11.0 HYDROLOGY AND WATER QUALITY

This section describes and analyzes surface hydrology and water quality characteristics associated with the proposed projects. Information in this section is based on site-specific drainage and geotechnical studies and other published information.

11.0 GENERAL ENVIRONMENTAL CONDITIONS AND REGULATIONS

11.0.1 REGIONAL HYDROLOGY AND WATER QUALITY

The project sites are situated in the central/western portion of Nevada County, at the point where the western Sierra Nevada foothills separate the low-lying Sacramento Valley from the Sierra Nevada range. The region's geography is characterized by rolling forested hills incised by steep canyons, and the climate is characterized by cool, wet winters with warm, dry summers.

The Alta Sierra site is in the Bear River watershed, and the Penn Valley and Rough and Ready Highway sites are in the Yuba River watershed. Both rivers flow to the Feather River, which discharges to the Sacramento River north of Sacramento. Bear and Yuba river flows are regulated almost entirely by several storage reservoirs and numerous diversions. Water quality in both rivers has been affected by mercury as a result of past hydraulic mining and sediment from development, logging, and recreation, and both are included on the Clean Water Act Section 303(d) list of impaired water bodies.

Wolf Creek and Deer Creek are major tributaries to the Bear and Yuba rivers, respectively, and are the closest tributaries in the vicinity of the three sites. Wolf Creek runs through Grass Valley in a northeast to southwest direction, where it has undergone considerable channelization and augmentation. Prior to entering and upon leaving Grass Valley, the creek remains in its natural course. Wolf Creek flows south approximately 14 miles to Bear River. Wolf Creek is an impaired water body due to pathogens (fecal coliform). Deer Creek flows through Nevada City to Lake Wildwood and ends as it enters the Yuba River below Englebright Lake. Squirrel Creek is tributary to Deer Creek. Deer Creek from Deer Creek Reservoir to Lake Wildwood is listed as impaired for mercury (SWRCB 2011).

Groundwater resources in western Nevada County are characterized as poorly defined and variable.

Flood Hazards

100-Year Flood Hazard Areas

The Federal Emergency Management Agency (FEMA) has published Flood Rate Insurance Maps (FIRMs) for many waterways in western Nevada County. None of the project sites is within a mapped 100-year floodplain, but the Penn Valley site is approximately 730 feet from the mapped Zone AE floodplain for Squirrel Creek.

Dam Failure Inundation

Dam failure flooding can occur as the result of partial or complete collapse of an impoundment. Dam failures often result from prolonged rainfall and flooding but can also result from improper siting, structural design flaws, erosion of the face of foundation, earthquakes, and massive landslides. The primary danger associated with any potential dam failure is the high velocity flooding of those properties downstream of such a dam. None of the project sites are in locations at risk of flooding from dam failure inundation.

Seiche, Tsunami, and Mudflow

A seiche is a rhythmic motion of water in a partially or completely landlocked water body caused by landslides, earthquake-induced ground accelerations, or ground offset. There are no water bodies in the vicinity of the project sites of sufficient size to pose a risk by seiche waves. None of the project sites are in an area prone to mudflow hazards. Due to their inland location, the project sites would not be affected by tsunami and climate change-induced sea level rise.

11.0.2 REGULATORY FRAMEWORK

Federal

Clean Water Act

The Clean Water Act (CWA) regulates the discharge of pollutants into watersheds throughout the nation. Section 402(p) of the act establishes a framework for regulating municipal and industrial stormwater discharges under the National Pollutant Discharge Elimination System (NPDES) program.

Sections 401 and 404

Sections 401 and 404 of the CWA are administered through the regulatory program of the US Army Corps of Engineers (USACE) and regulate the water quality of all discharges of fill or dredged material into waters of the United States, including wetlands and intermittent stream channels. Additional information on Sections 401 and 404 of the CWA is provided in Section 6.0, Biological Resources.

Section 402 – National Pollutant Discharge Elimination System

As authorized by Section 402(p) of the CWA, the NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. The State Water Resources Control Board (SWRCB) issues NPDES permits to cities and counties through the Regional Water Quality Control Boards (RWQCB), and it is the responsibility of the RWQCBs to preserve and enhance the quality of the state's waters through the development of water quality control plans and the issuance of waste discharge requirements. Waste discharge requirements for discharges to surface waters also serve as NPDES permits.

Section 303 – List of Impaired Water Bodies

CWA Section 303(d) requires that all states in the United States identify water bodies that do not meet specified water quality standards and that do not support intended beneficial uses. Identified waters are placed on the Section 303(d) List of Impaired Water Bodies. Once waters are placed on this list, states are required to develop a water quality control plan—called a total maximum daily load—for each water body and each associated pollutant/stressor.

State

Porter-Cologne Water Quality Control Act

In 1969, the California legislature enacted the Porter-Cologne Water Quality Control Act to preserve, enhance, and restore the quality of the state's water resources. The act established the SWRCB and nine RWQCBs as the principal state agencies with the responsibility for controlling

water quality in California. Under the act, water quality policy is established, water quality standards are enforced for both surface water and groundwater, and the discharges of pollutants from point and nonpoint sources are regulated. The SWRCB is responsible for implementing the CWA and issues NPDES permits to cities and counties through the RWQCBs. The project site is located in a portion of the state that is regulated by the Central Valley RWQCB.

Under CWA Section 303(d) and the Porter-Cologne Water Quality Control Act, the state of California is required to establish beneficial uses of state waters and to adopt water quality standards to protect those beneficial uses. The Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin (Basin Plan) prepared by the Central Valley RWQCB establishes water quality objectives and implementation programs to meet stated objectives and to protect the beneficial uses of water in the Sacramento-San Joaquin River Basin. The Basin Plan requirements apply to the Bear and Yuba rivers and their tributaries.

NPDES General Permit for Stormwater Discharges Associated with Construction

The SWRCB has adopted a General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) (CAS000002, Waste Discharge Requirements, Order No. 2009-0009-DWQ, as amended by Order No. 2010-0014-DWQ and Order 2012-0006-DWQ). The Construction General Permit applies to any construction activity affecting 1 acre or more. The focus of the permit is to minimize the potential effects of construction runoff on receiving water quality. The permit requires preparation of a stormwater pollution prevention plan (SWPPP) that identifies best management practices (BMPs) describing erosion control measures.

Project proponents are required to submit a Notice of Intent, a site map, a signed certification statement, an annual fee, and an SWPPP. The permit program is risk-based, wherein a project's risk is based on the project's potential to cause sedimentation and the risk of such sedimentation on the receiving waters. A project's risk determines its water quality control requirements, ranging from Risk Level 1, which consists of only narrative effluent standards, implementation of BMPs, and visual monitoring, to Risk Level 3, which consists of numeric effluent limitations, additional sediment control measures, and receiving water monitoring. Additional requirements include compliance with post-construction standards focusing on low-impact development, preparation of rain event action plans, increased reporting requirements, and specific certification requirements for certain project personnel.

