additionally, RPM BIO- 38 provides for a mitigation monitoring and implementation plan for the replacement of native trees that would need to be removed along the gondola alignment. Trees would not be replaced in the alignment due to safety concerns, but would be located on Common Area Lots, or other appropriate areas. This RPM could help mitigate erosion in the alignment by providing stabilization in other erosion-prone areas and provide a net neutral or net beneficial effect on erosion within the project area.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to erosion and sedimentation during project operation would be **adverse** because Alternative 2 would create conditions that could increase the long-term susceptibility of soils to erosion, thereby increasing the possibility for sedimentation and water quality degradation. These effects would be mitigated through compliance with existing regulations and implementation of RPMs SOILS-9, BIO-30, and BIO-38.

CEQA Determination of Effects

Under CEQA, and using the CEQA criteria, effects related to erosion and sedimentation during project operation would be **less than significant** because although Alternative 2 would create conditions that could

increase the long-term susceptibility of soils to erosion, thereby increasing the possibility for sedimentation and water quality degradation, compliance with regulatory requirements would result in the minimization and containment of soil erosion and prevent downstream sedimentation and associated effects on water quality. RPMs SOILS-9, BIO-30, and BIO-38 would require revegetation on all disturbed areas; preparation of a Restoration Plan for both Forest Service and private land that would document pre-disturbance conditions and revegetation disturbed areas, including the implementation of long-term erosion and sediment control measures, slope stabilization, and monitoring procedures; and replacement of native trees that would need to be removed along the gondola alignment. With implementation of these RPMs, this impact would be reduced, although these RPMs are not necessary to reduce a significant impact to a less-than-significant level.

Mitigation Measures

All RPMs provided in Appendix B are adopted by Placer County as mitigation measures and are included in the Mitigation Monitoring and Reporting Program for the project. The adoption of RPMs SOILS-9, BIO-30, and BIO-38 as mitigation measures would reduce the effects related to erosion and sedimentation during project operation but are not necessary to reduce a significant effect.

Impact 4.17-3 (Alt. 2): Water Quality Impacts from Acute or Diffuse Releases of Contaminants Used during Project Implementation

Implementation of Alternative 2 would result in an increase in the use of materials containing contaminants and generate new sources of stormwater runoff and pollution. These new sources could release to receiving waters, potentially contaminating them. However, the project is covered under the General Construction Permit and would require preparation of a Spill Prevention Countermeasure and Contingency (SPCC) Plan; the former requires management of stormwater discharges and both require implementation of pollution protection measures. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to releases of contaminants and hazardous materials would be **adverse** because Alternative 2 would increase the potential for accidental releases of contaminants and hazardous materials into receiving waters, which would result in water quality degradation. Implementation of RPMs HAZ-1, HAZ-5, HAZ-7, and WQ-1 would mitigate this effect. Under CEQA, and using the CEQA criteria, effects related to releases of contaminants and hazardous materials would be **less than significant** because compliance with regulatory requirements would result in the proper handling, storage, and containment of hazardous materials so that releases do not occur. In addition, RPMs HAZ-1, HAZ-5, HAZ-7, and WQ-1 provide additional measures to protect against accidental release of contaminants to waterways. These include a requirement that construction personnel receive training regarding the appropriate work practices necessary to effectively implement the RPMs related to hazardous materials, compliance with Placer County procedures related to the use and disposal of hazardous materials, and development and implementation of a SPCC Plan and SWPPP and receipt of necessary authorizations from the Lahontan RWQCB. With implementation of these RPMs, this impact would be reduced, although these RPMs are not necessary to reduce a significant impact to a less-than-significant level.

In addition to possible water quality degradation from erosion and sedimentation, there is the possibility of water quality degradation from materials brought on site to implement the project. Such materials would require containment from stormwater. While most areas of development would not be connected directly to surface water, storm events could generate stormwater runoff at construction or materials storage sites that could be carried into Bear Creek or Squaw Creek, and eventually on to the Truckee River. This could result in impairment of receiving water beneficial uses identified for these waterways.

Runoff could contain oils, grease, fuel, sediments, brake dust, and other potential water pollutants. During storm events, these pollutants could be carried to downstream receiving waters of Squaw Creek, Bear Creek, and the Truckee River. The Truckee River and Squaw Creek are listed as impaired waterbodies, and additional pollutants could exacerbate toxicity conditions for aquatic organisms. During construction, small amounts of materials such as aggregate-base rock, sand bedding and backfill, and crushed rock would be

brought to development areas. Any of these materials could become exposed to stormwater and potentially result in contamination of surface water. If areas of shallow groundwater are identified or encountered during construction, they could also potentially be released to groundwater. Additionally, construction equipment may contain toxic or hazardous substances, including fuels, lubricants, oil, grease, and paint. These materials could also become exposed to stormwater runoff or to groundwater if they are not properly contained. Multiple small incidents of contamination, or larger single releases (e.g., fuel spill) could result in adverse effects on surface water and groundwater quality.

To protect against releases, application and use of all chemicals used for implementation of the project would be carried out according to manufacturer label instructions and would continue to be applied in this manner with implementation of the project. The General Construction Permit would require preparation of a SWPPP, which would contain provisions for containment of pollutants and stormwater management. Some of these might include:

- ▲ scheduling materials deliveries to provide for minimal on-site storage and/or providing covered storage for materials wherever practical;
- ▲ designating specific areas for overnight construction equipment storage and maintenance, and providing runoff control around those areas to minimize the potential for runoff to contact spilled materials;
- ▲ establishing procedures for daily work site cleanup and immediate cleanup of spilled materials and contaminated soil;
- ▲ establishing a program of site inspections to ensure that BMPs are consistently implemented and effective;
- ▲ conducting visual monitoring of on-site runoff quality;
- ▲ placing fiber rolls along the perimeter of the site to reduce runoff flow velocities and prevent sediment from leaving the site, and sandbags around potentially affected off-site storm inlets to prevent contamination from entering the inlets; and
- ▲ specifying that all construction sites would be winterized by October 15.

For projects that require that hydrocarbons be present on-site in substantial quantities, contractors must have an up-to-date SPCC Plan that they will follow to ensure containment of fuels and lubricants and the procedures to follow in the event of a release. Fill and grading materials brought in from off-site would be clean, chemically inert, and handled with appropriate containment to prevent contamination of stormwater.

The project also includes RPMs that reduce the potential for release of contaminants. RPM HAZ-1 requires that construction personnel receive training regarding the appropriate work practices necessary to effectively implement the RPMs related to hazardous materials. RPMs HAZ-5 and HAZ-7 require compliance with Placer County procedures related to the use and disposal of hazardous materials. RPM WQ-1 requires the development and implementation of a SPCC Plan and SWPPP and receipt of necessary authorizations from the Lahontan RWQCB.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to releases of contaminants and hazardous materials would be **adverse** because Alternative 2 would result in contaminants and hazardous materials being brought onto the project site, increasing the potential for accidental releases and resulting in potential contamination of receiving waters and water quality degradation. These effects would be mitigated through compliance with existing regulations and implementation of RPMs HAZ-1, HAZ-5, HAZ-7, and WQ-1.

CEQA Determination of Effects

Under CEQA, and using the CEQA criteria, effects related to releases of contaminants and hazardous materials would be **less than significant** because although Alternative 2 would result in contaminants and hazardous materials being brought onto the project site, increasing the potential for accidental releases and resulting in potential contamination of receiving waters and water quality degradation, compliance with regulatory requirements would require the proper handling, storage, and containment of hazardous materials so that releases do not occur. RPMs HAZ-1, HAZ-5, HAZ-7, and WQ-1 would require that construction personnel receive training regarding the appropriate work practices necessary to effectively implement the RPMs related to hazardous materials, compliance with Placer County procedures related to the use and disposal of hazardous materials, and development and implementation of a SPCC Plan and SWPPP and receipt of necessary authorizations from the Lahontan RWQCB. With implementation of these RPMs, this impact would be reduced, although these RPMs are not necessary to reduce a significant impact to a less-than-significant level.

Mitigation Measures

All RPMs provided in Appendix B are adopted by Placer County as mitigation measures and are included in the Mitigation Monitoring and Reporting Program for the project. The adoption of RPMs HAZ-1, HAZ-5, HAZ-7, and WQ-1 as mitigation measures would reduce the effects related to erosion and sedimentation during project operation but are not necessary to reduce a significant effect.

Impact 4.17-4 (Alt. 2): Impacts on Groundwater from Increased Visitation and Groundwater Demand

Implementation of Alternative 2 would result in an increase in skier-days at Squaw Valley and Alpine Meadows and would consequently produce an increase in water consumption from local aquifers. Increased use of groundwater by skiers would be minor relative to aquifer and supply system capacity. It is therefore unlikely that there would be a measurable effect on local groundwater conditions in wells. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, there would be **no effect** related to groundwater because the project would not have a measurable effect on groundwater levels in existing wells. There are no applicable RPMs that would mitigate this effect. Under CEQA, and using the CEQA criteria, effects related to groundwater would be **less than significant** because the project would not have a measurable effect on groundwater levels in existing wells. There are no applicable RPMs that would reduce this impact.

The gondola and Gazex system would require minimal use of water for construction and operation, and little to no groundwater would be required to supply water to project components. In addition, the amount of new impervious surfaces would be small and would not interfere with infiltration such that groundwater recharge would be affected by the project. However, it is expected that the proposed gondola will result in some increase in annual skier visitation to Squaw Valley and Alpine Meadows. An increase in the annual number of “skier-days” could result in an increased demand for water (e.g., for drinking and sanitation) from groundwater sources.

Water for Squaw Valley is supplied by groundwater, and water for Alpine Meadows is supplied by a combination of groundwater and springs; aquifers beneath the resorts provide groundwater supplies. The Squaw Valley Public Service District supplies water to Olympic Valley, and the Alpine Springs County Water District supplies water within the Bear Creek watershed at Alpine Meadows. It is estimated that the project would result in up to approximately 36,856 additional skier-days per year (although it is expected to take up to 5 years to reach this level of increased visitation), to occur over the roughly 5-month winter season, during gondola operation. Impact 4.8-1 in Section 4.8, “Utilities,” provides details regarding water supply consumption figures. Based on liberal assumptions of reasonably foreseeable, conservative water demand, the analysis provided for Impact 4.8-1 indicates that visitation because of the gondola would increase water demand compared to the available water supply by less than 0.1 percent. The increase in consumption is minor relative to existing supply and is not expected to produce a measurable effect in groundwater supply wells within the Olympic Valley or Bear Creek groundwater subwatersheds.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, there would be **no effect** related to groundwater because while Alternative 2 would create conditions that would increase water consumption from local aquifers, it would do so in quantities that would not produce a measurable effect in drawdown or recharge at local wells. There are no applicable RPMs that would mitigate this effect.

