# 4.6 Hydrology, Water Quality, and Drainage

## Introduction

This section of the DEIR addresses potential impacts to hydrologic resources, including surface water hydrology/drainage, water quality, flooding, and groundwater, within Plumas County. The environmental setting provides a description of these resources areas, while the regulatory setting provides a description of applicable federal, State, and local regulations and policies that are relevant to hydrologic resources and applicable to the project. A description of the potential impacts of the proposed project is also provided and includes the identification of feasible mitigation (general plan policies) to avoid or lessen the impacts.

The reader of this DEIR is referred to Section 4.9 "Public Services, Recreation Resources, and Utilities" for a description of the environmental impacts related to water/wastewater supply and infrastructure. The reader is also directed to Section 4.7 "Geology, Soils, Seismicity, and Mineral Resources" for a description of the environmental impacts related to seiches and mudflows in the County.

### Summary of NOP Comments

The Central Valley Flood Protection Board provided a comment letter during the NOP scoping period suggesting that the DEIR address hydraulic and cumulative impacts. Additional comments were received regarding the need to address groundwater impacts along with requests regarding water rights on individual parcels within the County.

### Summary of Impact Conclusions

A summary of the hydrology, water quality, and drainage impacts described in this section are provided below in Table 4.6-1.

**TABLE 4.6-1**
**SUMMARY OF HYDROLOGY, WATER QUALITY, AND DRAINAGE IMPACTS**

| Impact Number | Impact Topic | Impact Conclusion | Impact After Mitigation |
|---|---|---|---|
| Impact 4.6-1 | Water Quality Standards and Requirements | Less Than Significant | Less Than Significant |
| Impact 4.6-2 | Water Quality and Erosion or Siltation | Less Than Significant | Less Than Significant |
| Impact 4.6-3 | Water Quality and Wastewater Disposal | Less Than Significant | Less Than Significant |
| Impact 4.6-4 | Groundwater Supplies and Recharge | Potentially Significant | Significant and Unavoidable |
| Impact 4.6-5 | Exceed Capacity of Stormwater System | Less Than Significant | Less Than Significant |
| Impact 4.6-6 | Housing within a 100-Year Flood Hazard Area | Less Than Significant | Less Than Significant |
| Impact 4.6-7 | Impeding or Redirecting Flood Flows | Less Than Significant | Less Than Significant |
| Impact 4.6-8 | Dam Inundation and Flood Hazards | Potentially Significant | Significant and Unavoidable |

# Regulatory Setting

## Federal and State Regulations

### *Executive Order 11988*

Under Executive Order 11988, FEMA is responsible for managing floodplain areas, which are defined as the lowland and relatively flat areas adjoining inland and coastal waters subject to a 1 percent or greater chance of flooding in any given year (the 100-year floodplain). FEMA requires that local governments covered by federal flood insurance pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the 100-year floodplain.

### *Clean Water Act*

The Clean Water Act established the basic structure for regulating discharges of pollutants into "waters of the United States." The act specifies a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. Sections 303 and 304, which provide for water quality standards, criteria, and guidelines.

- Section 401 requires every applicant for a federal permit or license for any activity that may result in a discharge to a water body to obtain a water quality certification that the proposed activity would comply with applicable water quality standards.
- Section 402 regulates point- and nonpoint-source discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program. In California, the State Water Resources Control Board (SWRCB) oversees the NPDES program, which is administered by the RWQCBs. The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits. Anti-backsliding requirements provided for under CWA Sections 402(o) (2) and 303(d) (4) prohibit slackening of discharge requirements and regulations under revised NPDES permits. With isolated/limited exceptions, these regulations require effluent limitations in a reissued permit to be at least as stringent as those contained in the previous permit.
- Section 404 of the CWA establishes a program to regulate the discharge of dredged and fill material into waters of the U.S., including some wetlands. Activities in waters of the U.S. that are regulated under this program include fills for development, water resource projects (e.g., dams and levees), infrastructure development (e.g., highways and airports), and conversion of wetlands to uplands for farming and forestry.

### *Clean Water Act Section 303(d) Impaired Waters List*

Under Section 303(d) of the CWA, states are required to develop lists of water bodies that would 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 Total Maximum Daily Load (TMDL) for each of the listed pollutants. The TMDL is the amount of loading that the water body can receive and still be in compliance with water quality

objectives. The TMDL can also act as a plan to reduce loading of a specific pollutant from various sources to achieve compliance with water quality objectives. The TMDL prepared by the state must include an allocation of allowable loadings to point and nonpoint sources, with consideration of background loadings and a margin of safety. The TMDL must also include an analysis that shows the linkage between loading reductions and the attainment of water quality objectives. EPA must either approve a TMDL prepared by the state or, if it disapproves the state's TMDL, issue its own. 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. In California, preparation and management of the Section 303(d) list is administered by the RWQCBs.

### *Safe Drinking Water Act*

The Safe Drinking Water Act (SDWA), established in 1974, is the principle federal law in the United States that ensures safe drinking water for the public. Pursuant to the act, the Environmental Protection Agency (EPA) is required to set standards for drinking water quality and oversee all states, localities, and water suppliers who implement those standards. The SDWA requires EPA to establish National Primary Drinking Water Regulations (NPDWR) for contaminants that may cause adverse public health effects.

Amendments to the SDWA require, in addition to more contaminants to be regulated, that well head protection be provided, new monitoring for certain substances, filtration for certain surface water systems, disinfection for certain groundwater systems, certification of water system operators, and the publication of consumer confidence reports.