The SWPPP must include BMPs to reduce construction effects on receiving water quality by implementing erosion control measures and reducing or eliminating non-stormwater discharges. Examples of typical construction BMPs include but are not limited to using temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils; storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or surface water; developing and implementing a spill prevention and cleanup plan; and installing sediment control devices such as gravel bags, inlet filters, fiber rolls, or silt fences to reduce or eliminate sediment and other pollutants from discharging to the drainage system or receiving waters.

General Order for Dewatering and Other Low Threat Discharges to Surface Waters

Certain activities during construction may also need to conform to the Waste Discharge Requirements included in the General Order for Dewatering and Other Low Threat Discharges to Surface Waters (Water Quality Order No. 5-00-175). The Dewatering General Order requires that a permit be acquired for dewatering and other low threat discharges to surface waters, provided

that they do not contain significant quantities of pollutants and either (1) are four months or less in duration, or (2) the average dry weather discharge does not exceed 0.25 million gallons per day (mgd). Activities that may require the acquisition of such a permit include well development, construction dewatering, pump/well testing, pipeline/tank pressure testing, pipeline/tank flushing or dewatering, condensate discharges, water supply system discharges, and other miscellaneous dewatering/low threat discharges. However, the actions applicable to site development may already be covered under the Construction General Permit, and therefore a separate permit may not be required.

Local

Nevada County General Plan

The Nevada County General Plan includes policies intended to protect water quality in the county. General Plan policies related to water quality include the following:

Policy 3.19A For all discretionary development, increases in stormwater runoff due to new development, which could result in flood damage to downstream residences, commercial, industrial, active natural resource management uses (i.e., farming, ranching, mining, timber harvest, etc.), public facilities, roads, bridges, and utilities shall not be permitted. Required retention/detention facilities, where necessary, shall be designed such that the water surface returns to its base elevation within 24 hours after the applicable storm event. The sizing of such facilities, when needed, shall be based upon the protection of downstream facilities.

Policy FH-10.3.2 Avoid potential increases in downstream flooding potential by protecting natural drainage and vegetative patterns through project site plan review, application of Comprehensive Site Development Standards, use of clustered development, and project subdivision design. The Comprehensive Site Development Standards shall include measures applicable to all discretionary and ministerial projects to avoid downstream flooding resulting from new development. Such measures, shall include, but not be limited to:

- avoidance of stream channel modifications;
- avoidance of excessive areas of impervious surfaces; and
- use of on-site retention or detention of storm water.

Policy 11.6 The County shall continue to enforce its regulations concerning the installation and operation of private sanitary waste disposal systems in order to protect the quality of surface and groundwater. The location of septic tanks and leachfields and their appropriate setbacks from water courses shall be in accordance with the guidelines of the Lahontan Regional Water Quality Control Board (eastern County) and the Central Valley Regional Water Quality Control Board (western County).

Policy 11.6A New development shall minimize the discharge of pollutants into surface water drainages by providing the following improvements or similar methods which provide equal or greater runoff control: (a) include curbs

and gutters on arterials, collectors, and local roads consistent with adopted urban street designs; and (b) oil, grease, and silt traps for subdivisions creating five or more parcels and commercial and industrial development of one acre or greater size. Maintenance of such facilities shall be assured through a legally-enforceable mechanism.

Policy 12.1 Enforce Grading Ordinance provisions for erosion control on new development projects by adopting provisions for ongoing monitoring of project grading. Project site inspection shall be required prior to initial site disturbance and grading to ensure all necessary control measures, are in place. The installation, maintenance, and performance of erosion and sediment control measures shall be monitored by County or District staff (or their designee) and completely funded by a project applicant. All County projects shall comply with this policy.

Policy 12.4 Require erosion control measures as an element of all County contracts, discretionary projects, and ministerial projects.

Nevada County Land Use and Development Code

Chapter V, Article 19 – Grading

This section of the code outlines the requirements for obtaining a grading permit, including specific requirements for grading plans, soils engineering reports, engineering geology reports, and geotechnical investigations as well as restrictions on grading performed in the winter. This section also contains standards for cuts and fills, drainage, and terracing. In addition, this section contains standards for erosion and sediment control, including the preparation of erosion and sediment control plans and related inspection requirements.

Chapter II, Article 4, Section L-II 4.3.10 – Floodplains

Section L-II 4.3.10 includes regulations to mitigate the impact of development on floodplains and to protect development and downstream users from the potential for hazards associated with flooding. Nevada County zoning regulations require a minimum 100-foot setback from floodplains and prohibit the placement of fill within floodplains. None of the project sites is within a floodplain. A floodplain has been mapped for Squirrel Creek north of the proposed footprint; however, the project would not encroach within the 100-foot setback area.

Chapter II, Article 4, Section L-II 4.3.17 – Watercourses, Wetlands and Riparian Areas

Section L-II 4.3.17 is intended to preserve the integrity and minimize the disruption of watersheds and watercourses; preserve stream corridors and riparian habitat, ensure adequate protection of stream values, and protect stream corridors for wildlife movement and foraging; avoid the impact of development on wetlands, or where avoidance is not possible, to minimize or compensate for such impacts; to provide for minimum setbacks to protect resources values; and to retain wetlands as non-disturbance open space

11.0.3 IMPACT METHODOLOGY

Standards of Significance

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G thresholds of significance, which state that a project would have a significant impact related to hydrology and water quality if it would:

1) Violate any water quality standards or waste discharge requirements.

2) 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 which would not support existing land uses or planned uses for which permits have been granted).

3) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.

4) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

5) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

6) Otherwise substantially degrade water quality.

7) 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.

8) Place within a 100-year flood hazard area structures that would impede or redirect flood flows.

9) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of a failure of a levee or dam.

10) Expose people or structures to inundation by seiche, tsunami, or mudflow.

Methodology

A site-specific drainage study was prepared for each project site, and the results incorporated into the description of existing conditions and impacts for each site.

The Alta Sierra and Rough and Ready Highway sites would use septic systems. Information developed by the project applicant was incorporated into the analysis.

Thresholds Not Evaluated

The project sites do not propose development within a 100-year flood hazard area, and the sites are not subject to dam failure inundation, seiche, tsunami, mudflow, or sea level rise. There would be no impact relative to Standards of Significance 7 through 10, and these impacts are not further evaluated for any of the project sites.