CEQA Determination of Effects

Under CEQA, and using the CEQA criteria, effects related to releases of contaminants and hazardous materials would be **less than significant** because the amount of groundwater associated with implementation of the project that would be consumed would not have a measurable effect on groundwater levels in existing wells. There are no applicable RPMs that would reduce this impact.

Mitigation Measures

No mitigation measures are required.

Impact 4.17-5 (Alt. 2): Localized Flooding from Changes in Site Drainage Patterns

Construction of Alternative 2 could cause localized erosion and changes in topography, resulting in potential downstream effects on stormwater conveyance. Without adequate stormwater drainage sizing for anticipated flow volumes, localized flooding may occur. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to localized flooding would be **adverse**. While the amount of disturbance proposed under Alternative 2 is small relative to existing disturbance, currently available information cannot confirm that existing stormwater infrastructure could accommodate modified site drainage resulting from disturbance. Implementation of RPMs WQ-9 and WQ-10 would mitigate this effect. Under CEQA, and using the CEQA criteria, effects related to localized flooding would be **potentially significant**. While it is unlikely that Alternative 2 would concentrate runoff to a degree that would produce localized flooding, currently available information cannot confirm that such conditions would not be created. Implementation of RPMs WQ-9 and WQ-10 would reduce this impact to a **less-than-significant** level.

Several significant drainage features at the Squaw Valley and Alpine Meadows base areas would be permanently modified to accommodate the new base station terminals under Alternative 2. Construction of Alternative 2 could also alter surface flows by regrading contours within the disturbance areas associated with project components and/or increasing the amount of impervious surface on the project site. The footprint of the project and disturbance area relative to existing disturbance would be small; however, positioning and placement of facilities relative to drainage features would be important, because project components can alter local flow pathways. Project components could disturb sensitive soils, alter local topographical features, or otherwise alter surface features in such a manner that would change the drainage pattern of the project area and produce downstream effects on the hydrological regime. Changes to the hydrological regime would generally manifest as changes in the magnitude, timing, and peak discharge of flows. In addition, changes in impervious surface and drainage patterns (i.e., from individual towers and buildings) could result in preferential flow pathways for drainage (see Impact 4.17-2).

Placement of the base terminals on the Squaw Valley and Alpine Meadows base areas would involve modification of prominent features associated with the drainage infrastructure that currently accommodates snowmelt runoff from the ski areas. On the Squaw Valley side, Cushing Pond, the artificial stormwater basin located below and between the Squaw One and KT-22 chairlifts, would be partially filled in to provide a stable foundation for the gondola base terminal. Cushing Pond provides the capability for some spring snowmelt and warm weather melt retention, acting to slow runoff and encourage seepage into shallow ground. Seepage not only slows runoff and reduces peak flow volumes, but also acts as a filtration mechanism that assists in improving water quality. Filling this pond to construct the base-terminal would reduce or eliminate any of these functions that the pond provides. To preserve the function of Cushing Pond, it would be expanded westward on the site, and the expansion would be designed in a manner to accommodate anticipated flow volumes. On the Alpine Meadows side, the base terminal would be situated on or near existing conveyance structures that act to carry Bear Creek tributary flows to the main branch of

Bear Creek. Placement of the base terminal at Alpine Meadows would be located atop approximately 125 feet of the 220-foot semi-open existing drainage culvert. However, the existing culvert would be retained and the current screens sealed, or the culvert would be replaced with an enclosed sleeve. In either case, the function and capacity of the culvert would not be altered. The function and capacity of the other nearby culvert also would not be altered.

Project activities could result in enhanced erosion in other disturbed areas along the Alternative 2 alignment (see Impacts 4.17-1 and 4.17-2), which could affect flow characteristics. While the application of regulatory requirements and implementation of RPMs would reduce effects under NEPA and result in less-than-significant impacts on erosion under CEQA, there are several potential consequences of erosion on the downstream flow regime if it does occur. The very process of erosion can beget more erosion, causing a positive feedback loop, loosening topsoil and changing topography by degrees small and large in local areas where disturbance occurs. Preferential pathways can form, and the efficiency in the connections between eroded areas and natural watercourses can increase. If erosion causes sediment loads in waterways to increase, sediments would be deposited downstream on riverbeds and banks. Suspended sediment could also erode banks through abrasive action as water passes narrow or meandering river segments. These effects could produce changes to downstream hydrogeomorphology. Taken together, these geomorphic changes could produce a large effect on drainage in the project area. Drainage infrastructure in the stormwater drainage system at the base of the ski areas could be negatively affected because many of the stormwater conveyance structures resemble natural features and are therefore susceptible to hydromodification.

Both Squaw Valley and Alpine Meadows have semi-engineered drainage systems that convey drainage from the ski areas into the respective creeks at their bases, Squaw Creek and Bear Creek. Squaw and Bear Creeks act informally as an extension of the artificial drainage systems, which results in a sensitive response to peak runoff conditions within the creeks. Information on peak flow conditions and engineered sizing is not available for the existing infrastructure; therefore, changes to the upstream hydrological regime could have consequences for the existing downstream infrastructure that are currently unknown. As a result, storm drainage systems could be inadvertently modified, or the capacity exceeded, resulting in localized flooding. Therefore, although Alternative 2 results in a small disturbance footprint that has a low likelihood of generating changes in drainage patterns, and the potential for erosion is minimal, because of a lack of detailed information on project drainage and existing drainage systems, it cannot be ensured that the project would not result drainage flows that exceed the capacity of the existing drainage system.

RPMs WQ-9 and WQ-10 require that a Registered Civil Engineer conduct a stormwater drainage study for both Squaw Valley and Alpine Meadows, and the site proposed for development in the implementation plans, to determine whether the development would produce runoff that would exceed the capacity of existing stormwater infrastructure, cause localized ponding, or increase the potential for property damage from flooding. The report would identify water quality protection features and methods to be used during and after construction, as well as identify how stormwater runoff would be reduced to pre-project conditions. The Forest Service would adhere to standards equally stringent to or more stringent than Placer County RPMs WQ-9 and WQ-10.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to localized flooding would be **adverse**. Although it is unlikely that Alternative 2 would create conditions that would make soils more susceptible to erosion and potentially create modified drainage pathways, currently available information cannot confirm that such conditions would not be created. These effects would be mitigated through implementation of RPMs WQ-9 and WQ-10.

CEQA Determination of Effects

Under CEQA, and using the CEQA criteria, effects related to localized flooding would be **potentially significant**. Although it is unlikely that Alternative 2 would create conditions that would make soils more susceptible to erosion and potentially create modified drainage pathways, currently available information cannot confirm

that such conditions would not be created. Implementation of RPMs WQ-9 and WQ-10 would reduce this impact to a **less-than-significant level**.

Mitigation Measures

All RPMs provided in Appendix B are adopted by Placer County as mitigation measures and are included in the Mitigation Monitoring and Reporting Program for the project. The adoption of RPMs WQ-9 and WQ-10 as mitigation measures would reduce the effects related to localized flooding from changes in site drainage patterns during project operation but are not necessary to reduce a significant effect.

Impact 4.17-6 (Alt. 2): Impacts on Riparian Conservation Objectives in Riparian Conservation Areas

Absent the adoption of any RPMs, implementation of Alternative 2 would result in a departure from adherence to the standards and guidelines for riparian and aquatic ecosystems identified in the SNFPA ROD, which would be an **adverse** effect under NEPA. However, the RCO analysis concluded that Alternative 2 is consistent with the Adaptive Management Strategy for the Sierran Forests, as required by the SNFPA ROD, because the project would incorporate RPMs and corresponding Forest Service Region 5 BMPs as protection measures to ensure no net loss or degradation of riparian habitats or aquatic resources. Standards and guidelines for RCOs that have been designed to protect downstream beneficial water uses would be met by Alternative 2 if RPMs and BMPs are adhered to. Therefore, implementation of RPMs and corresponding BMPs would mitigate effects of the alternative. This impact analysis is specific to a NEPA analytical indicator and is not responsive to a CEQA criterion. No CEQA effects conclusion is provided.

RCAs are land allocations identified by the Forest Service that “are managed to maintain or restore the structure and function of aquatic, riparian, and meadow ecosystems” (U.S. Forest Service 2004). The SNFPA identified broad objectives, known as RCOs, and associated specific standards and guidelines against which projects and actions that the Forest Service implements are measured. Standards and guidelines that are applicable to the project are listed in Table 4.17-4, together with the associated RCO, and a summary evaluation of whether the standards have been met.

Alternative 2 would result in the temporary, construction-related disturbance of 6.6 acres and the permanent disturbance of 5.1 acres of RCAs (KSL Ski Holdings 2017, Hydro Restoration 2016, 2017, U.S. Forest Service 2004, USGS 2017; adapted by Ascent Environmental 2018). This is below the disturbance threshold of 20 percent included in RCO #2 (Table 4.17-4).

To establish whether the guideline has been met, specific activities that would occur with implementation of Alternative 2 were considered within the context of the guideline. RPMs that would be carried out as a part of the project were applied to the project activity, and a determination was made on the degree to which the standard could be met if RPMs were adhered to. An RCO analysis was conducted and documented these determinations (U.S. Forest Service 2018). The RCO report contains a detailed description of actions to be taken, the manner in which those actions could potentially affect whether the standard was met, how the application of specific RPMs would provide sufficient protection against violating the standard, and how the RCO would continue to be achieved. General information further supporting conclusions that standards and guidelines under RCOs #2, #4, and #5 have been met (e.g., potential barriers to upstream or downstream passage for aquatic-dependent species, occurrence of suitable habitat for Sierra Nevada yellow-legged frog, presence/absence of bogs and fens) can be found in Sections 4.12, “Vegetation,” 4.13, “Botany,” 4.14, “Wildlife and Aquatics,” and 4.15, “Wetlands,” within this EIS/EIR.