### *California Department of Water Resources (DWR), Division of Safety of Dams*

Division 3 of the California Water Code—the statute governing dam safety in California—places responsibility for the safety of non-federal dams and reservoirs under the jurisdiction of DWR Division of Safety of Dams (DSOD). DSOD sets performance standards and regulates the construction of all dams 25 feet and higher that impound over 0.015 TAF (4.9 million gallons) of water, or over 6 feet high that impound over 0.05 TAF (16.3 million gallons) of water. DSOD's engineers and engineering geologists provide multiple critical reviews of new dams as well as for the enlargement and alteration of existing dams in order to ensure that their stringent performance standards are adhered to. Detailed DSOD standards address the site geology, seismic setting, site geotechnical investigations, laboratory testing, proposed construction materials, seismic analyses, and design of the dam. They also oversee construction to verify compliance with the approved construction documents, and approve foundations before material is placed. Before water can be impounded behind a new dam, DWR must issue a certificate of approval to operate. These certificates may contain restrictive conditions and may be amended or revoked. DSOD engineers inspect existing dams on a yearly schedule to ensure they are performing safely and are being adequately maintained. Operating dams are also periodically inspected to assure they are adequately maintained, and to direct the owner to correct any deficiencies that are found.

### *Porter-Cologne Water Quality Control Act*

Under the Porter-Cologne Water Quality Control Act, water quality objectives are limits or levels of water quality constituents or characteristics established for the purpose of protecting beneficial uses. The Act requires the RWQCBs to establish water quality objectives while acknowledging that water quality may be changed to some degree without unreasonably affecting beneficial uses. Designated beneficial uses, together with the corresponding water quality objectives, also constitute water quality standards under the federal Clean Water Act. Therefore, the water quality objectives form the regulatory references for meeting state and federal requirements for water quality control. A change in water quality is only allowed if the change is consistent with the maximum beneficial use of the waters of the state, would not unreasonably affect the present or anticipated beneficial uses, and would not result in water quality lower than that specified in applicable water quality control plans.

### *State Water Resources Control Board*

Created by the California State Legislature in 1967, the SWRCB holds authority over water resources allocation and water quality protection within the state. The five-member SWRCB allocates water rights, adjudicates water right disputes, develops statewide water protection plans, establishes water quality standards, and guides the nine Regional Water Quality Control Boards. The mission of SWRCB is to, "preserve, enhance, and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations."

### *Central Valley Regional Water Quality Control Board*

As authorized by the Porter-Cologne Water Quality Control Act, the Central Valley RWQCB primary function is to protect the quality of the waters within its jurisdiction for all beneficial uses. Plumas County is within the Central Valley RWQCB. State law defines beneficial uses of California's waters that may be protected against quality degradation to include, but not be limited to: domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

The Central Valley RWQCB implements water quality protection measures by formulating and adopting water quality control plans (referred to as basin plans, as discussed below) for specific groundwater and surface water basins, and by prescribing and enforcing requirements on all agricultural, domestic, and industrial waste discharges. The Central Valley RWQCB oversees many programs to support and provide benefit to water quality, including the following major programs: Agricultural Regulatory; Above-Ground Tanks; Basin Planning; CALFED; Confined Animal Facilities; Landfills and Mining; Non-Point Source; Spills, Leaks, Investigations, and Cleanups (SLIC); Storm Water; TMDL; Underground Storage Tanks (UST), Wastewater Discharges (including the NPDES); Water Quality Certification; and Watershed Management.

### *NPDES General Permit for Discharges of Stormwater Associated with Construction Activities*

Construction activities disturbing 1-acre or more of land are subject to the permitting requirements of the NPDES General Construction Activity Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Construction Permit). The General Construction Permit requires the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP), which must be completed before construction begins. Implementation of the SWPPP starts with the commencement of construction and continues through the completion of the project. Upon completion of the project, the applicant must submit a Notice of Termination to the RWQCB notifying the agency that construction is completed. The disturbance to areas associated with construction of structures and facilities for the project would require coverage under a General Construction Permit.

Effective July 1, 2010, an updated General Construction Permit requires several additional items in order to be eligible for coverage under the General Construction Permit. The permit requires a risk-based permitting approach, dependent upon the likely level of risk imparted by a project. The permit also contains several compliance items, including (1) additional mandatory Best Management Practices (BMPs) to reduce erosion and sedimentation, which may include incorporation of vegetated swales, setbacks and buffers, rooftop and impervious surface disconnection, bioretention cells, rain gardens, rain cisterns, implementation of pollution/sediment/spill control plans, training, and other structural and non-structural actions; (2) sampling and monitoring for non-visible pollutants; (3) effluent monitoring and annual compliance reports; (4) development and adherence to a Rain Event Action Plan; (5) requirements for the post-construction period; (6) monitoring of soil characteristics on site; and (7) mandatory training under a specific curriculum. Numeric action levels and effluent limitations were originally included under the revised permit, however, these were rescinded pursuant to court order. Under the permit, monitoring, reporting, and training requirements for management of stormwater pollutants are also required.