11.1 ALTA SIERRA SITE

11.1.1 PROJECT-SPECIFIC SETTING

The Alta Sierra site consists of three parcels, one for the construction of the store, parking, and other associated improvements (APN 25-430-08), and two for the off-site septic system (APNs 25-430-10 and -12). The store parcel is undeveloped, and all three parcels generally slope from the northwest to the southeast. The steepest natural slope is located along the northern boundary of the store parcel, but the majority of the site has an average slope of 20 percent. A subtle ridge bisects the site, allowing runoff generated on-site to flow toward both Alta Sierra Drive and Little Valley Road. Both roadways have roadside ditches to convey runoff parallel to the road. The runoff currently generated on-site flows to the two roadside ditches and is conveyed downstream. There is a 12-inch corrugated metal pipe culvert under an existing driveway on Alta Sierra Drive north of the project site, which is intended to convey stormwater flows in the roadside ditch northward. The culvert appears to be clogged, however, which results in stormwater flows overtopping the driveway. As a result, stormwater runoff flows west across Alta Sierra Drive to a ditch on the west side of the road (TTG 2016a).

There are no natural surface water bodies on the site. The nearest downgradient surface water body is Rattlesnake Creek, located approximately 500 feet southwest of the site (EBI 2014). Rattlesnake Creek drains to Wolf Creek.

Groundwater was not observed in borings or trenches, but saturated soil conditions and groundwater could be encountered in areas of soil/rock transition, and groundwater seepage may be encountered in areas proposed for deeper excavation (Holdrege and Kull 2015a).

Surface soils consists of sandy silt, which overlies gravel and highly weathered metavolcanic rock composed of 8- to 10-inch cobbles and boulders up to 35 inches in diameter. Soils at the project site are the Secca-Rock outcrop complex, which is characterized by medium to rapid runoff with slow permeability (Holdrege and Kull 2015a).

11.1.2 REGULATORY FRAMEWORK

There are no additional regulations, policies, or standards that pertain to the Alta Sierra site other than those described in Section 11.0.2, above.

11.1.3 IMPACTS AND MITIGATION MEASURES

Stormwater Runoff and Water Quality (Standards of Significance 1, 3, 4, 5, and 6)

Impact 11.1.1(AS) Development of the Alta Sierra site would result in an increase in the rate and amount of stormwater runoff and would contribute urban pollutants to stormwater runoff. **(Less than Significant With Mitigation Incorporated)**

Development of the proposed project at the Alta Sierra site would involve the removal of vegetation, grading, excavation and trenching, and cut and fill. These activities would alter drainage patterns and could expose soil to erosion during construction. There would be heavy equipment and materials use, which could be a source of pollutants that could adversely affect water quality, which would be a **potentially significant** construction-period impact. Because the area of disturbance would be over 1 acre, the construction contractor would be required to implement an SWPPP and BMPs in accordance with the NPDES Construction General Permit (Order No. 2009-0009-DWQ, as amended by Order No. 2010-0014-DWQ and Order 2012-0006-DWQ). In addition to the SWPPP, the applicant would be required to comply with Chapter V, Article 19 (Grading) and Chapter 11, Article 4, Section L-II 4.3.13 (Steep Slopes/High Erosion Potential) of the County's Land Use and Development Code.

After construction, most of the store parcel would be covered with impervious surfaces associated with the building rooftop, parking lot, sidewalks, and hardscape. This would increase the rate and amount of stormwater runoff from the site compared to existing conditions, which could affect local drainage conditions. Runoff could contain additional urban pollutant loads from the rooftop and parking lot and would differ in terms of the types and levels of pollutants compared to existing conditions. Typical pollutants would include oil and grease, metals, and sediment from the parking lot and potentially landscape maintenance products. Pollutants in stormwater runoff could adversely affect water quality. Operational impacts would be **potentially significant**.

A drainage plan has been prepared that identifies how stormwater runoff and water would be managed to ensure compliance with County drainage and stormwater treatment standards and state water quality regulations (TTG 2016a). The pavement on the store parcel would be designed with a slope to avoid localized ponding on-site. The project's drainage system would consist of several features to control runoff and remove pollutants on-site before stormwater is discharged to the off-site roadside ditches (west ditch along Alta Sierra Drive and east ditch along Little Valley Road). On-site rainfall on the store parcel would be routed along concrete gutters or asphalt pavement to catch basins and curb openings. Stormwater on the off-site sewage disposals is not expected to be impacted during project operation because those areas would be continue to have natural, pervious surface coverage to allow for proper percolation.

Flows from the west side of the store parcel (between the store and Alta Sierra Drive) would be directed toward the southwest corner of the site (low point), where they would pass through a stormwater filter prior to discharge into a catch basin that would be connected to underground detention pipes. An 18-inch culvert would be installed under the driveway on Alta Sierra Drive. This would ensure existing flows to the north in the roadside ditch would continue unimpeded (i.e., the proposed project would not create a barrier to flow that could increase flood potential in the ditch south of the site). As noted above, there is a localized drainage problem at the culvert under an off-site driveway just north of the project site, which results in stormwater overtopping Alta Sierra Drive. However, the drainage network piping on the west side has been sized so that post-development runoff rate for the 10-year and 100-year storm events would be less than pre-development conditions when flows are discharged to the ditch along Alta Sierra Drive. **Table 11.0-1** summarizes the pre-development and post-development peak flow rates. Because the project would not increase flow rates to the ditch on Alta Sierra Drive, it would not exacerbate the existing roadway overtopping problem.

The remainder of the store site's runoff would be conveyed to a surface bio-retention basin. Runoff would pass through the engineered subsurface layers of the bio-retention basin to an underground perforated pipe system. The percolated runoff would then be conveyed to an underground detention system before discharging to the roadside ditch along Little Valley Road. This portion of the site's drainage system has been sized so that post-development runoff rates for

the 10-year and 100-year storm events would be less than pre-development conditions when flows are discharged to the ditch along Little Valley Road (**Table 11.0-1**).

TABLE 11.0-1
ALTA SIERRA SITE STORMWATER RUNOFF PEAK FLOW RATES

	West Side (Flows to Alta Sierra Drive)		East Side (Flows to Little Valley Road)	
	10-Year (cfs)	100-Year (cfs)	10-Year	100-Year (cfs)
Pre-Development	0.066	0.104	0.303	0.480
Post-Development	0.062	0.078	0.292	0.376
Difference	-0.004	-0.026	-0.011	-0.104

cfs (cubic feet per second)
Source: TTG 2016a

With implementation of mitigation measures **MM AS-11.1.1a** through **MM AS-11.1.1c**, the drainage system and stormwater runoff water quality treatment features described above would be included in the project, which would ensure the proposed project would not increase the potential for off-site flooding as a result of stormwater runoff, even though the amount of runoff would increase. Construction site runoff and the stormwater runoff from the site after it is developed would be treated in the on-site drainage and water quality treatment system in accordance with County and state requirements. Therefore, development at the Alta Sierra site would not violate water quality standards, result in substantial erosion or siltation, increase the rate or amount of surface runoff that would result in flooding on- or off-site, or exceed storm drainage system capacity. Impacts would be reduced to **less than significant.**

Mitigation Measures

MM AS-11.1.1a The construction and grading permits shall comply with the applicable NPDES regulations. Prior to grading permit issuance, obtain a General Permit for Storm Water Discharges Associated with the construction activity and provide a copy of the permit to the County Planning, Building and Public Works Departments. Grading plans shall include verification that an NPDES permit, issued by the State Water Resources Board, has been issued for this project. To protect water quality, the contractor shall implement standard Best Management Practices during and after construction. These measures include, but are not limited to, the following:

1. At no time shall heavy equipment operate in flowing water.

2. Disturbed areas shall be graded to minimize surface erosion and siltation; bare areas will be covered with mulch; cleared areas will be revegetated with locally native erosion control seed mix.