Table 4.17-4 Riparian Conservation Objectives Analysis Summary

Riparian Conservation Objective	S&G No.	Standard and Guideline Description	S&G Met (Y/N)
RCO #1 Ensure that identified beneficial uses for the waterbody are adequately protected. Identify the specific beneficial uses for the project area, water quality goals from the Regional Basin Plan, and the manner in which the standards and guidelines will protect the beneficial uses.	95	For waters designated "Water Quality Limited" (Clean Water Act Section 303(d)), participate in the development of the Total Maximum Daily Loads (TMDLs) and TMDL Implementation Plans. Execute applicable elements of the completed TMDL Implementation Plans.	Y
	96	Ensure that management activities do not adversely affect water temperatures necessary for local aquatic- and riparian-dependent species assemblage.	Y
	99	Prohibit storage of fuels and other toxic materials within RCAs except at designated administrative sites and sites covered by a Special Use Authorization. Prohibit refueling within RCAs unless there are no other alternatives. Ensure that spill plans are reviewed and up-to-date.	Y
RCO #2 Maintain or restore: (1) the geomorphic and biological characteristics of special aquatic features, including lakes, meadows, bogs, fens, wetlands, vernal pools, springs; (2) streams, including in stream flows; and (3) hydrologic connectivity both within and between watersheds to provide for the habitat needs of aquatic- dependent species.	100	Maintain and restore the hydrologic connectivity of streams, meadows, wetlands, and other special aquatic features by identifying roads and trails that intercept, divert, or disrupt natural surface and subsurface water flow paths. Implement corrective actions where necessary to restore connectivity.	Y
	101	Ensure that culverts or other stream crossings do not create barriers to upstream or downstream passage for aquatic-dependent species. Locate water-drafting sites to avoid adverse effects to in- stream flows and depletion of pool habitat. Where possible, maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows, wetlands, and other special aquatic features.	Y
	102	Prior to activities that could adversely affect streams, determine if relevant stream characteristics are within the range of natural variability. If characteristics are outside the range of natural variability, implement mitigation measures and short-term restoration actions needed to prevent further declines or cause an upward trend in conditions. Evaluate required long-term restoration actions and implement them according to their status among other restoration needs.	Y
	103	Prevent disturbance to meadow-associated streambanks and natural lake and pond shorelines caused by resource activities from exceeding 20 percent of stream reach or 20 percent of natural lake and pond shorelines.	Y
	105	At either the landscape or project-scale, determine if the age class, structural diversity, composition, and cover of riparian vegetation are within the range of natural variability for the vegetative community. If conditions are outside the range of natural variability, consider implementing mitigation and/or restoration actions that will result in an upward trend. Actions could include restoration of aspen or other riparian vegetation where conifer encroachment is identified as a problem.	Y
RCO #4 Ensure that management activities, including fuels reduction actions, within RCAs and CARs enhance or maintain physical and biological characteristics associated with aquatic- and riparian-dependent species	114	As appropriate, assess and document aquatic conditions following the Regional Stream Condition Inventory protocol prior to implementing ground disturbing activities within suitable habitat for the California red-legged frog, Cascade frog, Yosemite toad, foothill and mountain yellow-legged frogs, and northern leopard frog.	Y
RCO #5 Preserve, restore, or enhance special aquatic features, such as meadows, lakes, ponds, bogs, fens, and wetlands, to provide the ecological conditions and processes needed to recover or enhance the viability of species that rely on these areas	118	Prohibit or mitigate ground-disturbing activities that adversely affect hydrologic processes that maintain water flow, water quality, or water temperature critical to sustaining bog and fen ecosystems and plant species that depend on these ecosystems. During project analysis, survey, map, and develop measures to protect bogs and fens from such activities as trampling by livestock, pack stock, humans, and wheeled vehicles. Criteria for defining bogs and fens include, but not limited to, presence of: (1) sphagnum moss (<i>Spagnum</i> spp.), (2) mosses belonging to the genus <i>Meesia</i> , and (3) sundew (<i>Drosera</i> spp.). Complete initial plant inventories of bogs and fens within active grazing allotments prior to re-issuing permits.	Y

Notes: CAR = critical aquatic refuge; RCA = Riparian Conservation Area; RCO = Resource Conservation Objective; S&G = standards and guidelines

The RCO analysis concluded that Alternative 2 is consistent with the Adaptive Management Strategy for the Sierran Forests, as required by the SNFPA Record of Decision (U.S. Forest Service 2004). The project would incorporate RPMs and BMPs identified in Appendix B as protection measures to ensure no net loss or degradation of riparian habitats or aquatic resources. Standards and guidelines for RCOs are designed to protect downstream beneficial water uses and would be met by Alternative 2.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to RCO standards and guidelines would be **adverse**. These effects would be mitigated, however, through implementation of the RPMs identified in the RCO report for individual standards and guidelines, and repeated here in Appendix B.

CEQA Determination of Effects

This impact analysis is specific to a NEPA analytical indicator and is not responsive to a CEQA criterion. No CEQA effects conclusion is provided.

4.17.3.3 ALTERNATIVE 3

Impact 4.17-1 (Alt. 3): Impacts from Erosion and Sedimentation Caused by Construction-Related Activities

Activities associated with construction of Alternative 3, such as clearing, grading, and travel over temporary roadways would cause localized erosion and sedimentation of waterways, resulting in downstream water quality degradation. The project applicant would be required to adhere to local, state, and federal regulations that safeguard against erosion and sedimentation. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to erosion and sedimentation during project construction would be **adverse** because project construction could cause localized erosion and sedimentation of waterways, resulting in downstream water quality degradation. Implementation of RPMs REV-1 through REV-3, MUL-1, MUL-3 through MUL-7, BIO-1, BIO-19, BIO-23 through BIO-26, BIO-30, BIO-31, BIO-33 through BIO-36, BIO-38 through BIO-40, HAZ-1, HAZ-5, HAZ-7, SOILS-1 through SOILS-6, SOILS-9 through SOILS-12, WQ-1, WQ-3 through WQ-21, TREE-1 through TREE-7, and TREE-10 would mitigate this effect. Under CEQA, and using the CEQA criteria, effects related to erosion and sedimentation during project construction would be **potentially significant** despite compliance with regulatory requirements that would minimize the potential for soil erosion and downstream sedimentation and associated effects on water quality. However, RPMs REV-1 through REV-3, MUL-1, MUL-3 through MUL-7, BIO-1, BIO-19, BIO-23 through BIO-26, BIO-30, BIO-31, BIO-33 through BIO-36, BIO-38 through BIO-40, HAZ-1, HAZ-5, HAZ-7, SOILS-1 through SOILS-6, SOILS-9 through SOILS-12, WQ-1, WQ-3 through WQ-21, TREE-1 through TREE-7, and TREE-10 provide a robust program to protect soils and water quality. Among other details, these RPMs would include development of plans for the project and review and approval by the lead agencies if an alternative is approved and adopted; require the use of silt fencing, straw mulch, waddles, straw bale check dams, sediment traps or sedimentation basins, stabilized construction areas, material management protocols, and other soil stabilization measures during construction; and require equipment avoidance areas, erosion control measures, limits on operations based on slope, springs, drainages, etc., stream crossing details, rehabilitation of temporary disturbance areas such as staging areas and temporary routes, and timing of operations based on soil moisture, sediment transport, and transportation routes. With implementation of these RPMs, this impact would be reduced to a **less-than-significant** level.

Impact 4.17-1 (Alt. 3) would be the same as Impact 4.17-1 (Alt. 2) but could vary by degree. The amount of temporary disturbance proposed under Alternative 3 (12.4 acres; see Table 4.17-5) is less than that under Alternative 2 (16.6 acres; see Table 4.17-3), and so it is likely that there would be less disturbance of hydrological features or soils susceptible to erosion with implementation of Alternative 3. While the magnitude and intensity of these impacts would vary with the level of disturbance, the mechanisms by which

the impacts would be generated are the same as those identified for Alternative 2; however, with the incorporation of RPMs, the significance conclusion would remain the same.

Table 4.17-5 Projected Ground Disturbance on National Forest System and Private Lands under Alternative 3, by Type

Type of Disturbance	Acres of Disturbance			
	Alternative 1	Alternative 3		
		National Forest System	Private	Total
Temporary Ground Disturbance				
Overstory vegetation removal	None	0.99	9.61	10.60
Tower footing construction area	None	0.06	0.32	0.38
Access roads	None	0.00	1.14	1.14
Powerline	None	0.04	0.22	0.25
Total temporary disturbance	None	1.08	11.29	12.37
Permanent Ground Disturbance				
Mid-station/terminal	None	1.54	3.53	5.07
Gazex shelter	None	0.01	0.00	0.01
Gazex exploder	None	0.05	0.01	0.05
Total permanent disturbance	None	1.60	3.53	5.13
Grand Total	None	2.68	14.82	17.50
Note: Totals may not equal sum of numbers because of independent rounding.				
Sources: Data provided by SE Group in 2015, 2016, 2017; adapted by Ascent Environmental in 2018				

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to erosion and sedimentation during project construction would be **adverse** because Alternative 3 would generate an increased level of soil disturbance and increased likelihood of sedimentation and water quality degradation in a highly sensitive hydrological environment. These effects would be mitigated through compliance with existing regulations and implementation of RPMs REV-1 through REV-3, MUL-1, MUL-3 through MUL-7, BIO-1, BIO-19, BIO-23 through BIO-26, BIO-30, BIO-31, BIO-33 through BIO-36, BIO-38 through BIO-40, HAZ-1, HAZ-5, HAZ-7, SOILS-1 through SOILS-6, SOILS-9 through SOILS-12, WQ-1, WQ-3 through WQ-21, TREE-1 through TREE-7, and TREE-10 .

CEQA Determination of Effects

Under CEQA, using the CEQA criteria, and considering applicable regulatory requirements, effects related to erosion and sedimentation during project construction would be **potentially significant** because while Alternative 3 would comply with regulatory requirements to minimize the potential for soil erosion and downstream sedimentation and associated effects on water quality, the level of activity would increase soil disturbance and the likelihood of sedimentation and water quality degradation in a highly sensitive hydrological environment. Sensitive soil units exist within the project area, and two downstream waterbodies are TMDL listed for sedimentation. However, RPMs REV-1 through REV-3, MUL-1, MUL-3 through MUL-7, BIO-1, BIO-19, BIO-23 through BIO-26, BIO-30, BIO-31, BIO-33 through BIO-36, BIO-38 through BIO-40, HAZ-1, HAZ-5, HAZ-7, SOILS-1 through SOILS-6, SOILS-9 through SOILS-12, WQ-1, WQ-3 through WQ-21, TREE-1 through TREE-7, and TREE-10 provide a robust program to protect soils and water quality. Among other details, these RPMs would include development of plans for the project and review and approval by the lead agencies if an alternative is approved and adopted; require the use of silt fencing, straw mulch, waddles, straw bale check dams, sediment traps or sedimentation basins, stabilized construction areas, material management protocols, and other soil stabilization measures during construction; and require equipment avoidance areas, erosion control measures, limits on operations based on slope, springs, drainages, etc.,

stream crossing details, rehabilitation of temporary disturbance areas such as staging areas and temporary routes, and timing of operations based on soil moisture, sediment transport, and transportation routes. With implementation of these RPMs, this impact would be reduced to a **less-than-significant** level.