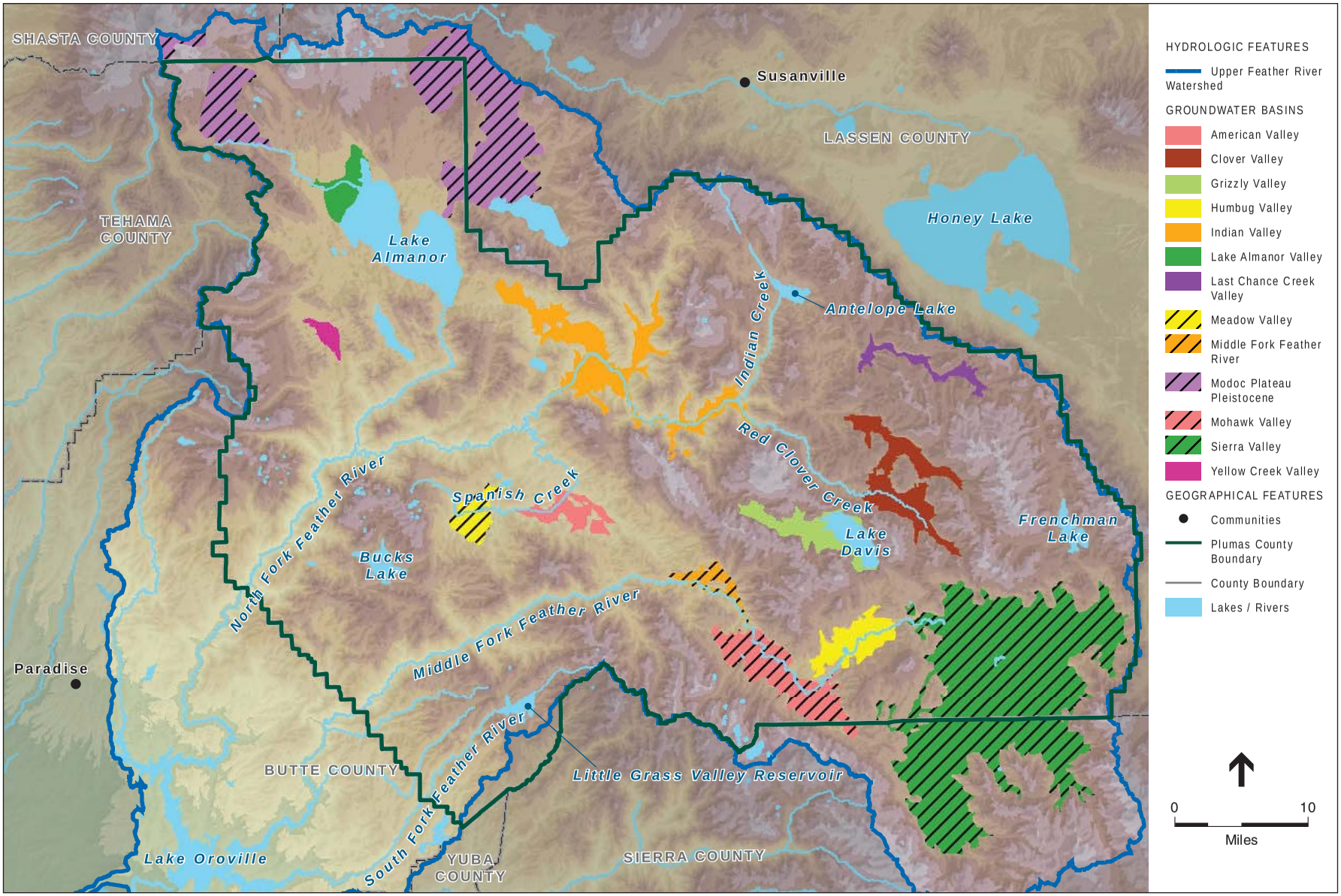
# Environmental Setting

## Climate

The amount of precipitation received throughout the County varies but greatly contributes to the significant amount of water available in the County and the remaining State of California through the California Water Project. The Sierra Crest (centrally located within Plumas County) acts as a barrier to storm systems between the western and eastern portions of the County. The western side of the Sierra Nevada Mountains receives over 90 inches of precipitation annually while the area east of the Sierra Crest receives 11 inches. Snowpack levels in the County's higher elevation areas serve as natural water reservoirs for surface water that becomes available as the snow melts and drains into the regional waterway system.

## Surface Water Hydrology and Quality

As shown in **Figure 4.6-1**, the Upper Feather River watershed covers a majority of the County (98%), which covers about 72% of the entire watershed. The tributaries of the Upper Feather River watershed drain over 2 million acres of land in the Sierra Nevada Mountains which direct




SOURCE: ESA, 2012

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**Figure 4.6-1**
Hyrdologic Features

flow southwest into Lake Oroville in neighboring Butte County. As shown in **Table 4.6-2**, the Upper Feather River watershed is divided into four main branches with respective watersheds: the West Branch, the North Fork, the Middle Fork and the South Fork of the Feather River. The North Fork Feather River drainage area is the largest drainage area in the watershed covering approximately 1.4 million acres and contributing a yearly average flow of over 2.3 million acre feet of water to Lake Oroville. The South Fork Feather River drainage is the smallest of the four drainage areas and contributes an average of over 189,000 acre feet to Lake Oroville each year.

**TABLE 4.6-2**
**UPPER FEATHER RIVER WATERSHED MAJOR RIVER DRAINAGES**

| Primary Drainage | Acres | Average Yearly Inflow to Lake Oroville (acre feet) |
|---|---|---|
| West Branch Feather River | 106,990 | 250,140 |
| South Fork Feather River | 81,070 | 189,390 |
| North Fork Feather River | 1,380,110 | 2,336,680 |
| Middle Fork Feather River | 738,880 | 1,087,650 |
| **Total:** | **2,307,050** | **3,863,860** |

Source: Ecosystem Sciences Foundation, 2005

As shown in the table, both the North and Middle forks of the Feather River provide a significant source of surface water. As shown in Figure 4.6-1, the Middle Fork of the Feather River traverses the southern portion of the County, starting from several sources in the Sierra Valley region and flowing past the City of Portola and the Planning Areas of Clio, Blairsden and Sloat as it heads westward to Lake Oroville in Butte County. The North Fork begins in the far northwestern corner of the County and flows to Lake Almanor. From there, it flows toward the southwest, passing through the Feather River Canyon in western Plumas County. The North Fork also empties into Lake Oroville.