3. The contractor shall exercise every reasonable precaution from adding pollution to offsite waterways with fuels, oils, bitumen, calcium chloride, and other harmful materials. Construction byproducts and pollutants such as oil, cement, and washwater shall be prevented from discharging into the offsite drainages and shall be collected and removed from the site.

4. Erosion control measures shall be applied to all disturbed slopes. No invasive non-native grasses shall be used for erosion control, such as velvet grass or orchard grass. A combination of rice straw wattles, a mulch of native straw or certified weed-free straw, and a planting of native plant species is recommended.

5. Silt fencing (or filter fabric) shall be used to catch any short-term erosion or sedimentation that may inadvertently occur. Silt-fencing should be installed well above the offsite drainages and extend beyond the construction zone if necessary. The use of standard straw is prohibited to avoid introduction of noxious weeds, such as star thistle.

6. To minimize water quality impacts to Rattlesnake Creek or other offsite drainages after the project is complete, no direct discharge of runoff from newly constructed impervious surface will be allowed to flow directly to the drainage. Runoff from surfaces should be directed through storm water interceptors constructed at discharge points. These interceptors will remove oil, sediment, and other pollutants that might otherwise flow to downstream waterways.

MM AS-11.1.1b The following measures shall be required to reduce surface water drainage patterns, unless alternatives are approved that are recommended by the project's geotechnical engineers, the California Regional Water Quality Control Board or the Department of Public Works that will provide substantially the same or better management of surface drainage:

1. Slope final grade adjacent to structural areas so that surface water drains away from building pad finish subgrades at a minimum 2 percent slope for a minimum distance of 10 feet. Where interior slabs-on-grade are proposed, the exterior subgrade must have a minimum slope of 4 percent away from the structure for a minimum distance of 10 feet. Additional drainage and slab-on-grade construction recommendations are provided in a geotechnical engineering report outlined in mitigation measure MM AS-8.1.1b.

2. Compact and slope all soil placed adjacent to building foundations such that water is not retained to pond or infiltrate. Backfill should be free of deleterious material.

3. Direct rain-gutter downspouts to a solid collector pipe which discharges flow to positive drainage and away from building foundations.

MM AS-11.1.1c Drainage facilities for this project shall utilize County Standard Plans and Specifications and be designed by a registered civil engineer. Onsite storm drainage facilities shall be constructed in compliance with the design and analysis provided in the project specific Drainage Report prepared by TTG Engineers dated May 2016, and Sheet C2 date stamped March 30, 2015, which is to be kept on file with the Planning Department. Additionally, measures shall be incorporated into the improvement plans that reduce the offsite drainage flows to pre-project conditions as any additional net increase in stormwater runoff from the project site is prohibited. Features shall also be incorporated into the plans that minimize the discharge of pollutants in conformance with General Plan Policy 11.6A, which include, but not limited to, the use of curbs and gutters, and the use of oil, grease and silt traps. County engineering staff

shall review future construction plans to verify that the final design meet the requirements of this mitigation measure.

Timing/Implementation: *Prior to issuance of Grading Permit and approval of improvement plan; during construction activities*

Enforcement/Monitoring: *Nevada County Planning Department*

Groundwater Supply and Quality (Standards of Significance 1, 2, and 6)

Impact 11.1.2(AS) Saturated soil and groundwater seepage may be present seasonally at the Alta Sierra site and the site would be served by an existing septic system, but the project would have minimal effect on groundwater amount and quality. **(Less than Significant)**

The Alta Sierra site would be served by the Nevada Irrigation District (NID), which has existing lines available for project connection. Groundwater wells would not be used for the project's water supply. The project site's small size and underlying clay soils and weathered bedrock conditions limit opportunities for groundwater recharge, so there would be no impacts on regional supply or recharge conditions.

Groundwater was not observed in borings or trenches, but saturated soil conditions and groundwater could be encountered in areas of soil/rock transition, and groundwater seepage may be encountered in areas proposed for deeper excavation. This could result in the need for dewatering. Given the small development footprint, underlying bedrock, and depth to groundwater, the amount of groundwater that may be removed during construction would not be substantial. The potential for saturated soil conditions and seepage to affect structures would be mitigated through subsurface design, as recommended in the project's geotechnical engineering report (Holdrege and Kull 2015a). Potential water quality impacts related to groundwater dewatering would be managed through implementation of the General Order for Dewatering and Other Low Threat Discharges to Surface Waters (Water Quality Order No. 5-00-175).

The proposed drainage system would consist of underground features to control and treat runoff. Depending on the depth of these features, there is the possibility that pollutants could interact with saturated soils. However, the pollutants would typically attach to the surface soil particles and would not likely travel deep into subsurface soil and water layers. Subsurface soils are clay-rich and underlain by weathered bedrock, which would reduce the potential for vertical and lateral migration of pollutants in groundwater.

A new sewage disposal system is necessary for the Alta Sierra site and would rely on two off-site parcels (APNs 25-430-10 and -12). As described in Impact 8.1.4 (AS) in Section 8.10, Geology and Soils, septic testing (perc and mantle) has been completed, a Minimum Useable Sewage Disposal Area has been established that is exclusive of the existing system, and tests have shown the system would function properly.

Therefore, development of the Alta Sierra site would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge, or otherwise degrade groundwater quality. Impacts would be **less than significant**.

Mitigation Measures

None required.

11.2 PENN VALLEY SITE

11.2.1 PROJECT-SPECIFIC SETTING

The Penn Valley site is undeveloped and generally slopes from the southeast to the northwest, and the change in grade over the entire site is approximately 7 feet. Existing drainage structures in the vicinity of the site include three 42-inch by 36-inch arch culverts crossing Penn Valley Drive, a 30-inch by 24-inch arch culvert crossing the existing drive near the southeast property corner, and an 18-inch storm drain pipe located at the southwest property corner. On-site and off-site flows are ultimately conveyed by an existing wash with an upstream end located at the three 42-inch by 36-inch arch culvert discharge points. The wash continues along the southern and western property boundaries and exits the site near the northwest property corner and discharges into Squirrel Creek. An existing berm along the eastern property boundary prevents off-site flows from entering the site (TTG 2016b).

There are no permanent natural surface water bodies on the site. The nearest downgradient surface water body is Squirrel Creek, north of the site (TTG 2016b). Squirrel Creek drains to Deer Creek. There is a small wetland on the site consisting of approximately 0.42 acre of palustrine emergent seasonal marshes and 0.60 acre of jurisdictional water associated with Squirrel Creek and an unnamed tributary.