Mitigation Measures

All RPMs provided in Appendix B are adopted by Placer County as mitigation measures and are included in the Mitigation Monitoring and Reporting Program for the project. The adoption of RPMs REV-1 through REV-3, MUL-1, MUL-3 through MUL-7, BIO-1, BIO-19, BIO-23 through BIO-26, BIO-30, BIO-31, BIO-33 through BIO-36, BIO-38 through BIO-40, HAZ-1, HAZ-5, HAZ-7, SOILS-1 through SOILS-6, SOILS-9 through SOILS-12, WQ-1, WQ-3 through WQ-21, TREE-1 through TREE-7, and TREE-10 as mitigation measures would reduce the effects related to erosion and sedimentation during project construction but are not necessary to reduce a significant effect.

Impact 4.17-2 (Alt. 3): Impacts from Erosion and Sedimentation Caused by Long-Term Implementation of the Project

Long-term implementation of Alternative 3 would result in placement of new structures that could alter the erosion and sedimentation regime, resulting in long-term downstream water quality degradation. The project applicant would be required to adhere to local, state, and federal regulations that safeguard against erosion and sedimentation. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to erosion and sedimentation during project operation would be **adverse** because Alternative 3 would create conditions that could increase the long-term susceptibility of soils to erosion, thereby increasing the possibility for sedimentation and water quality degradation. Implementation of RPMs SOILS-9, BIO-30, and BIO-38 would mitigate this effect. Under CEQA, and using the CEQA criteria, effects related to erosion and sedimentation during project operation would be **less than significant** because compliance with regulatory requirements would result in the minimization and containment of soil erosion and prevent downstream sedimentation and associated effects on water quality. In addition, RPMs SOILS-9, BIO-30, and BIO-38 would require revegetation on all disturbed areas; preparation of a Restoration Plan for both Forest Service and private land that would document pre-disturbance conditions and revegetation disturbed areas, including the implementation of long-term erosion and sediment control measures, slope stabilization, and monitoring procedures; and replacement of native trees that would need to be removed along the gondola alignment. With implementation of these RPMs, this impact would be reduced, although these RPMs are not necessary to reduce a significant impact to a less-than-significant level.

Impact 4.17-2 (Alt. 3) would be the same as Impact 4.17-2 (Alt. 2) but would vary by degree. The amount of permanent disturbance proposed under Alternative 3 (5.1 acres; see Table 4.17-5) is slightly more than that under Alternative 2 (5.0 acres; see Table 4.17-3), and so it is likely that there would be more disturbance of hydrological features or soils susceptible to erosion with implementation of Alternative 3. While the magnitude and intensity of these impacts would vary with the level of disturbance, the mechanisms by which the impacts would be generated are the same as those identified for Alternative 2; however, with the incorporation of RPMs, the significance conclusion would remain the same.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to erosion and sedimentation during project operation would be **adverse** because Alternative 3 would create conditions that would increase the long-term susceptibility of soils to erosion, thereby increasing the possibility for sedimentation and water quality degradation. These effects would be mitigated through compliance with existing regulations and implementation of RPMs SOILS-9, BIO-30, and BIO-38.

CEQA Determination of Effects

Under CEQA, and using the CEQA criteria, effects related to erosion and sedimentation during project operation would be **less than significant** because although Alternative 3 would create conditions that could increase the long-term susceptibility of soils to erosion, thereby increasing the possibility for sedimentation

and water quality degradation, compliance with regulatory requirements would result in the minimization and containment of soil erosion and prevent downstream sedimentation and associated effects on water quality. RPMs SOILS-9, BIO-30, and BIO-38 would require revegetation on all disturbed areas; preparation of a Restoration Plan for both Forest Service and private land that would document pre-disturbance conditions and revegetation disturbed areas, including the implementation of long-term erosion and sediment control measures, slope stabilization, and monitoring procedures; and replacement of native trees that would need to be removed along the gondola alignment. With implementation of these RPMs, this impact would be reduced, although these RPMs are not necessary to reduce a significant impact to a less-than-significant level.

Mitigation Measures

All RPMs provided in Appendix B are adopted by Placer County as mitigation measures and are included in the Mitigation Monitoring and Reporting Program for the project. The adoption of RPMs SOILS-9, BIO-30, and BIO-38 as mitigation measures would reduce the effects related to erosion and sedimentation during project operation but are not necessary to reduce a significant effect.

Impact 4.17-3 (Alt. 3): Water Quality Impacts from Acute or Diffuse Releases of Contaminants Used during Project Implementation

Implementation of Alternative 3 would result in an increase in the use of materials containing contaminants and generate new sources of stormwater runoff and pollution. These new sources could release to receiving waters, potentially contaminating them. However, the project is covered under the General Construction Permit and would require preparation of an SPCC Plan; the former requires management of stormwater discharges and the both require implementation of pollution protection measures. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to releases of contaminants and hazardous materials would be **adverse** because Alternative 3 would increase the potential for accidental releases of contaminants and hazardous materials into receiving waters, which would result in water quality degradation. Implementation of RPMs HAZ-1, HAZ-5, HAZ-7, and WQ-1 would mitigate this effect. Under CEQA, and using the CEQA criteria, effects related to releases of contaminants and hazardous materials would be **less than significant** because compliance with regulatory requirements would result in the proper handling, storage, and containment of hazardous materials so that releases do not occur. In addition, RPMs HAZ-1, HAZ-5, HAZ-7, and WQ-1 provide additional measures to protect against accidental release of contaminants to waterways. These include a requirement that construction personnel receive training regarding the appropriate work practices necessary to effectively implement the RPMs related to hazardous materials, compliance with Placer County procedures related to the use and disposal of hazardous materials, and development and implementation of a SPCC Plan and SWPPP and receipt of necessary authorizations from the Lahontan RWQCB. With implementation of these RPMs, this impact would be reduced, although these RPMs are not necessary to reduce a significant impact to a less-than-significant level.

Impact 4.17-3 (Alt. 3) would be the same as Impact 4.17-3 (Alt. 2).

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to releases of contaminants and hazardous materials would be **adverse** because Alternative 3 would result in contaminants and hazardous materials being brought onto the project site, increasing the potential for accidental releases and resulting in potential contamination of receiving waters and water quality degradation. These effects would be mitigated through compliance with existing regulations and implementation of RPMs HAZ-1, HAZ-5, HAZ-7, and WQ-1.

CEQA Determination of Effects

Under CEQA, and using the CEQA criteria, effects related to releases of contaminants and hazardous materials would be **less than significant** because although Alternative 3 would result in contaminants and hazardous materials being brought onto the project site, increasing the potential for accidental releases and resulting in potential contamination of receiving waters and water quality degradation, compliance with

regulatory requirements would result in the proper handling, storage, and containment of hazardous materials so that releases do not occur. RPMs HAZ-1, HAZ-5, HAZ-7, and WQ-1 would require that construction personnel receive training regarding the appropriate work practices necessary to effectively implement the RPMs related to hazardous materials, compliance with Placer County procedures related to the use and disposal of hazardous materials, and development and implementation of a SPCC Plan and SWPPP and receipt of necessary authorizations from the Lahontan RWQCB. With implementation of these RPMs, this impact would be reduced, although these RPMs are not necessary to reduce a significant impact to a less-than-significant level.

Mitigation Measures

All RPMs provided in Appendix B are adopted by Placer County as mitigation measures and are included in the Mitigation Monitoring and Reporting Program for the project. The adoption of RPMs HAZ-1, HAZ-5, HAZ-7, and WQ-1 as mitigation measures would reduce the effects related to erosion and sedimentation during project operation but are not necessary to reduce a significant effect.

Impact 4.17-4 (Alt. 3): Impacts on Groundwater from Increased Visitation and Groundwater Demand

Implementation of Alternative 3 would result in an increase in skier-days at Squaw Valley and Alpine Meadows and would consequently produce an increase in water consumption from local aquifers. Increased use of groundwater by skiers would be minor and would constitute a de minimis quantity of water relative to aquifer and supply system capacity. It is therefore unlikely that there would be a measurable effect on local groundwater conditions in wells. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, there would be a **no effect** because the project would not have a measurable effect on groundwater levels in existing wells. There are no applicable RPMs that would mitigate this effect. Under CEQA, and using the CEQA criteria, effects related to groundwater would be **less than significant** because the project would not have a measurable effect on groundwater levels in existing wells. There are no applicable RPMs that would reduce this impact.

Impact 4.17-4 (Alt. 3) would be the same as Impact 4.17-4 (Alt. 2). The potential for increased visitation, and therefore, increased water demand, is the same across all action alternatives.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, there would be **no effect** related to groundwater because while Alternative 3 would create conditions that would increase water consumption from local aquifers, it would do so in quantities that would not produce a measurable effect in drawdown or recharge at local wells. There are no applicable RPMs that would mitigate this effect.

CEQA Determination of Effects

Under CEQA, and using the CEQA criteria, effects related to releases of contaminants and hazardous materials would be **less than significant** because the amount of groundwater associated with implementation of the project that would be consumed would not have a measurable effect on groundwater levels in existing wells. There are no applicable RPMs that would reduce this impact.

Mitigation Measures

No mitigation measures are required.

Impact 4.17-5 (Alt. 3): Localized Flooding from Changes in Site Drainage Patterns

Construction of Alternative 3 could cause localized erosion and changes in topography, resulting in potential downstream effects on stormwater conveyance. Without adequate stormwater drainage sizing for anticipated flow volumes, localized flooding may occur. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to localized flooding would be **adverse**. While the amount of disturbance proposed under Alternative 3 is small relative to existing disturbance, currently available information cannot confirm that existing stormwater infrastructure could accommodate modified site drainage resulting from disturbance. Implementation of RPMs WQ-9 and WQ-10 would mitigate this effect. Under CEQA, and using the CEQA criteria, effects related to localized flooding would be **potentially significant**. While it is unlikely that Alternative 3 would concentrate runoff to a degree that would produce localized flooding, currently available information cannot confirm that such conditions would not be created. Implementation of RPMs WQ-9 and WQ-10 would reduce this impact to a **less-than-significant** level.