A majority of smaller streams and creeks flow into either the North or Middle Forks of the Feather River. Several of these water courses that flow into the North Fork include the East Branch, Indian Creek, Spanish Creek, Bucks Creek and Warner Creek. Indian Creek, which flows from the Diamond Mountains in the northeastern portion of the County, receives the flows of Last Chance Creek, Red Clover Creek, Little Grizzly Creek and Lights Creek, along with their tributaries. The Middle Fork receives surface water flows from Big Grizzly Creek, Sulphur Creek, Jamison Creek, Nelson Creek and Onion Valley Creek. Little Last Chance Creek, located in the eastern portion of the County, starts in the Diamond Mountains and flows southward before ending in the Sierra Valley.

Lake Almanor is the largest water body in Plumas County and was created by the development of a barrier (dam) across the North Fork of the Feather River. The lake, located in the northwestern section of the County (see Figure 4.6-1), covers approximately 10.9 square miles. Originally created as a hydroelectric facility, the lake has become a major recreational area. Other significant lakes and reservoir include Lake Davis north of Portola, Frenchman Lake in the eastern portion of

the County, Antelope Lake in the northeastern portion, Bucks Lake in the western portion, and Little Grass Valley Reservoir in the southwestern portion (as shown in Figure 4.6-1). There are also numerous smaller lakes and reservoirs scattered throughout the County.

The Upper Feather River watershed serves as an important supply of surface water resources. Water has been a valuable export from Plumas County since the State Water Project (SWP) located its main storage facility fed by the Feather River at Lake Oroville. This watershed supplies 3.2 million acre feet per year for downstream urban, industrial and agricultural use as part of the SWP and delivers water to 29 agencies. The SWP also operates three reservoirs in Plumas County, Antelope Lake, Frenchman Lake, and Lake Davis, which flow into Lake Oroville.

### *Surface Water Quality*

The State Water Resources Control Board, in coordination with the US EPA, maintains a list of river and stream stretches that are included on its Clean Water Act Section 303(d) list of water quality impaired segments. Overall, water quality within the County is considered good. However, there are several water bodies currently on the Clean Water Act's 303(d) list of impaired waters (listed constituents include mercury, copper, temperature, and toxicity) as shown in **Table 4.6-3**. Water quality constituents of general concern include temperature, dissolved oxygen, sediment, and bacteria, with most impacts resulting from a variety of common land and water use practices in this watershed, (i.e., ranching, mining, timber harvest, road construction/maintenance, and rural residential development). The east side of the County experiences much more erosion than the west side, which greatly affects surface water quality.

**TABLE 4.6-3**
**CLEAN WATER ACT SECTION 303(D) LISTINGS FOR THE UPPER FEATHER RIVER WATERSHED**

| Water Body | Pollutant (Source) | TMDL Schedule |
|---|---|---|
| Little Grizzly Creek | Copper (Mill Tailings) | Est. TMDL Completion: 2021 |
| Little Grizzly Creek | Zinc (Mill Tailings) | Est. TMDL Completion: 2020 |
| Feather River, North Fork (below Lake Almanor) | Mercury (Resource Extraction) | Est. TMDL Completion: 2021 |
| Feather River, Middle Fork (Sierra Valley to Lake Oroville) | Unknown Toxicity ( Source Unknown) | Est. TMDL Completion: 2021 |
| Feather River, South Fork (Little Grass Valley Reservoir to Lake Oroville) | PCBs and Unknown Toxicity (Sources Unknown) | Est. TMDL Completion: 2021 |

SOURCE: SWRCB, 2012

## Groundwater Quantity and Quality

Plumas County's subsurface geology is complex, with most of the land underlain by volcanic rock, which is relatively impermeable except in places where cracks, fissures and cavities have formed. Consequently, most of the County is not conducive to the formation of large groundwater aquifers, as may be found in the Sacramento of San Joaquin Valley areas. However, in a few places, notably the Sierra Valley, aquifers of relatively large capacity can be found.

The County contains 14 groundwater basins, which are primarily located in the valleys on the east side of the Sierra Crest. These groundwater basins are also shown in Figure 4.6-1. Sierra Valley is the largest groundwater basin (125,250 acres) and underlies the Middle Fork of the Feather River. The smallest groundwater basin is Yellow Creek Valley Groundwater Basin covering 2,310 acres (see **Table 4.6-4)**.