Potentially shallow, seasonal groundwater and saturated soil conditions are present. Groundwater was not observed but saturated soil conditions and groundwater could be encountered in areas of soil/rock transition, particularly during or after the rainy season (Holdrege and Kull 2015b).

Surface soils consist of alluvial land, loamy, which is characterized by moderate runoff (USDA 1993). Subsurface soils are dense silty sand with high organic content. Weathered granitic rock is approximately 40 to 80 inches below the ground surface (Holdrege and Kull 2015b).

11.2.2 REGULATORY FRAMEWORK

In addition to the regulations, policies, and standards described in Section 11.0.2, the project site is within the Penn Valley Village Center Area Plan, which has the following guidelines pertaining to drainage.

SP4 Site design should not change natural drainage patterns.

SP6 Riparian corridors should be maintained in their natural state as much as possible.

11.2.3 IMPACTS AND MITIGATION MEASURES

Stormwater Runoff and Water Quality (Standards of Significance 1, 3, 4, 5, and 6)

Impact 11.2.1(PV) Development of the Penn Valley site would result in an increase in the rate and amount of stormwater runoff and would contribute urban pollutants to stormwater runoff. **(Less than Significant With Mitigation Incorporated)**

Development of the proposed project at the Penn Valley site would involve the removal of vegetation, grading, excavation, and trenching. These activities would temporarily alter drainage patterns and could expose soil to erosion during construction. There would be heavy equipment and materials use, which could be a source of pollutants that could adversely affect water quality

and the on-site wetland, which would be a **potentially significant** construction-period impact.[1] Because the site is greater than 1 acre, the project applicant's construction contractor would be required to implement an SWPPP and BMPs in accordance with the NPDES Construction General Permit (Order No. 2009-0009-DWQ, as amended by Order No. 2010-0014-DWQ and Order 2012-0006-DWQ). In addition to the SWPPP, the applicant would be required to comply with Chapter V, Article 19 (Grading) of the County's Land Use and Development Code.

After construction, most of the site would be covered with impervious surfaces associated with the building rooftop, parking lot, sidewalks, and hardscape. This would increase the rate and amount of stormwater runoff from the site compared to existing conditions, which could affect storm drain capacity. Runoff could contain additional urban pollutant loads from the rooftop and parking lot and would differ in terms of the types and levels of pollutants compared to existing conditions. Typical pollutants would include oil and grease, metals, and sediment from the parking lot and potentially landscape maintenance products. Pollutants in stormwater runoff could adversely affect water quality. Operational impacts would be **potentially significant**.

A drainage plan has been prepared that identifies how stormwater runoff and water would be managed to ensure compliance with County drainage and stormwater runoff water quality standards and state water quality regulations (TTG 2016b). The project's on-site drainage system would consist of features to control runoff and remove pollutants before stormwater is discharged to the on-site wash. On-site runoff would be routed along concrete gutters or asphalt pavement to catch basins and curb openings. The on-site pavement would be designed with a slope to avoid localized ponding on-site.

Flows in the southern part of the site would be directed southwest to a catch basin connected to a stormwater detention system. In the northern part of the site, flows would be directed to a catch basin located at a low point near the northeast corner. Both catch basins would connect to a 24-inch storm drain detention system that would discharge flow to the on-site wash in the northwest corner of the site. The detention basin system would be equipped with a stormwater treatment device to remove pollutants.

The drainage network piping has been sized so that post-development runoff for the 10-year and 100-year storm events would be less than pre-development conditions (**Table 11.0-2**). This would ensure the proposed project would not increase discharges into the wash that could result in overtopping the wash and flooding off-site property to the west, or increase flows in Squirrel Creek that would result in off-site flooding along the creek. There would be no stormwater discharges toward the roadway.

TABLE 11.0-2
PENN VALLEY SITE STORMWATER RUNOFF PEAK FLOW RATES

	Flows to On-Site Wash	
	10-Year (cfs)	**100-Year (cfs)**
Pre-Development	0.507	0.826
Post-Development	0.399	0.531
Difference	-0.108	-0.295

cfs (cubic feet per second)
Source: TTG 2016b

[1] For further evaluation of wetland impacts, the reader is referred to Impact PV-6.2.3 in Section 6, Biological Resources.

Penn Valley Village Center Area Plan guideline SP4 directs that new buildings should minimize alterations to the perceived slope of the area and that site grading should be sensitive to natural landforms and topography. Although there would be ground disturbance at the site, the site is relatively flat, and there would be little topographic change with the addition of pavement. There would be no abrupt grade changes at the property lines. While natural drainage patterns on-site would be modified, the project has been designed to ensure that discharge runoff flow rates entering the on-site wash would not exceed pre-development flow rates. This would ensure the natural conditions in Squirrel Creek are maintained.

With implementation of mitigation measures **MM PV-11.2.1a** through **MM PV-11.2.1c**, the drainage system and stormwater runoff water quality treatment features described above would be included in the project, which would ensure the proposed project would not increase the potential for off-site flooding as a result of stormwater runoff, even though the amount of runoff would increase. Construction site runoff and the stormwater runoff from the site after it is developed would be treated in the on-site system in accordance with County and state requirements. Therefore, development at the Penn Valley site would not violate water quality standards, result in substantial erosion or siltation, increase the rate or amount of surface runoff that would result in flooding on- or off-site, or exceed storm drainage system capacity. Impacts would be reduced to **less than significant.** In addition, implementation of these mitigation measures, in combination with MM PV-6.2.3, would ensure the on-site wetland is protected from water quality degradation.

Mitigation Measures

MM PV-11.2.1a The construction and grading permits shall comply with the applicable NPDES regulations. Prior to grading permit issuance, obtain a General Permit for Storm Water Discharges Associated with the construction activity and provide a copy of the permit to the County Planning, Building and Public Works Departments. Grading plans shall include verification that an NPDES permit, issued by the State Water Resources Board, has been issued for this project. To protect water quality, the contractor shall implement standard Best Management Practices during and after construction. These measures include, but are not limited to, the following:

1. At no time shall heavy equipment operate in flowing water.

2. Disturbed areas shall be graded to minimize surface erosion and siltation; bare areas will be covered with mulch; cleared areas will be revegetated with locally native erosion control seed mix.

3. The contractor shall exercise every reasonable precaution from adding pollution to offsite waterways with fuels, oils, bitumen, calcium chloride, and other harmful materials. Construction byproducts and pollutants such as oil, cement, and washwater shall be prevented from discharging into the offsite drainages and shall be collected and removed from the site.

4. Erosion control measures shall be applied to all disturbed slopes. No invasive non-native grasses shall be used for erosion control, such as velvet grass or orchard grass. A combination of rice straw wattles, a mulch of native straw or certified weed-free straw, and a planting of native plant species is recommended.