Alternative 3 would have an impact similar to that discussed for Alternative 2. Under Alternative 3, construction of the Squaw Valley base station terminal would require partial filling of Cushing Pond, but the pond would not be expanded to the west. On the Alpine Meadows side, the terminal station would be situated on or near existing conveyance structures that act to carry Bear Creek tributary flows to the main branch of Bear Creek. Placement of the terminal station at Alpine Meadows would be located atop approximately 43 feet of the 220-foot semi-open existing drainage channel. However, all culvert capacity and function would be retained.

For the same reasons described for Impact 4.17-5 (Alt. 2), Alternative 3 could produce conditions that contribute to localized flooding. Alternative 3 would produce slightly more permanent disturbance than Alternative 2 and would not involve replacement of the lost detention capacity at Cushing Pond; however, with the incorporation of RPMs, the significance conclusion would remain the same.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to localized flooding would be **adverse**. Although it is unlikely that Alternative 3 would create conditions that would make soils more susceptible to erosion and potentially create modified drainage pathways, currently available information cannot confirm that such conditions would not be created. These effects would be mitigated through implementation of RPMs WQ-9 and WQ-10.

CEQA Determination of Effects

Under CEQA, and using the CEQA criteria, effects related to localized flooding would be **potentially significant**. Although it is unlikely that Alternative 3 would create conditions that would make soils more susceptible to erosion and potentially create modified drainage pathways, currently available information cannot confirm that such conditions would not be created. Implementation of RPMs WQ-9 and WQ-10 would reduce this impact to a **less-than-significant level**.

Mitigation Measures

All RPMs provided in Appendix B are adopted by Placer County as mitigation measures and are included in the Mitigation Monitoring and Reporting Program for the project. The adoption of RPMs WQ-9 and WQ-10 as mitigation measures would reduce the effects related to localized flooding from changes in site drainage patterns during project operation but are not necessary to reduce a significant effect.

Impact 4.17-6 (Alt. 3): Impacts on Riparian Conservation Objectives in Riparian Conservation Areas

Absent the adoption of any RPMs, implementation of Alternative 3 would result in a departure from adherence to the standards and guidelines for riparian and aquatic ecosystems identified in the SNFPA ROD, which would be an **adverse** effect under NEPA. However, the RCO analysis concluded that Alternative 3 is consistent with the Adaptive Management Strategy for the Sierra Forests, as required by the SNFPA ROD, because the project would incorporate RPMs and corresponding Forest Service Region 5 BMPs as protection measures to ensure no net loss or degradation of riparian habitats or aquatic resources. Standards and guidelines for RCOs that have been designed to protect downstream beneficial water uses would be met by Alternative 3 if RPMs and BMPs are adhered to. Therefore, implementation of RPMs and corresponding BMPs would mitigate effects of the alternative. This impact analysis is specific to a NEPA analytical indicator and is not responsive to a CEQA criterion. No CEQA effects conclusion is provided.

As described for Impact 4.17-6 (Alt.2), RCAs are land allocations identified by the Forest Service that “are managed to maintain or restore the structure and function of aquatic, riparian, and meadow ecosystems” (U.S. Forest Service 2004). Standards and guidelines in the SNFPA intended to protect riparian and aquatic ecosystems that are applicable to the project are listed above in Table 4.17-4, together with the associated RCO, and a summary evaluation of whether the standards have been met.

Alternative 3 would result in the temporary, construction-related disturbance in 4.7 acres of RCAs and permanent disturbance in 3.5 acres of RCAs (KSL Ski Holdings 2017; Hydro Restoration 2016, 2017; U.S. Forest Service 2004; USGS 2017; compiled by Ascent Environmental 2018), which is less than the amount of disturbance associated with Alternative 2. While the magnitude and intensity of impacts in RCAs would vary with the level of disturbance, the mechanisms by which the impacts would be generated are the same as those identified for Alternative 2; however, with the incorporation of RPMs, the significance conclusion would remain the same.

For the same reasons identified for Alternative 2, Alternative 3 is consistent with the Adaptive Management Strategy for the Sierran Forests, as required by the SNFPA Record of Decision (U.S. Forest Service 2004). Alternative 3 would incorporate RPMs and BMPs identified in Appendix B to ensure no net loss or degradation of riparian habitats or aquatic resources. Applicable standards and guidelines for RCOs designed to protect downstream beneficial water uses would likely be met by the project.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to RCO standards and guidelines would be **adverse**. These effects would be mitigated, however, through implementation of the RPMs identified in the RCO report for individual standards and guidelines, and repeated here in Appendix B.

CEQA Determination of Effects

This impact analysis is specific to a NEPA analytical indicator and is not responsive to a CEQA criterion. No CEQA effects conclusion is provided.

4.17.3.4 ALTERNATIVE 4

Impact 4.17-1 (Alt. 4): Impacts from Erosion and Sedimentation Caused by Construction-Related Activities

Activities associated with construction of Alternative 4, such as clearing, grading, and travel over temporary roadways would cause localized erosion and sedimentation of waterways, resulting in downstream water quality degradation. The project applicant would be required to adhere to local, state, and federal regulations that safeguard against erosion and sedimentation. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to erosion and sedimentation during project construction would be **adverse** because project construction could cause localized erosion and sedimentation of waterways, resulting in downstream water quality degradation. Implementation of RPMs REV-1 through REV-3, MUL-1, MUL-3 through MUL-7, BIO-1, BIO-19, BIO-23 through BIO-26, BIO-30, BIO-31, BIO-33 through BIO-36, BIO-38 through BIO-40, HAZ-1, HAZ-5, HAZ-7, SOILS-1 through SOILS-6, SOILS-9 through SOILS-12, WQ-1, WQ-3 through WQ-21, TREE-1 through TREE-7, and TREE-10 would mitigate this effect. Under CEQA, and using the CEQA criteria, effects related to erosion and sedimentation during project construction would be **potentially significant** despite compliance with regulatory requirements that would minimize the potential for soil erosion and downstream sedimentation and associated effects on water quality. However, RPMs REV-1 through REV-3, MUL-1, MUL-3 through MUL-7, BIO-1, BIO-19, BIO-23 through BIO-26, BIO-30, BIO-31, BIO-33 through BIO-36, BIO-38 through BIO-40, HAZ-1, HAZ-5, HAZ-7, SOILS-1 through SOILS-6, SOILS-9 through SOILS-12, WQ-1, WQ-3 through WQ-21, TREE-1 through TREE-7, and TREE-10 provide a robust program to protect soils and water quality. Among other details, these RPMs would include development of plans for the project and review and approval by the lead agencies if an alternative is approved and adopted; require the use of silt fencing, straw mulch, waddles, straw bale check dams, sediment traps or sedimentation basins, stabilized construction areas, material management protocols, and other soil stabilization measures during construction; and require equipment avoidance areas, erosion control measures, limits on operations based on slope, springs, drainages, etc., stream crossing details, rehabilitation of temporary disturbance areas such as staging areas and temporary routes, and timing of operations based on soil moisture, sediment transport, and transportation routes. With implementation of these RPMs, this impact would be reduced to a **less-than-significant** level.

Impact 4.17-2 (Alt. 4) would be the same as Impact 4.17-1 (Alt. 2) but could vary by degree. The amount of temporary disturbance proposed under Alternative 4 (11.6 acres; see Table 4.17-6) is less than that under Alternative 2 (16.6 acres; see Table 4.17-3) and Alternative 3 (12.4 acres; see Table 4.17-5), and so it is likely that there would be less disturbance of hydrological features or soils susceptible to erosion with implementation of Alternative 4. While the magnitude and intensity of these impacts would vary with the level of disturbance, the mechanisms by which the impacts would be generated are the same as those identified for Alternative 2; however, with the incorporation of RPMs, the significance conclusion would remain the same.

Table 4.17-6 Projected Ground Disturbance on National Forest System and Private Lands under Alternative 4, by Type

Type of Disturbance	Acres of Disturbance			
	Alternative 1	Alternative 4		
		National Forest System	Private	Total
Temporary Ground Disturbance				
Overstory vegetation removal	None	1.70	6.17	7.88
Tower footing construction area	None	0.06	0.38	0.43
Access roads	None	0.31	2.34	2.65
Powerline	None	0.08	0.58	0.66
Total temporary disturbance	None	2.15	9.47	11.62

Table 4.17-6 Projected Ground Disturbance on National Forest System and Private Lands under Alternative 4, by Type

Type of Disturbance	Acres of Disturbance			
	Alternative 1	Alternative 4		
		National Forest System	Private	Total
Permanent Ground Disturbance				
Mid-station/terminal	None	1.54	1.42	2.97
Gazex shelter	None	0.08	0.00	0.08
Gazex exploder	None	0.06	0.01	0.06
Total permanent disturbance	None	1.67	1.43	3.10
Grand Total	None	3.82	10.90	13.92

Note: Totals may not equal sum of numbers because of independent rounding.

Sources: Data provided by SE Group in 2015, 2016, 2017; adapted by Ascent Environmental in 2018

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to erosion and sedimentation during project construction would be **adverse** because Alternative 4 would generate an increased level of soil disturbance and increased likelihood of sedimentation and water quality degradation in a highly sensitive hydrological environment. These effects would be mitigated through compliance with existing regulations and implementation of RPMs REV-1 through REV-3, MUL-1, MUL-3 through MUL-7, BIO-1, BIO-19, BIO-23 through BIO-26, BIO-30, BIO-31, BIO-33 through BIO-36, BIO-38 through BIO-40, HAZ-1, HAZ-5, HAZ-7, SOILS-1 through SOILS-6, SOILS-9 through SOILS-12, WQ-1, WQ-3 through WQ-21, TREE-1 through TREE-7, and TREE-10 .

CEQA Determination of Effects

Under CEQA, using the CEQA criteria, and considering applicable regulatory requirements, effects related to erosion and sedimentation during project construction would be **potentially significant** because while Alternative 4 would comply with regulatory requirements to minimize the potential for soil erosion and downstream sedimentation and associated effects on water quality, the level of activity would increase soil disturbance and the likelihood of sedimentation and water quality degradation in a highly sensitive hydrological environment. Sensitive soil units exist within the project area, and two downstream waterbodies are TMDL listed for sedimentation. RPMs REV-1 through REV-3, MUL-1, MUL-3 through MUL-7, BIO-1, BIO-19, BIO-23 through BIO-26, BIO-30, BIO-31, BIO-33 through BIO-36, BIO-38 through BIO-40, HAZ-1, HAZ-5, HAZ-7, SOILS-1 through SOILS-6, SOILS-9 through SOILS-12, WQ-1, WQ-3 through WQ-21, TREE-1 through TREE-7, and TREE-10 provide a robust program to protect soils and water quality. Among other details, these RPMs would include development of plans for the project and review and approval by the lead agencies if an alternative is approved and adopted; require the use of silt fencing, straw mulch, waddles, straw bale check dams, sediment traps or sedimentation basins, stabilized construction areas, material management protocols, and other soil stabilization measures during construction; and require equipment avoidance areas, erosion control measures, limits on operations based on slope, springs, drainages, etc., stream crossing details, rehabilitation of temporary disturbance areas such as staging areas and temporary routes, and timing of operations based on soil moisture, sediment transport, and transportation routes. With implementation of these RPMs, this impact would be reduced to a **less-than-significant** level.