**TABLE 4.6-4**
**SUMMARY OF GROUNDWATER BASIN CHARACTERISTICS WITHIN PLUMAS COUNTY**

| Groundwater Basin (Basin Acreage) | Storage Capacity | Monitoring Data |
|---|---|---|
| American Valley (6,800 Acres) | 50,000 acre feet (saturated depth interval of 10 to 210 feet) | DWR (4 wells bi-yearly, water quality) Department of Health Services (11 wells, water quality) |
| Clover Valley (16,780 Acres) | Unavailable | None Occurring |
| Grizzly Valley (Acreage Unavailable) | Unavailable | Department of Health Services (1 well, water quality) |
| Humbug Valley (9,980 Acres) | 76,000 acre feet (saturated depth to 100 feet) | Department of Health Services (8 wells, water quality) |
| Indian Valley (29,400 Acres) | 100,000 acre feet (saturated depth of 10 to 210 feet) | DWR (4 wells biennially, water quality) Department of Health Services (9 wells, water quality) |
| Lake Almanor Valley (7,150 Acres) | 45,000 acre feet (saturated depth of 10 to 210 feet) | DWR (10 wells semi-annually, groundwater levels and 4 wells biennially, water quality) Department of Health Services (4 wells, water quality) |
| Last Chance Creek Valley (4,660 Acres) | Unavailable | None Occurring |
| Meadow Valley (5,730 Acres) | Unavailable | Department of Health Services (1 well, water quality) |
| Middle Fork Feather River (4,340 Acres) | Unavailable | None Occurring |
| Modoc Plateau Pleistocene (Acreage Unavailable) | Unavailable | None Occurring |
| Mohawk Valley (Acreage Unavailable) | 90,000 acre feet (saturated depth of 0 to 200 feet) | DWR (1 well semi-annually, groundwater levels and 2 wells biennially, water quality) Department of Health Services (15 wells, water quality) |
| Sacramento Valley Eastside (Acreage Unavailable) | Unavailable | Unavailable |
| Sierra Valley (125,250 Acres) | 7,500,000 acre feet (saturated depth to 1,000 feet) | DWR (34 wells semi-annually, groundwater levels and 9 wells, water quality) Department of Health Services (9 wells, water quality) |
| Yellow Creek Valley (2,310 Acres) | Unavailable | None Occurring |

Source: Ecosystem Sciences Foundation, 2005

With the exception of the Sierra Valley Groundwater Basin, most groundwater basins in the County are considered healthy with no significant groundwater declines. During the early 1980's the Sierra Valley Groundwater Basin experienced significant groundwater declines associated

some irrigation practices. Since its inception in 1980, the Sierra Valley Groundwater Management District (SVGMD) has monitored groundwater levels and installed flow meters to monitor groundwater pumping on all wells in the Sierra Valley pumping 100 gallons per minute or more. In response to the declining groundwater levels, the SVGMD established water budgets in the areas of significant agricultural pumping.

For the most part, all groundwater basins (with the exception of the Sierra Valley Groundwater Basin) have no known groundwater management plans, groundwater ordinances, or basin adjudications. However, the largest groundwater basin (Sierra Valley Groundwater Basin) in the study area experiences a wide range of water quality conditions, primarily associated with naturally occurring mineral constituents. Sodium chloride and sodium bicarbonate water quality conditions occur south of Highway 49 (Ecosystem Sciences Foundation, 2005). The most affected portion of the basin is found in the central west side of the valley where fault-associated thermal waters and hot springs yield water with high concentrations of boron, fluoride, iron, and sodium. Additionally, several wells in this area also have high arsenic and manganese concentrations. Boron concentrations in thermal waters have been measured in excess of 8 mg/L. At the basin fringes, boron concentrations are usually less than 0.3 mg/L. There is also a sodium hazard associated with thermal waters in the central portion of the basin (Ecosystem Sciences Foundation, 2005).

### *Water Supply and Availability*

The majority of potable water supply in Plumas County is provided by a variety of individual Community Service Areas (CSA), Community Services Districts (CSDs), and Public Utility Districts (PUDs) that serve the various communities located throughout the County. Water supply information for several of these water purveyors was recently collected during the preparation of two recent studies prepared by Plumas LAFCO for the eastern portion of the County and the Lake Almanor Area (prepared by Policy Consulting Associates, LLC, 2011 and 2012). A summary of available water supply information (including sources, type, average supply, and safe yields) is provided in **Table 4.6-5**. As shown in the table, sufficient water supply is currently available for those water service purveyors with available information. Estimates of available supply and projected demand were also developed for the year 2030. As indicated in Table 4.6-5, all reporting water purveyors have available supply (within currently defined safe/firm yield levels) to meet their projected demands by 2030.

**TABLE 4.6-5**
**WATER SERVICE PURVEYORS AND WATER SUPPLY**

| Water Source | Average Supply (1) | Maximum (1) | Safe/Firm Yield (1) | Estimates of Supply/Demand (2030) (2) |
|---|---|---|---|---|
| **Chester Public Utility District** | | | | |
| Lake Almanor Valley Groundwater Basin | 650 | 2,190 | Unknown | 730 / Not Provided |
| **Clio Public Utility District** | | | | |
| Mohawk Chapman Springs | 150 | 250 | Unknown | Unknown |

**TABLE 4.6-5 (continued)**
**WATER SERVICE PURVEYORS AND WATER SUPPLY**

| Water Source | Average Supply (1) | Maximum (1) | Safe/Firm Yield (1) | Estimates of Supply/Demand (2030) (2) |
|---|---|---|---|---|
| **Gold Mountain Community Services District** | | | | |
| Humbug Valley Basin | 20 | 80 | 200 | 110 / 110 |
| **Grizzly Lake Community Services District** | | | | |
| Humbug Valley Basin | 130 | 430 | 200 | 140 / Unknown |
| Fillippini Springs | 0 | 100 | Unknown | Unknown |
| **Grizzly Ranch Community Services District** | | | | |
| Sierra Valley Basin | 40 | 30 (Well 3P2 only) | 1,030 | 50 / 40 |
| **Hamilton Branch Community Services District** | | | | |
| Lake Almanor Valley Groundwater Basin | 290 | 640 | Unknown | 320 /140 |
| **Plumas-Eureka Community Services District** | | | | |
| Mohawk Valley Groundwater Basin | 190 | 1,490 | 330 | 210 / 200 |
| **Walker Ranch Community Services District** | | | | |
| Lake Almanor Valley Groundwater Basin | 130 | 1,780 | Unknown | 160 / 140 |

Notes: (1) Acre Feet per Year (2) Represented as average annual supply and demand. Estimates based on Department of Finance population projection of 0.5 percent annually throughout Plumas County.