5. Silt fencing (or filter fabric) shall be used to catch any short-term erosion or sedimentation that may inadvertently occur. Silt-fencing should be installed well above the offsite drainages and extend beyond the construction zone if necessary. The use of standard straw is prohibited to avoid introduction of noxious weeds, such as star thistle.

6. To minimize water quality impacts to Squirrel Creek or other offsite drainages after the project is complete, no direct discharge of runoff from newly constructed impervious surface will be allowed to flow directly to the drainage. Runoff from surfaces should be directed through storm water interceptors constructed at discharge points. These interceptors will remove oil, sediment, and other pollutants that might otherwise flow to downstream waterways.

MM PV-11.2.1b The following measures shall be required to reduce surface water drainage patterns, unless alternatives are approved that are recommended by the project's geotechnical engineers, the California Regional Water Quality Control Board or the Department of Public Works that will provide substantially the same or better management of surface drainage:

1. Slope final grade adjacent to structural areas so that surface water drains away from building pad finish subgrades at a minimum 2 percent slope for a minimum distance of 10 feet. Where interior slabs-on-grade are proposed, the exterior subgrade must have a minimum slope of 4 percent away from the structure for a minimum distance of 10 feet. Additional drainage and slab-on-grade construction recommendations are provided in a geotechnical engineering report outlined in mitigation measure MM PV-8.2.1b.

2. Compact and slope all soil placed adjacent to building foundations such that water is not retained to pond or infiltrate. Backfill should be free of deleterious material.

3. Direct rain-gutter downspouts to a solid collector pipe which discharges flow to positive drainage and away from building foundations.

MM PV-11.2.1c Drainage facilities for this project shall utilize County Standard Plans and Specifications and be designed by a registered civil engineer. Onsite storm drainage facilities shall be constructed in compliance with the design and analysis provided in the project specific Drainage Report prepared by TTG Engineers dated March 2016, and Sheet C2 date stamped February 2, 2016, which is to be kept on file with the Planning Department. Additionally, measures shall be incorporated into the improvement plans that reduce the offsite drainage flows to pre-project conditions as any additional net increase in stormwater runoff from the project site is prohibited. Features shall also be incorporated into the plans that minimize the discharge of pollutants in conformance with General Plan Policy 11.6A, which include, but is not limited to, the use of curbs and gutters, and the use of oil, grease and silt traps. County engineering staff shall review future construction plans to verify that the final design meet the requirements of this mitigation measure.

Timing/Implementation: *Prior to issuance of Grading Permit and approval of improvement plan; during construction activities*

Enforcement/Monitoring: Nevada County Planning Department

Groundwater Supply and Quality (Standards of Significance 2 and 6)

Impact 11.1.2(PV) Saturated soil and groundwater seepage may be present seasonally at the Penn Valley site, but the project would have minimal effect on groundwater amount and quality. **(Less than Significant)**

The Penn Valley site would be served by NID, which has existing lines available for project connection. Groundwater wells would not be used for the project's water supply. The project site's small size and shallow depth to granitic bedrock conditions limit opportunities for groundwater recharge. There would be no impacts on regional supply or recharge conditions.

Groundwater was not observed in borings or trenches, but saturated soil conditions and groundwater could be encountered in areas of soil/rock transition, and groundwater seepage may be encountered in areas proposed for deeper excavation. This could result in the need for dewatering. Given the small development footprint, underlying bedrock, and depth to groundwater, the amount of groundwater that may be removed during construction would not be substantial. The potential for saturated soil conditions and seepage to affect structures would be mitigated through subsurface design, as recommended in the project's geotechnical engineering report (Holdrege and Kull 2015b). Potential water quality impacts related to groundwater dewatering would be managed through implementation of the General Order for Dewatering and Other Low Threat Discharges to Surface Waters (Water Quality Order No. 5-00-175).

The proposed drainage system would consist of underground features to control and treat runoff. Depending on the depth of these features, there is the possibility that pollutants could interact with saturated soils. However, the pollutants would typically attach to the surface soil particles and would not likely travel deep into subsurface soil and water layers. Subsurface soils are underlain by weathered bedrock, which would reduce the potential for vertical and lateral migration in groundwater.

Therefore, development of the Penn Valley site would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge, or otherwise degrade groundwater quality. Impacts would be **less than significant**.

Mitigation Measures

None required.

11.3 ROUGH AND READY HIGHWAY SITE

11.3.1 PROJECT-SPECIFIC SETTING

The Rough and Ready Highway site is partially developed with a building, parking lot, and driveway. The site generally slopes from the southeast to the northwest, and the change in grade over the entire site is approximately 9 feet. Stormwater runoff on the site flows northwest toward an existing roadside drainage ditch on the south side of Rough and Ready Highway (TTG 2016c).

There are no natural surface water bodies on the site. The nearest downgradient surface water body is Upper Rough and Ready Ditch, approximately 0.2 mile north of the site. Deer Creek is approximately 0.8 mile north of the site (EBI 2015).

Groundwater was not observed in borings or trenches, but saturated soil conditions and groundwater could be encountered in areas of soil/rock transition, and groundwater seepage may be encountered in areas proposed for deeper excavation (Holdrege and Kull 2015c).

Surface soils consist of Aiken loam, which is characterized by slow to medium runoff and moderate erosion hazard (USDA 1993). Subsurface soils are loam and heavy clay loam and clay that overlie weathered volcanic tuff and conglomerate (Holdrege and Kull 2015c).

11.3.2 REGULATORY FRAMEWORK

There are no additional regulations, policies, or standards that pertain to the Rough and Ready Highway site other than those described in Section 11.0.2, above.

11.3.3 IMPACTS AND MITIGATION MEASURES

Stormwater Runoff and Water Quality (Standards of Significance 1, 3, 4, 5, and 6)

Impact 11.3.1(RR) Development of the Rough and Ready Highway site would result in an increase in the rate and amount of stormwater runoff and would contribute urban pollutants to stormwater runoff. **(Less than Significant with Mitigation Incorporated)**

Development of the proposed project at the Rough and Ready Highway site would involve the removal of vegetation, grading, excavation and trenching, and cut and fill. These activities would alter drainage patterns and could expose soil to erosion during construction. There would be heavy equipment and materials use, which could be a source of pollutants that could adversely affect water quality, which would be a **potentially significant** construction-period impact. Because the site is greater than 1 acre, the project applicant's construction contractor would be required to implement an SWPPP and BMPs in accordance with the NPDES Construction General Permit (Order No. 2009-0009-DWQ, as amended by Order No. 2010-0014-DWQ and Order 2012-0006-DWQ). In addition to the SWPPP, the applicant would be required to comply with Chapter V, Article 19 (Grading) of the County's Land Use and Development Code.