Mitigation Measures

All RPMs provided in Appendix B are adopted by Placer County as mitigation measures and are included in the Mitigation Monitoring and Reporting Program for the project. The adoption of RPMs REV-1 through REV-3, MUL-1, MUL-3 through MUL-7, BIO-1, BIO-19, BIO-23 through BIO-26, BIO-30, BIO-31, BIO-33 through BIO-36, BIO-38 through BIO-40, HAZ-1, HAZ-5, HAZ-7, SOILS-1 through SOILS-6, SOILS-9 through SOILS-12, WQ-1, WQ-3 through WQ-21, TREE-1 through TREE-7, and TREE-10 as

mitigation measures would reduce the effects related to erosion and sedimentation during project construction to a **less-than-significant** level.

Impact 4.17-2 (Alt. 4): Impacts from Erosion and Sedimentation Caused by Long-Term Implementation of the Project

Long-term implementation of Alternative 4 would result in placement of new structures that could alter the erosion and sedimentation regime, resulting in long-term downstream water quality degradation. The project applicant would be required to adhere to local, state, and federal regulations that safeguard against erosion and sedimentation. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to erosion and sedimentation during project operation would be **adverse** because Alternative 4 would create conditions that could increase the long-term susceptibility of soils to erosion, thereby increasing the possibility for sedimentation and water quality degradation. Implementation of RPMs SOILS-9, BIO-30, and BIO-38 would mitigate this effect. Under CEQA, and using the CEQA criteria, effects related to erosion and sedimentation during project operation would be **less than significant** because compliance with regulatory requirements would result in the minimization and containment of soil erosion and prevent downstream sedimentation and associated effects on water quality. In addition, RPMs SOILS-9, BIO-30, and BIO-38 would require revegetation on all disturbed areas; preparation of a Restoration Plan for both Forest Service and private land that would document pre-disturbance conditions and revegetation disturbed areas, including the implementation of long-term erosion and sediment control measures, slope stabilization, and monitoring procedures; and replacement of native trees that would need to be removed along the gondola alignment. With implementation of these RPMs, this impact would be reduced, although these RPMs are not necessary to reduce a significant impact to a less-than-significant level.

Impact 4.17-2 (Alt. 4) would be the same as Impact 4.17-1 (Alt. 2) but could vary by degree. The amount of permanent disturbance proposed under Alternative 4 (3.1 acres; see Table 4.17-6) is less than that under Alternative 2 (5.0 acres; see Table 4.17-3) and Alternative 3 (5.1 acres; see Table 4.17-5), and so it is likely that there would be less disturbance of hydrological features or soils susceptible to erosion with implementation of Alternative 4. While the magnitude and intensity of these impacts would vary with the level of disturbance, the mechanisms by which the impacts would be generated are the same as those identified for Alternative 2; however, with the incorporation of RPMs, the significance conclusion would remain the same.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to erosion and sedimentation during project operation would be **adverse** because Alternative 4 would create conditions that would increase the long-term susceptibility of soils to erosion, thereby increasing the possibility for sedimentation and water quality degradation. These effects would be mitigated through compliance with existing regulations and implementation of RPMs SOILS-9, BIO-30, and BIO-38.

CEQA Determination of Effects

Under CEQA, and using the CEQA criteria, effects related to erosion and sedimentation during project operation would be **less than significant** because although Alternative 4 would create conditions that could increase the long-term susceptibility of soils to erosion, thereby increasing the possibility for sedimentation and water quality degradation, compliance with regulatory requirements would result in the minimization and containment of soil erosion and prevent downstream sedimentation and associated effects on water quality. RPMs SOILS-9, BIO-30, and BIO-38 would require revegetation on all disturbed areas; preparation of a Restoration Plan for both Forest Service and private land that would document pre-disturbance conditions and revegetation disturbed areas, including the implementation of long-term erosion and sediment control measures, slope stabilization, and monitoring procedures; and replacement of native trees that would need to be removed along the gondola alignment. With implementation of these RPMs, this impact would be reduced, although these RPMs are not necessary to reduce a significant impact to a less-than-significant level.

Mitigation Measures

All RPMs provided in Appendix B are adopted by Placer County as mitigation measures and are included in the Mitigation Monitoring and Reporting Program for the project. The adoption of RPMs SOILS-9, BIO-30, and BIO-38 as mitigation measures would reduce the effects related to erosion and sedimentation during project operation but are not necessary to reduce a significant effect.

Impact 4.17-3 (Alt. 4): Water Quality Impacts from Acute or Diffuse Releases of Contaminants Used during Project Implementation

Implementation of Alternative 4 would result in an increase in the use of materials containing contaminants and generate new sources of stormwater runoff and pollution. These new sources could release to receiving waters, potentially contaminating them. However, the project is covered under the General Construction Permit and would require preparation of an SPCC Plan; the former requires management of stormwater discharges and the both require implementation of pollution protection measures. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to releases of contaminants and hazardous materials would be **adverse** because Alternative 4 would increase the potential for accidental releases of contaminants and hazardous materials into receiving waters, which would result in water quality degradation. Implementation of RPMs HAZ-1, HAZ-5, HAZ-7, and WQ-1 would mitigate this effect. Under CEQA, and using the CEQA criteria, effects related to releases of contaminants and hazardous materials would be **less than significant** because compliance with regulatory requirements would result in the proper handling, storage, and containment of hazardous materials so that releases do not occur. In addition, RPMs HAZ-1, HAZ-5, HAZ-7, and WQ-1 provide additional measures to protect against accidental release of contaminants to waterways. These include a requirement that construction personnel receive training regarding the appropriate work practices necessary to effectively implement the RPMs related to hazardous materials, compliance with Placer County procedures related to the use and disposal of hazardous materials, and development and implementation of a SPCC Plan and SWPPP and receipt of necessary authorizations from the Lahontan RWQCB. With implementation of these RPMs, this impact would be reduced, although these RPMs are not necessary to reduce a significant impact to a less-than-significant level.

Impact 4.17-3 (Alt. 4) would be the same as Impact 4.17-3 (Alt. 2).

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to releases of contaminants and hazardous materials would be **adverse** because Alternative 4 would result in contaminants and hazardous materials being brought onto the project site, increasing the potential for accidental releases and resulting in potential contamination of receiving waters and water quality degradation. These effects would be mitigated through and implementation of RPMs HAZ-1, HAZ-5, HAZ-7, and WQ-1.

CEQA Determination of Effects

Under CEQA, and using the CEQA criteria, effects related to releases of contaminants and hazardous materials would be **less than significant** because although Alternative 4 would result in contaminants and hazardous materials being brought onto the project site, increasing the potential for accidental releases and resulting in potential contamination of receiving waters and water quality degradation, compliance with regulatory requirements would result in the proper handling, storage, and containment of hazardous materials so that releases do not occur. RPMs HAZ-1, HAZ-5, HAZ-7, and WQ-1 would require that construction personnel receive training regarding the appropriate work practices necessary to effectively implement the RPMs related to hazardous materials, compliance with Placer County procedures related to the use and disposal of hazardous materials, and development and implementation of a SPCC Plan and SWPPP and receipt of necessary authorizations from the Lahontan RWQCB. With implementation of these RPMs, this impact would be reduced, although these RPMs are not necessary to reduce a significant impact to a less-than-significant level.

Mitigation Measures

All RPMs provided in Appendix B are adopted by Placer County as mitigation measures and are included in the Mitigation Monitoring and Reporting Program for the project. The adoption of RPMs HAZ-1, HAZ-5, HAZ-7, and WQ-1 as mitigation measures would reduce the effects related to erosion and sedimentation during project operation but are not necessary to reduce a significant effect.

Impact 4.17-4 (Alt. 4): Impacts on Groundwater from Increased Visitation and Groundwater Demand

Implementation of Alternative 4 would result in an increase in skier-days at Squaw Valley and Alpine Meadows and would consequently produce an increase in water consumption from local aquifers. Increased water consumption would be primarily focused at Squaw Valley. Increased use of groundwater by skiers would be minor and would constitute a de minimis quantity of water relative to aquifer and supply system capacity. It is therefore unlikely that there would be a measurable effect on local groundwater conditions in wells. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, there would be a **no effect** because the project would not have a measurable effect on groundwater levels in existing wells. There are no applicable RPMs that would mitigate this effect. Under CEQA, and using the CEQA criteria, effects related to groundwater would be **less than significant** because the project would not have a measurable effect on groundwater levels in existing wells. There are no applicable RPMs that would reduce this impact.

Impact 4.17-4 (Alt. 4) would be the same as Impact 4.17-4 (Alt. 2). The potential for increased visitation, and therefore, increased water demand, is the same across all action alternatives.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, there would be **no effect** related to groundwater because while Alternative 4 would create conditions that would increase water consumption from local aquifers, it would do so in quantities that would not produce a measurable effect in drawdown or recharge at local wells. There are no applicable RPMs that would mitigate this effect.

CEQA Determination of Effects

Under CEQA, and using the CEQA criteria, effects related to releases of contaminants and hazardous materials would be **less than significant** because the amount of groundwater associated with implementation of the project that would be consumed would not have a measurable effect on groundwater levels in existing wells. There are no applicable RPMs that would reduce this impact.

Mitigation Measures

No mitigation measures are required.

Impact 4.17-5 (Alt. 4): Localized Flooding from Changes in Site Drainage Patterns

Construction of Alternative 4 could cause localized erosion and changes in topography, resulting in potential downstream effects on stormwater conveyance. Without adequate stormwater drainage sizing for anticipated flow volumes, localized flooding may occur. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to localized flooding would be **adverse**. Although it is unlikely that Alternative 4 would concentrate runoff and produce localized flooding, currently available information cannot confirm that such conditions would not be created. Implementation of RPMs WQ-9 and WQ-10 would mitigate this effect. Under CEQA, and using the CEQA criteria, effects related to localized flooding would be **potentially significant**. Although it is unlikely that Alternative 4 would create conditions that would make soils more susceptible to erosion and potentially create modified drainage pathways, concentrating runoff and producing localized flooding, currently available information cannot confirm that such conditions would not be created. RPMs WQ-9 and WQ-10 would reduce this impact.