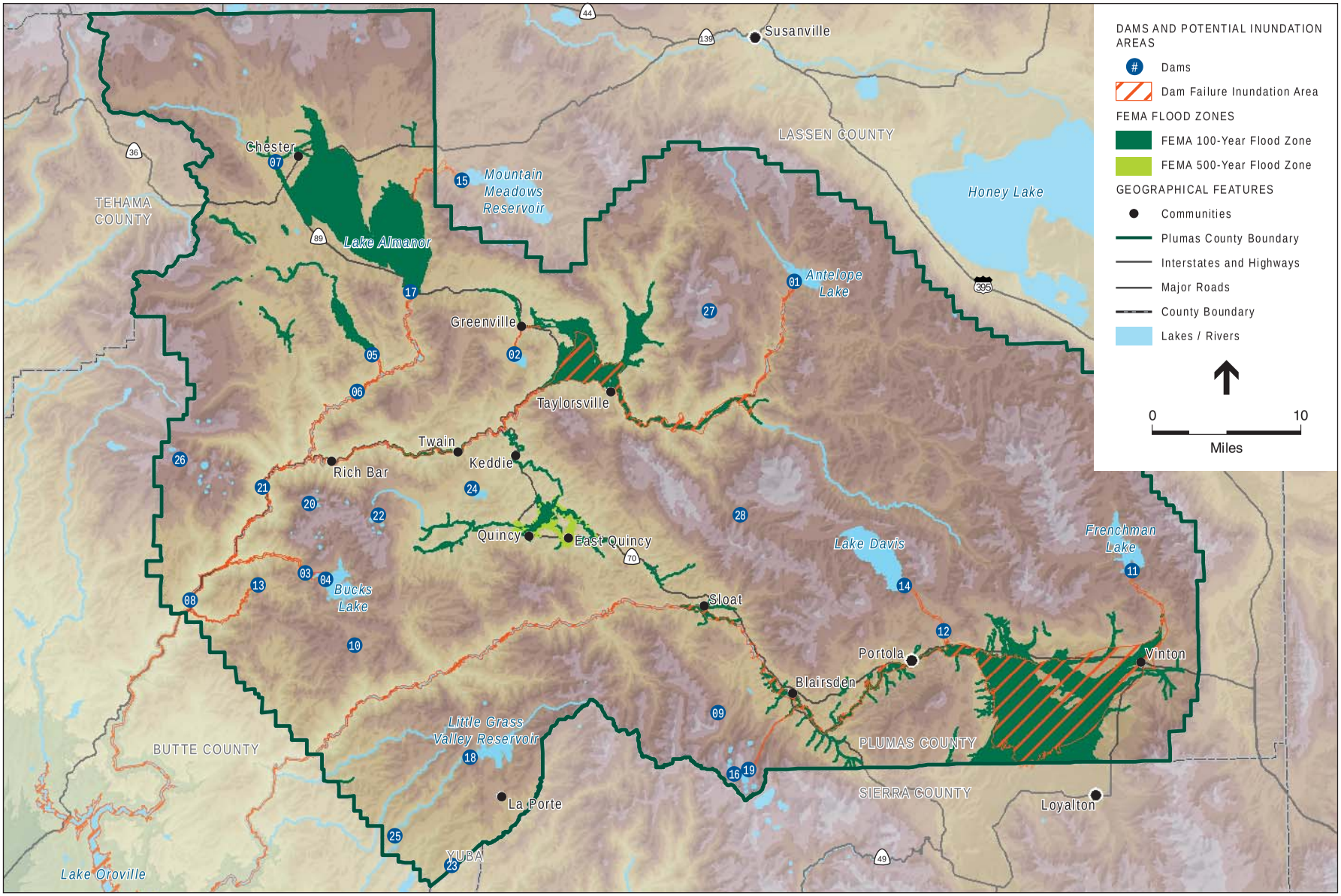
Source: Policy Consulting Associates, LLC, 2011 and 2012.

## Flooding and Stormwater Drainage

Flooding within the Planning Area can occur from three sources: (1) rainfall and runoff exceeding the capacity of local watercourses, (2) rainfall and runoff to depressions causing localized areas of shallow flooding, and (3) flooding from failure of a dam. Overall, the most significant flood hazard areas are in the Sierra Valley and the Indian Valley areas of the County. Other significant flood hazard area is located along Spanish Creek and its tributaries north of and around the community of Quincy.

As previously described, the County contains an extensive network of rivers and other watercourses that flow out of higher elevations to the valley areas. The Federal Emergency Management Agency (FEMA) has identified several areas of the County as within 100 and 500-year flood zones. These areas are identified in **Figure 4.6-2** and are primarily located in or near the communities of Chester, Greenville, Crescent Mills, Taylorsville, Quincy, Vinton and the City of Portola. FEMA estimates potential flood frequencies for flood-prone areas throughout the US, which are then published as Flood Insurance Rate Maps (FIRMs).

200-year floodplains have been delineated for some regions in the State by DWR. These zones are delineated within DWR's Best Available Maps and are defined as regions with a 0.5 chance of annual occurrence of flooding. However, Plumas County has not been delineated by DWR for 200-year floodplains. Therefore, no 200-year flood zones are reported within the County.




SOURCE: ESA, 2012

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**Figure 4.6-2**

Flood Zones, Dams, and Potential Inundation Areas

### *Dam Failure*

Flooding within the County may also occur as a result of a dam failure. Dams are human-made structures built for a variety of uses including flood control, power, agriculture, water supply and recreation. When dams are constructed for flood control, they are usually engineered to contain a flood with a computed risk of occurrence. For example, a dam may be designed to contain a flood that has a certain probability of occurring in any one year (e.g., 100-year flood). If a larger flood occurs, then that structure will either release water through its spillway or be overtopped. Overtopping is the primary cause of earthen dam failure. Dam failures can create flash floods that are catastrophic to life and property.