After construction, most of the site would be covered with impervious surfaces associated with the building rooftop, parking lot, sidewalks, and hardscape. This would increase the rate and amount of stormwater runoff from the site compared to existing conditions, which could affect local drainage conditions. Runoff could contain additional urban pollutant loads from the rooftop and parking lot and would differ in terms of the types and levels of pollutants compared to existing conditions. Typical pollutants would include oil and grease, metals, and sediment from the parking lot and potentially landscape maintenance products. Pollutants in stormwater runoff could adversely affect water quality. Operational impacts would be **potentially significant**.

A drainage plan has been prepared that identifies how stormwater runoff and water would be managed to ensure compliance with County standards and state regulations (TTG 2016c). The project's on-site drainage system would consist of several features to control runoff and remove pollutants before stormwater is discharged to the existing roadside ditch along Rough and Ready Highway. The on-site pavement would be designed to have a minimum slope to avoid localized

ponding on-site, with the exception of one location where a concrete valley gutter would be used because the slope is less than 1 percent. On-site runoff would be routed via sheet flow along concrete gutters or asphalt pavement toward a series of curb openings located near the northern property line and two trench drains crossing the drive aisles.

The curb openings would allow runoff to enter a bio-retention basin. Runoff would pass through engineered subsurface layers to an underground system of perforated pipe. The percolated runoff would then be conveyed to an underground detention system. A "beehive" grated area drain would route flows in excess of the treatment volume to the underground detention system. Treated flows would be discharged to the roadside ditch.

No off-site flows are expected to enter the site, but a 12-inch pipe culvert is proposed under the driveway entrance off the Rough and Ready Highway to allow uninterrupted flow across the driveway (i.e., the proposed project would not create a barrier to flow that could increase flood potential in the ditch).

The drainage network piping has been sized so that post-development runoff for the 10-year and 100-year storm events would be less than pre-development conditions when flows are discharged to the roadside ditch (**Table 11.0-3**). This would ensure the proposed project would not increase the potential for off-site flooding as a result of stormwater runoff, and it would ensure pollutants in runoff would not increase compared to existing conditions.

TABLE 11.0-3
ROUGH AND READY HIGHWAY SITE STORMWATER RUNOFF PEAK FLOW RATES

	Flows to On-Site Wash	
	10-Year (cfs)	100-Year (cfs)
Pre-Development	0.703	1.114
Post-Development	0.420	0.567
Difference	-0.283	-0.547

cfs (cubic feet per second)
Source: TTG 2016c

With implementation of mitigation measures **MM RR-11.3.1a** through **MM RR-11.3.1c**, the drainage system and stormwater runoff water quality treatment features described above would be included in the project, which would ensure the proposed project would not increase the potential for off-site flooding as a result of stormwater runoff, even though the amount of runoff would increase. Construction site runoff and the stormwater runoff from the site after it is developed would be treated in the on-site system in accordance with County and state requirements. Therefore, development at the Rough and Ready Highway site would not violate water quality standards, result in substantial erosion or siltation, increase the rate or amount of surface runoff that would result in flooding on- or off-site, or exceed storm drainage system capacity. Impacts would be reduced to **less than significant.**

Mitigation Measures

MM RR-11.3.1a Construction General Permit for Stormwater Runoff. The construction and grading permits shall comply with the applicable NPDES regulations. Prior to grading permit issuance, obtain a General Permit for Storm Water Discharges Associated with the construction activity and provide a copy of the permit to

the County Planning, Building and Public Works Departments. Grading plans shall include verification that an NPDES permit, issued by the State Water Resources Board, has been issued for this project. To protect water quality, the contractor shall implement standard Best Management Practices during and after construction. These measures include, but are not limited to, the following:

1. At no time shall heavy equipment operate in flowing water.

2. Disturbed areas shall be graded to minimize surface erosion and siltation; bare areas will be covered with mulch; cleared areas will be revegetated with locally native erosion control seed mix.

3. The contractor shall exercise every reasonable precaution from adding pollution to offsite waterways with fuels, oils, bitumen, calcium chloride, and other harmful materials. Construction byproducts and pollutants such as oil, cement, and washwater shall be prevented from discharging into the offsite drainages and shall be collected and removed from the site.

4. Erosion control measures shall be applied to all disturbed slopes. No invasive non-native grasses shall be used for erosion control, such as velvet grass or orchard grass. A combination of rice straw wattles, a mulch of native straw or certified weed-free straw, and a planting of native plant species is recommended.

5. Silt fencing (or filter fabric) shall be used to catch any short-term erosion or sedimentation that may inadvertently occur. Silt-fencing should be installed well above the offsite drainages and extend beyond the construction zone if necessary. The use of standard straw is prohibited to avoid introduction of noxious weeds, such as star thistle.

6. To minimize water quality impacts to Upper Rough and Ready Ditch or other offsite drainages (e.g., Deer Creek) after the project is complete, no direct discharge of runoff from newly constructed impervious surface will be allowed to flow directly to the drainage. Runoff from surfaces should be directed through storm water interceptors constructed at discharge points. These interceptors will remove oil, sediment, and other pollutants that might otherwise flow to downstream waterways.

MM RR-11.3.1b Surface Drainage. The following measures shall be required to reduce surface water drainage patterns, unless alternatives are approved that are recommended by the project's geotechnical engineers, the California Regional Water Quality Control Board or the Department of Public Works that will provide substantially the same or better management of surface drainage:

1. Slope final grade adjacent to structural areas so that surface water drains away from building pad finish subgrades at a minimum 2 percent slope for a minimum distance of 10 feet. Where interior slabs-on-grade are proposed, the exterior subgrade must have a minimum slope of 4 percent away from the structure for a minimum distance of 10 feet. Additional drainage and slab-on-grade construction recommendations are provided in a geotechnical engineering report outlined in mitigation measure MM RR-8.3.1b.

2. Compact and slope all soil placed adjacent to building foundations such that water is not retained to pond or infiltrate. Backfill should be free of deleterious material.

3. Direct rain-gutter downspouts to a solid collector pipe which discharges flow to positive drainage and away from building foundations.

MM RR-11.3.1c Drainage Facilities. Drainage facilities for this project shall utilize County Standard Plans and Specifications and be designed by a registered civil engineer. Onsite storm drainage facilities shall be constructed in compliance with the design and analysis provided in the project specific Drainage Report prepared by TTG Engineers dated March 2016, and Sheet C2 date stamped June 24, 2016, which is to be kept on file with the Planning Department. Additionally, measures shall be incorporated into the improvement plans that reduce the offsite drainage flows to pre-project conditions as any additional net increase in stormwater runoff from the project site is prohibited. Features shall also be incorporated into the plans that minimize the discharge of pollutants in conformance with General Plan Policy 11.6A, which include, but is not limited to, the use of curbs and gutters, and the use of oil, grease and silt traps. County engineering staff shall review future construction plans to verify that the final design meet the requirements of this mitigation measure.