Alternative 4 would have an impact similar to that discussed for Alternative 2. Under Alternative 4, construction of the Squaw Valley base station terminal would not require any modifications to Cushing Pond.

On the Alpine Meadows side, the terminal station would be situated on or near existing conveyance structures that act to carry Bear Creek flows to the main branch of Bear Creek. Placement of the terminal station at Alpine Meadows would be located atop approximately 45 feet of the 220-foot semi-open existing drainage culvert. However, culvert function and capacity would not be altered.

For the same reasons described for Impact 4.17-5 (Alt. 2), Alternative 4 could produce conditions that contribute to localized flooding. However, Alternative 4 would produce less permanent disturbance than both Alternatives 2 and 3. With incorporation of RPMs, the significance conclusion would remain the same.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to localized flooding would be **adverse**. Although it is unlikely that Alternative 4 would create conditions that would make soils more susceptible to erosion and potentially create modified drainage pathways, concentrating runoff and producing localized flooding, currently available information cannot confirm that such conditions would not be created. These effects would be mitigated through implementation of RPMs WQ-9 and WQ-10.

CEQA Determination of Effects

Under CEQA, and using the CEQA criteria, effects related to localized flooding would be **potentially significant**. Although it is unlikely that Alternative 4 would create conditions that would make soils more susceptible to erosion and potentially create modified drainage pathways, concentrating runoff and producing localized flooding, currently available information cannot confirm that such conditions would not be created. Implementation of RPMs WQ-9 and WQ-10 would reduce this impact to a **less-than-significant level**.

Mitigation Measures

All RPMs provided in Appendix B are adopted by Placer County as mitigation measures and are included in the Mitigation Monitoring and Reporting Program for the project. The adoption of RPMs WQ-9 and WQ-10 as mitigation measures would reduce the effects related to localized flooding from changes in site drainage patterns during project operation but are not necessary to reduce a significant effect.

Impact 4.17-6 (Alt. 4): Impacts on Riparian Conservation Objectives in Riparian Conservation Areas

Absent the adoption of any RPMs, implementation of Alternative 4 would result in a departure from adherence to the standards and guidelines for riparian and aquatic ecosystems identified in the SNFPA ROD, which would be an **adverse** effect under NEPA. However, the RCO analysis concluded that Alternative 4 is consistent with the Adaptive Management Strategy for the Sierran Forests, as required by the SNFPA ROD, because the project would incorporate RPMs and corresponding Forest Service Region 5 BMPs as protection measures to ensure no net loss or degradation of riparian habitats or aquatic resources. Standards and guidelines for RCOs that have been designed to protect downstream beneficial water uses would be met by Alternative 4 if RPMs and BMPs are adhered to. Therefore, implementation of RPMs and corresponding BMPs would mitigate effects of the alternative. This impact analysis is specific to a NEPA analytical indicator and is not responsive to a CEQA criterion. No CEQA effects conclusion is provided.

As described in Impact 4.17-6 (Alt. 2), RCAs are land allocations identified by the Forest Service that “are managed to maintain or restore the structure and function of aquatic, riparian, and meadow ecosystems” (U.S. Forest Service 2004). Standards and guidelines in the SNFPA intended to protect riparian and aquatic ecosystems that are applicable to the project are listed above in Table 4.17-4, together with the associated RCO, and a summary evaluation of whether the standards have been met.

Alternative 4 would result in the temporary, construction-related disturbance of 5.9 acres and the permanent disturbance of 3.6 acres of RCAs (KSL Ski Holdings 2017; Hydro Restoration 2016, 2017; U.S. Forest Service 2004; USGS 2017; compiled by Ascent Environmental 2018), which is less than the amount of disturbance under Alternative 2, but more than Alternative 3. While the magnitude and intensity of impacts

in RCAs would vary with the level of disturbance, the mechanisms by which the impacts would be generated are the same as those identified for Alternative 2; however, with the incorporation of RPMs, the significance conclusion would remain the same.

For the same reasons identified for Alternative 2, Alternative 4 is consistent with the Adaptive Management Strategy for the Sierran Forests, as required by the SNFPA Record of Decision (U.S. Forest Service 2004). Alternative 4 would incorporate RPMs and BMPs identified in Appendix B to ensure no net loss or degradation of riparian habitats or aquatic resources. Applicable standards and guidelines for RCOs designed to protect downstream beneficial water uses would likely be met by the project.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect effects related to RCO standards and guidelines would be **adverse**. These effects would be mitigated, however, through implementation of the RPMs identified in the RCO report for individual standards and guidelines, and repeated here in Appendix B.

CEQA Determination of Effects

This impact analysis is specific to a NEPA analytical indicator and is not responsive to a CEQA criterion. No CEQA effects conclusion is provided.

4.17.3.5 SUMMARY OF DIRECT AND INDIRECT EFFECTS

Table 4.17-7 provides a summary of the effects determinations for the direct and indirect effects evaluated above for each alternative.

For Alternative 1, the No Action Alternative, there would be no effect for all NEPA indicators and CEQA criteria evaluated.

Addressing the action alternatives, for Impact 4.17-1, all NEPA indicators effects would be adverse and mitigated with adherence to regulatory requirements and implementation of applicable RPMs. For these indicators, there would be a small difference in effects across the three action alternatives relating to the total amount of disturbance from construction and vegetation clearing, with Alternative 2 likely to be slightly more adverse due to the larger disturbance footprint (16.6 acres) compared to Alternative 3 (12.4 acres) and Alternative 4 (11.6 acres). Under CEQA, the impacts of the three action alternatives under Impact 4.17-1 would be potentially significant considering applicable regulatory requirements and with implementation of RPMs but would be mitigated to a less-than-significant level with implementation of RPMs.

For Impact 4.17-2, all NEPA indicators effects would be adverse and mitigated with adherence to regulatory requirements and implementation of applicable RPMs. For these indicators, there would be a small difference in effects across the three action alternatives relating to the total amount of disturbance from placement of permanent structures, with Alternative 3 likely to be slightly more adverse due to the larger disturbance footprint (5.1 acres) compared to Alternative 2 (5.0 acres) and Alternative 4 (3.1 acres). Under CEQA, the impacts of the three action alternatives under Impact 4.17-2 would be less than significant considering applicable regulatory requirements and with implementation of RPMs.

For Impact 4.17-3, the impact would be adverse but mitigated under NEPA and less than significant under CEQA with implementation of applicable RPMs. The impact relates to the potential release of contaminants and hazardous materials, and there would be no discernable difference in the potential severity of this affect across the action alternatives.

For Impact 4.17-4, there would be no effect under NEPA and a less-than-significant impact under CEQA across all three action alternatives because water use would be de minimis under both NEPA and CEQA. Increases in skier visitation, and therefore increases in water demand, would be the same for all action alternatives.

For Impact 4.17-5, the impact would be adverse but mitigated under NEPA and less than significant under CEQA with implementation of applicable RPMs for all three action alternatives. Because specific information on existing drainage systems and project-related drainage systems is lacking, a difference in effect across alternatives cannot be determined.

For Impact 4.17-6, the impact would be adverse but mitigated under NEPA. Because this impact analysis is specific to a NEPA analytical indicator, no CEQA effects conclusion is provided. Alternative 2 would result in the most substantial temporary, construction-related disturbance (6.6 acres) and permanent disturbance of RCAs (5.1 acres), followed by Alternative 4 (5.9 and 3.6 acres, respectively) and Alternative 3 (4.7 and 3.5 acres, respectively).

Table 4.17-7 Summary of Direct and Indirect Effects

Impact	Applicable Analytical Indicators and Significance Criteria	Alt. 1	Alt. 2	Alt. 3	Alt. 4
4.17-1: Impacts from Erosion and Sedimentation Caused by Construction-Related Activities	Quantification (acres) of ground disturbance resulting from the projects and discussion of impacts on water quality, hydrologic function, drainage patterns, stream health, rate and amount of runoff, stream sedimentation, slope stability, and water quality standards of receiving waters	No effect	Adverse under NEPA; less than significant under CEQA	Adverse under NEPA; less than significant under CEQA Less than under Alternative 2	Adverse under NEPA; less than significant under CEQA Less than under Alternatives 2 and 3
	Discuss particularly impacts of the temporary construction access route on water resources	No effect	Adverse under NEPA; less than significant under CEQA	Adverse under NEPA; less than significant under CEQA Less than under Alternative 2	Adverse under NEPA; less than significant under CEQA Less than under Alternative 2 and more than under Alternative 3
	Discussion of Total Maximum Daily Load (TMDL) adopted for sediment in Squaw Creek	No effect	Adverse under NEPA; less than significant under CEQA	Adverse under NEPA; less than significant under CEQA Less than under Alternative 2	Adverse under NEPA; less than significant under CEQA Less than under Alternatives 2 and 3
	Narrative discussion of BMPs and mitigation techniques to minimize adverse effects to watershed health (specifically measures to minimize erosion and the creation of a stormwater management plan)	No effect	Adverse under NEPA; less than significant under CEQA	Adverse under NEPA; less than significant under CEQA Less than under Alternative 2	Adverse under NEPA; less than significant under CEQA Less than under Alternatives 2 and 3
	Violate any federal, state or county potable water quality standards	No effect	Adverse under NEPA; less than significant under CEQA	Adverse under NEPA; less than significant under CEQA Less than under Alternative 2	Adverse under NEPA; less than significant under CEQA Less than under Alternatives 2 and 3
	Create or contribute runoff water which would include substantial additional sources of polluted water	No effect	Adverse under NEPA; less than significant under CEQA	Adverse under NEPA; less than significant under CEQA Less than under Alternative 2	Adverse under NEPA; less than significant under CEQA Less than under Alternatives 2 and 3
	Otherwise substantially degrade surface water quality	No effect	Adverse under NEPA; less than significant under CEQA	Adverse under NEPA; less than significant under CEQA Less than under Alternative 2	Adverse under NEPA; less than significant under CEQA Less than under Alternatives 2 and 3