Dams typically are constructed of earth, rock, concrete, or mine tailings. Two factors that influence the potential severity of a full or partial dam failure include the amount of water impounded, and the density, type, and value of development and infrastructure located downstream. Dam failures can result from any one or a combination of the following causes:

- prolonged periods of rainfall and flooding;
- earthquake;
- inadequate spillway capacity, resulting in excess overtopping flows;
- internal erosion caused by embankment or foundation leakage or piping;
- improper design;
- improper maintenance;
- negligent operation; and
- failure of upstream dams on the same waterway.

Dams and reservoirs have been built throughout California for water supply, flood control, hydroelectric power and recreational facilities. The storage capacities of these reservoirs range from a few thousand acre-feet to five million acre-feet. For planning purposes, the State Office of Emergency Services (OES), with information from United States Bureau of Reclamation (USBR) and DWR, has the responsibility to provide local governments with critical hazard response information, including flooding from dam inundation. Figure 4.6-2 identifies those locations prone to flooding from dam inundation and as expected many of the areas overlap with FEMA identified flood zones. Dam inundation areas are generally found along the North and Middle Forks of the Feather River, Indian Creek between Taylorsville and Antelope Lake, Sierra Valley and Indian Valley. **Table 4.6-6**, identifies the location of these dams, with the "Map ID #" corresponding with the numbered dam locations found in the figure.

**TABLE 4.6-6**
**DAMS WITHIN PLUMAS COUNTY**

| Figure ID# | Dam Name | Watercourse | Capacity (acre feet) and Height (feet) | Year Built |
|---|---|---|---|---|
| 1 | Antelope Dam | Indian Creek | 22,566 / 113 | 1964 |
| 2 | Bidwell Lake | North Canyon Creek | 5,200 / 35 | 1865 |
| 3 | Bucks Diversion | Bucks Creek | 5,843 / 99 | 1928 |
| 4 | Bucks Storage | Bucks Creek | 103,000 /122 | 1928 |
| 5 | Butt Valley | Butt Creek | 49,800 / 84 | 1924 |
| 6 | Caribou Afterbay | North Fork Feather River | 2,400 / 164 | 1959 |
| 7 | Chester Diversion | North Fork Feather River | 75 / 47 | 1975 |
| 8 | Cresta Dam | North Fork Feather River | 4,400 / 103 | 1949 |
| 9 | Eureka Dam | Eureka Creek | 220 / 29 | 1866 |
| 10 | Faggs Debris | Willow Creek Tributary | 50 /10 | 1900 |
| 11 | Frenchman Dam | Last Chance Creek | 55,477 / 129 | 1961 |
| 12 | Grizzly Creek Dam | Big Grizzly Creek | 140 / 39 | 1915 |
| 13 | Grizzly Forebay | Grizzly Creek | 1,112 / 92 | 1928 |
| 14 | Grizzly Valley Dam | Big Grizzly Creek | 83,000 / 115 | 1966 |
| 15 | Indian OLE | Hamilton Creek | 24,800 / 26 | 1924 |
| 16 | Jamison Lake Dam | Little Jamison Creek | 300 / 15 | 1902 |
| 17 | Lake Almanor Dam | North Fork Feather River | 1,208,000 / 130 | 1927 |
| 18 | Little Grass Valley Dam | South Fork Feather River | 93,010 / 210 | 1961 |
| 19 | Long Lake Dam | Gray Eagle Creek | 1,478 / 12 | 1938 |
| 20 | Lower Three Lakes | Milk Ranch Creek | 606 / 32 | 1928 |
| 21 | Rock Creek Dam | North Fork Feather River | 4,660 / 120 | 1950 |
| 22 | Silver Lake Dam | Silver Creek | 650 / 21 | 1906 |
| 23 | Slate Creek Diversion | Slate Creek | Unavailable | Unavailable |
| 24 | Smith Lake Dam | Wapaunsie Creek | 400 / 14 | 1909 |
| 25 | South Fork Diversion | South Fork Feather River | 88 / 70 | 1961 |
| 26 | Spring Valley Lake Dam | Rock Creek | 75 /11 | 1979 |
| 27 | Taylor Lake Dam | Indian Creek Tributary | 380 / 14 | 1929 |
| 28 | Walker Mine Tails Dam | Dolly Creek | 1,200 / 30 | Unknown |

Source: DSOD, 2012 and Ecosystem Sciences Foundation, 2005

## Feather River Watershed Management

The Monterey Settlement Agreement (2003) by and among the Planning and Conservation League, Plumas County Flood Control and Water Conservation District, Citizens Planning Association of Santa Barbara County, Inc., and the State of California Department of Water Resources, Central Coast Water Authority, Kern Water Bank Authority, and State Water Project Contractors authorized the establishment of a Water Forum to implement watershed management and restoration activities in the Feather River watershed. The Water Forum's specific goals include:

- Improve retention (storage) of water for augmented base flow in streams;

- Improve water quality (reduced sedimentation), and streambank protection;
- Improve upland vegetation management; and
- Improve groundwater retention/storage.

The Feather River Watershed Authority is comprised of several entities and organizations of which Plumas County is the lead agency; Plumas National Forest, Sierra Valley Groundwater Management District, and Plumas County Flood Control and Water Conservation District are partner agencies. These four entities have statutory authority in the Upper Feather River Watershed and oversaw development of the Feather River Watershed Integrated Regional Water Management Plan (IRWMP) in 2005.