Timing/Implementation: *Prior to issuance of Grading Permit and approval of improvement plan; during construction activities*

Enforcement/Monitoring: *Nevada County Planning Department*

Groundwater Supply and Quality (Standards of Significance 1, 2, and 6)

Impact 11.3.2(RR) Saturated soil and groundwater seepage may be present seasonally at the Rough and Ready Highway site and the site would be served by a new septic system, but the project would have minimal effect on groundwater amount and quality. **(Less than Significant)**

The Rough and Ready Highway site would be served by NID, which has existing lines available for project connection. The project would not install groundwater wells. The project site's small size and underlying clay soils and weathered bedrock conditions limit opportunities for groundwater recharge. There would be no impacts on regional supply or recharge conditions.

Groundwater was not observed in borings or trenches, but saturated soil conditions and groundwater could be encountered in areas of soil/rock transition, and groundwater seepage may be encountered in areas proposed for deeper excavation. This could result in the need for dewatering. Given the small development footprint, underlying bedrock, and depth to groundwater, the amount of groundwater that may be removed during construction would not be substantial. The potential for saturated soil conditions and seepage to affect structures would be mitigated through subsurface design, as recommended in the project's geotechnical engineering report (Holdrege and Kull 2015c). Potential water quality impacts related to groundwater dewatering would be managed through implementation of the General Order for Dewatering and Other Low Threat Discharges to Surface Waters (Water Quality Order No. 5-00-175).

The proposed drainage system would consist of underground features to control and treat runoff. Depending on the depth of these features, there is the possibility that pollutants could interact with saturated soils. However, the pollutants would typically attach to the surface soil particles and would not likely travel deep into subsurface soil and water layers. Subsurface soils are clay-rich and underlain by weathered bedrock, which would reduce the potential for vertical and lateral migration in groundwater.

There is an existing permitted and built, but unused, on-site sewage disposal system (disposal/absorption bed) on the Rough and Ready Highway site parcel. The County Environmental Health Department has determined use of this system to be feasible under certain conditions, with independent service provider demonstration and documentation of the absorption bed functionality, and consistency with the project plan and setback requirements. In June 2016, testing required by the County was performed: the system accepted water properly, there was no evidence of saturation, and setbacks were confirmed (Navo 2016). The results of this flow/stress test indicate that the septic system can perform under expected normal waste flow conditions. Proposed project flows would consist of domestic wastewater flows, which the existing system was designed to accommodate. The proposed project would not introduce other kinds of wastewater that would have the potential to degrade groundwater quality.

Development of the Rough and Ready Highway site would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge, or otherwise degrade groundwater quality. Impacts would be **less than significant**.

Mitigation Measures

None required.

11.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative environmental setting for hydrology and water quality impacts comprises the Bear and Yuba river watersheds and the Wolf and Deer creek tributaries in Nevada County, which would ultimately receive project-generated stormwater runoff.

Cumulative Impacts Not Requiring Evaluation

None of the projects would result in impacts on groundwater resources or recharge, and therefore would not combine with each other or with cumulative development to result in a cumulative impact.

Cumulative development, excluding the proposed projects, could occur in 100-year flood hazard areas, areas subject to dam failure inundation, or mudflow. None of the proposed project sites are in locations subject to these hazards, and therefore there would be no contribution to a cumulative impact.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Water Quality Impacts Related to Stormwater Runoff (Standards of Significance 1, 3, 5, and 6)

Impact 11.4.1 Cumulative development, including the proposed projects, could affect water quality as a result of stormwater runoff containing pollutants. **(Less than Cumulatively Considerable)**

Water quality in the Bear and Yuba rivers has been affected by historic land uses, as have major tributaries such as Wolf and Deer creeks in which the three project sites are situated. Potential water quality impacts from construction of cumulative projects, including the three proposed projects, are minimized through compliance with the state's General Construction Permit, General Plan Policies 12.1 and 12.4, and the Grading Code, which are enforced at the local level by the County.

Cumulative development such as development projects, agriculture and forestry operations, and mining could increase the amount of pollutants into the major drainages, which could adversely affect water quality. General Plan Policy 11.6A requires that new development minimize the discharge of pollutants into surface water drainages, and projects are reviewed to ensure they include the applicable measures.

Each of the proposed project sites individually, and cumulatively, would not contribute to potential water quality impacts in the watersheds. Each project's drainage plan has been designed to ensure no net increase in stormwater flows discharged off-site, and each includes stormwater treatment features to remove pollutants. Therefore, the projects' contributions to water quality from stormwater runoff individually and in combination would be **less than cumulatively considerable**.

Mitigation Measures

None required.

Cumulative Water Quality Impacts Related to Septic Tanks (Standards of Significance 1 and 6)

Impact 11.4.2 Cumulative development, including the proposed projects, in areas not served by a public wastewater system would result in an increase in the number of septic tanks, which can affect water quality. **(Less than Cumulatively Considerable)**

Cumulative development in some areas in the watersheds could involve the use of septic tanks. Areas where several septic tanks operate in close proximity have the potential to affect groundwater and/or surface water quality, depending on their location. The design and installation of septic tanks are required to comply with County standards as provided under General Plan Policy 11.6 in order to protect the quality of surface and groundwater. In addition, the location of septic tanks and leach fields and their appropriate setbacks from water courses must be in accordance with the Central Valley RWQCB. The Penn Valley project would not include a septic system, so it would have no contribution to water quality due to septic tanks. For the Alta Sierra and Rough and Ready Highway sites, septic tanks may not be installed and operated until the County has reviewed the systems to ensure they comply with applicable standards and issues permits. Therefore, the Alta Sierra and Rough and Ready Highway projects' contributions to water

quality impacts due to septic tanks, individually and in combination, would be **less than cumulatively considerable**.

Mitigation Measures

None required.

Cumulative Stormwater Runoff Impacts (Standards of Significance 2, 3, and 4)

Impact 11.4.3 Cumulative development, including the proposed projects, could increase the rate and/or amount of stormwater discharged into local drainage systems and natural waterways, which could increase flood potential. **(Less than Cumulatively Considerable)**

Cumulative development in the watersheds has the potential to increase the rate and amount of stormwater runoff as undeveloped areas are converted to development with impervious surfaces such as structures and pavement. For all discretionary development, General Plan Policy 3.19A prohibits increases in stormwater runoff due to new development that could result in flood damage to downstream residences, commercial, industrial, active natural resource management uses (e.g., farming, ranching, mining, timber harvest), public facilities, roads, bridges, and utilities. Drainage studies are required to demonstrate how projects would comply with this policy. Each of the proposed projects has been designed to reduce project-generated stormwater runoff such that post-development flows are less than pre-development flows. As a result, there would be no net increase in stormwater runoff from any site that would combine with the other two sites, or with cumulative development, that would increase local or regional flooding due to stormwater runoff. The projects' contributions to flood impacts due to increased stormwater discharges individually and cumulatively would be **less than cumulatively considerable**.

Mitigation Measures

None required.

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