Table 4.17-7 Summary of Direct and Indirect Effects

Impact	Applicable Analytical Indicators and Significance Criteria	Alt. 1	Alt. 2	Alt. 3	Alt. 4
4.17-2: Impacts from Erosion and Sedimentation Caused by Long-Term Implementation of the Project	Quantification (acres) of ground disturbance resulting from the projects and discussion of impacts on water quality, hydrologic function, drainage patterns, stream health, rate and amount of runoff, stream sedimentation, slope stability, and water quality standards of receiving waters	No effect	Adverse under NEPA; less than significant under CEQA	Adverse under NEPA; less than significant under CEQA More than under Alternative 2	Adverse under NEPA; less than significant under CEQA Less than under Alternatives 2 and 3
	Narrative discussion of BMPs and mitigation techniques to minimize adverse effects to watershed health (specifically measures to minimize erosion and the creation of a stormwater management plan)	No effect	Adverse under NEPA; less than significant under CEQA	Adverse under NEPA; less than significant under CEQA More than under Alternative 2	Adverse under NEPA; less than significant under CEQA Less than under Alternatives 2 and 3
	Violate any federal, state or county potable water quality standards	No effect	Adverse under NEPA; less than significant under CEQA	Adverse under NEPA; less than significant under CEQA More than under Alternative 2	Adverse under NEPA; less than significant under CEQA Less than under Alternatives 2 and 3
	Create or contribute runoff water which would include substantial additional sources of polluted water	No effect	Adverse under NEPA; less than significant under CEQA	Adverse under NEPA; less than significant under CEQA More than under Alternative 2	Adverse under NEPA; less than significant under CEQA Less than under Alternatives 2 and 3
	Otherwise substantially degrade surface water quality	No effect	Adverse under NEPA; less than significant under CEQA	Adverse under NEPA; less than significant under CEQA More than under Alternative 2	Adverse under NEPA; less than significant under CEQA Less than under Alternatives 2 and 3
4.17-3: Water Quality Impacts from Acute or Diffuse Releases of Contaminants Used during Project Implementation	Violate any federal, state or county potable water quality standards	No effect	Adverse under NEPA; less than significant under CEQA	Adverse under NEPA; less than significant under CEQA Same as for Alternative 2	Adverse under NEPA; less than significant under CEQA Same as for Alternatives 2 and 3
	Create or contribute runoff water which would include substantial additional sources of polluted water	No effect	Adverse under NEPA; less than significant under CEQA	Adverse under NEPA; less than significant under CEQA Same as for Alternative 2	Adverse under NEPA; less than significant under CEQA Same as for Alternatives 2 and 3
	Otherwise substantially degrade surface water quality	No effect	Adverse under NEPA; less than significant under CEQA	Adverse under NEPA; less than significant under CEQA Same as for Alternative 2	Adverse under NEPA; less than significant under CEQA Same as for Alternatives 2 and 3
4.17-4: Impacts on Groundwater from Increased Visitation and Groundwater Demand	Qualitative discussion of existing and proposed groundwater supply and potential changes to groundwater recharge due to increased visitation	No effect	No effect under NEPA; less than significant under CEQA	No effect under NEPA; less than significant under CEQA Same as for Alternative 2	No effect under NEPA; less than significant under CEQA Same as for Alternatives 2 and 3

Table 4.17-7 Summary of Direct and Indirect Effects

Impact	Applicable Analytical Indicators and Significance Criteria	Alt. 1	Alt. 2	Alt. 3	Alt. 4
	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 pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)	No effect	No effect under NEPA; less than significant under CEQA	No effect under NEPA; less than significant under CEQA Same as for Alternative 2	No effect under NEPA; less than significant under CEQA Same as for Alternatives 2 and 3
	Alter the direction or rate of flow of groundwater	No effect	No effect under NEPA; less than significant under CEQA	No effect under NEPA; less than significant under CEQA Same as for Alternative 2	No effect under NEPA; less than significant under CEQA Same as for Alternatives 2 and 3
4.17-5: Localized Flooding from Changes in Site Drainage Patterns	Substantially alter the existing drainage pattern of the site or area	No effect	Adverse under NEPA; less than significant under CEQA	Adverse under NEPA; less than significant under CEQA Same as for Alternative 2	Adverse under NEPA; less than significant under CEQA Same as for Alternatives 2 and 3
	Increase the rate or amount of surface runoff	No effect	Adverse under NEPA; less than significant under CEQA	Adverse under NEPA; less than significant under CEQA Same as for Alternative 2	Adverse under NEPA; less than significant under CEQA Same as for Alternatives 2 and 3
4.17-6: Impacts on Riparian Conservation Objectives in Riparian Conservation Areas	Completion of a Riparian Conservation Objective (RCO) analysis, including identification of Riparian Conservation Areas (RCAs) and restrictions for RCAs	No effect	Adverse under NEPA; not a CEQA impact	Adverse under NEPA; not a CEQA impact Less than under Alternative 2	Adverse under NEPA; not a CEQA impact Less than under Alternative 2, but more than under Alternative 3

4.17.4 Cumulative Effects

4.17.4.1 METHODS AND APPROACH

The list of past, present, and reasonably foreseeable future projects considered in this cumulative analysis is provided in Chapter 3 of this Draft EIS/EIR. The spatial scope for this cumulative effects analysis of hydrology and water quality is the Bear Creek watershed, Squaw Creek Hydrologic Unit Code (HUC) 12, and the portion of upper middle Truckee River HUC-12 near where Bear Creek and Squaw Creek flow into the Truckee River. A HUC is a U.S. Geological Survey–developed designation for watersheds and provides a mechanism to split larger watersheds into smaller units. The larger the HUC number, the smaller the portion of a watershed area included in the HUC. The Squaw Creek watershed and middle Truckee River watersheds cover a larger area than would be appropriate for this cumulative impact analysis. Use of the HUC-12 designations encompasses a portion of the larger Squaw Creek and middle Truckee River watersheds appropriate for evaluating past, present, and reasonably foreseeable future projects with a reasonable potential to interact with the action alternatives on a cumulative basis. Because effects on groundwater are also considered, the groundwater aquifer of Squaw Valley and Alpine Meadows provides the spatial scope for the assessment of cumulative effects on this resource.

All present or reasonably foreseeable future projects within the spatial scope of the analysis that have the potential to affect hydrology and water quality are listed below. Potential impacts associated with these projects to hydrology and water quality include the potential for erosion of soil and downstream sedimentation, and changes to the hydrological regime such that the timing and quantity of peak flow conditions overwhelm the capacity of stormwater conveyance structures.

Project	Potential Impacts
Alpine Meadows Master Development Plan	Possible erosion and sedimentation, and changes to the timing and quantity of peak flows, and consequent effects on stormwater infrastructure.
Village at Squaw Valley Specific Plan	Possible erosion and sedimentation, and changes to the timing and quantity of peak flows, and consequent effects on stormwater infrastructure.
Squaw Valley Red Dog Lift Replacement	Possible erosion and sedimentation, and changes to the timing and quantity of peak flows, and consequent effects on stormwater infrastructure.
Alpine Meadows Hotwheels Lift Replacement	Possible erosion and sedimentation, and changes to the timing and quantity of peak flows, and consequent effects on stormwater infrastructure.
Timberline Twister	Possible erosion and sedimentation, and changes to the timing and quantity of peak flows, and consequent effects on stormwater infrastructure.
Caldwell property (White Wolf) development	Possible erosion and sedimentation, and changes to the timing and quantity of peak flows, and consequent effects on stormwater infrastructure.
General development in Olympic Valley	Possible erosion and sedimentation, and changes to the timing and quantity of peak flows, and consequent effects on stormwater infrastructure.
General development in Alpine Meadows	Possible erosion and sedimentation, and changes to the timing and quantity of peak flows, and consequent effects on stormwater infrastructure.
Alpine Sierra subdivision	Possible erosion and sedimentation, and changes to the timing and quantity of peak flows, and consequent effects on stormwater infrastructure.
Truckee River Corridor Access Plan	Possible erosion and sedimentation, and changes to the timing and quantity of peak flows, and consequent effects on stormwater infrastructure.
Truckee River Tributaries Project	Possible erosion and sedimentation, and changes to the timing and quantity of peak flows, and consequent effects on stormwater infrastructure.

4.17.4.2 CUMULATIVE IMPACTS

Alternative 1 – No Action Alternative

Alternative 1 – No Action Alternative would result in a continuation of existing conditions. There would be no direct and indirect effects, and thus by definition no cumulative impacts on hydrology and water quality.

Alternative 2

There are several planned communities and residential developments in and adjacent to the project area that would ultimately increase impervious areas that could increase stormwater runoff volumes and peak flows, including the Alpine Sierra subdivision with 33 single-family residential units and 14 residential halfplex units. Also, the Truckee River Corridor Access Plan includes recreation improvements from Lake Tahoe to the Martis Valley.

Several ski resort improvements are proposed at Squaw Valley and Alpine Meadows. These projects would all result in temporary construction disturbance and long-term increases in impervious surfaces, but similar to the residential developments previously listed, they would be required to incorporate construction BMPs to protect water quality and post-construction stormwater infiltration facilities to mitigate the increase in impervious areas in compliance with Tahoe Regional Planning Agency and Lahontan RWQCB permits and the Lake Tahoe and Truckee TMDL programs.

In general, these probable future projects could impose temporary impacts on water quality that would be prevented through compliance with construction permits and individual project SWPPPs. Most of the projects would increase the extent of impervious surface area to varying degrees; however, any substantial increases in the extent of impervious surface area would have to be paired with infiltration and stormwater facilities designed and built to prevent any increase in stormwater runoff or peak flows. Implementation of Alternative 2, including the RPMs committed to by the project applicant and the standard BMPs required by the agencies, would not result in a considerable contribution to an overall adverse cumulative effect on hydrology or water quality in the project vicinity.

Alternative 2 could produce a cumulative effect on stormwater drainage and the capacity of existing stormwater infrastructure to accommodate changes in the flow regime. However, the stormwater management system at Squaw Valley will be upgraded during implementation of the *Village at Squaw Valley Site Specific Plan* and will be sized to accommodate drainage from the cleared gondola areas. It will be installed over time as project development proceeds, following the requirements of an infrastructure phasing plan. The phasing plan ensures that a sufficient stormwater management system is provided for each element of project construction to address runoff generated by the facilities being built. Therefore, benefits from the upgraded stormwater management system will be realized incrementally as the upgraded systems are installed, and the effectiveness of various components of the stormwater system could be assessed, allowing an adaptive approach to implementation. Paradoxically, the phased implementation approach to the Village at Squaw Valley stormwater infrastructure would decrease effects associated with Alternative 2 because the new system would accommodate adaptive management, if needed. Therefore, the cumulative effects of Alternative 2 would be **less than significant** under CEQA with respect to stormwater drainage and would be **beneficial** under NEPA.

Alternatives 3 and 4

Cumulative impacts resulting from Alternatives 3 and 4 would be essentially the same as those discussed above for Alternative 2.

This page intentionally left blank.