The California State Integrated Regional Water Management (IRWM) Planning program is administered by DWR and SWRCB through bond-funded Grant Programs. Preparation of IRWMPs are designed to promote a coordinated approach to identify and prioritize future actions, like a general plan, to address a variety of water-related issues for a particular region to ensure sustainable water uses, reliable water supplies, better water quality, environmental stewardship, efficient urban development, the protection of agriculture. For Plumas County, the Feather River IRWMP provides guidance for the water resources that comprise the Upper Feather River watershed. The 2005 IRWMP is currently in the process of being updated.

Established in 1985, the Feather River Coordinated Resource Management Group (FRCRMG) strives to protect, maintain and enhance ecosystems and community stability in the Feather River Watershed. Over the past several years, the FRCRMG and a variety of other project proponents have completed more than 50 Feather River watershed projects including studies and assessments, stream restoration, monitoring, resource management plans, strategic planning, community outreach and educational activities.

# Impacts and Mitigation Measures

## Methodology

The impact analysis for the proposed project is based on a review of the existing conditions with respect to hydrologic resources, as discussed above, and assessment of the changes that would occur as a result of implementing the proposed project. The potential changes in the hydrological conditions within the County, were assessed in order to determine if the project would have a significant adverse effect, pursuant to CEQA. The level of significance is based on the CEQA significance criteria listed below and the regulatory requirements and standards that are discussed previously.

## Significance Criteria

The significance criteria for this analysis were developed from criteria presented in Appendix G, Environmental Checklist Form", of the CEQA Guidelines and based on the professional judgment of the County of Plumas and its consultants. The proposed project would result in a significant impact if it would:

- Violate any water quality standards or waste discharge requirements;
- Otherwise substantially degrade water quality;
- 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);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off the site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off the site;
- Create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems;
- 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;
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows; or
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of failure of a levee or a dam.

## Impact 4.6-1: Water Quality Standards and Requirements

| | |
|---|---|
| **LTS** | **The proposed project could violate water quality standards or waste discharge requirements.** |
| | **Level of Significance Before Mitigation**: *Less than Significant* |
| | **Required Additional Mitigating Policies and Implementation Measures***: None* |
| | **Resultant Level of Significance:** *Less than Significant* |

Implementation of the various activities contained within the proposed project would involve construction of an array of facilities and structures, in support of future development. On an individual project by project basis, for each individual action implemented under the proposed project, construction activities would be expected to include the use of heavy equipment for grading, trenching, laying of pipe, construction of roads, installation of buildings, and installation of other anticipated infrastructure and facilities. Equipment could include bulldozers, graders, earth movers, heavy trucks, trenchers, and various other machinery. The use of these types of machinery within the County could result in the release of water quality pollutants. Potential pollutants associated with the use of construction equipment could include, but would not be limited to, spilled fuels, oil, lubricants, antifreeze, or hydraulic fluid. Also, the use of heavy machinery would disturb surface

sediments. During storm events, these potential pollutants, including sediment, could become entrained in stormwater runoff, and be transported into nearby drainage systems which ultimately drain into larger water systems including the Feather River. Therefore, discharges from construction activities could result in the degradation of water quality along the Feather River, as well as other potentially affected surface waterways. Degradation of water quality could in turn affect beneficial use, and could result in exceedance of CVRWQCB standards.

Prior to the initiation of future construction-related activities, individual applicants for projects that would disturb more than one acre of land would be required to obtain coverage under the NPDES General Construction Permit for Discharges of Stormwater Associated with Construction Activities (NPDES General Stormwater Permit), under the CVRWQCB. Permit requirements would include the implementation of several best management practices (BMP) designed to minimize water quality impacts:

- Preparation of hazardous material spill control and countermeasure programs;
- Stormwater quality sampling, monitoring, and compliance reporting;
- Development and adherence to a Rain Event Action Plan;
- Adherence to numeric action levels and effluent limits for pH and turbidity; monitoring of soil characteristics on site;
- Mandatory training under a specific curriculum; and
- Mandatory implementation of BMPs, which may include, but would not be limited to:
    - Physical barriers to prevent erosion and sedimentation including setbacks and buffers, rooftop and impervious surface disconnection, rain gardens and cisterns, and other installations;
    - Construction and maintenance of sedimentation basins;
    - Limitations on construction work during storm events;
    - Use of swales, mechanical, or chemical means of stormwater treatment during construction, including vegetated swales, bioretention cells, chemical treatments, and mechanical stormwater filters; and
    - Implementation of spill control, sediment control, and pollution control plans and training.

The specific BMPs to be implemented would be determined prior to acquisition of coverage under the NPDES General Permit, in coordination with the CVRWQCB. Adherence to BMPs required under the NPDES General Permit would be required as a condition of the permit, and would substantially reduce or prevent construction related waterborne pollutants from entering natural waters, per CVRWQCB standards.

In addition to construction-related impacts, the proposed project could also result in several operation-related water quality impacts. Development of residential, commercial, and industrial land uses, as well as public facilities (e.g., roads, schools, maintenance and corporation yards, water supply, and wastewater facilities) create additional impervious surfaces and generate

additional automobile use. Several different types of pollutants (including sediment, organic compounds, nutrients, trace metals, bacteria and viruses, and oil and grease compounds) are common in runoff from these types of land uses (additional Water quality impacts related to soil erosion and sedimentation are discussed below under Impact 4.6-2.) Organic compounds are derived from automotive fluids, pesticides, and herbicides. Nutrients include nitrogen, phosphorus, and other organic compounds that can be found in organic litter, fertilizers, food waste, sewage, and sediment.

Increased growth within the various Planning Areas resulting from implementation of the proposed project would increase urbanization and the conversion of vacant open lands to areas with increased impervious surface area. Consequently, this additional urban development would result in an increase in pollutants associated with runoff, as described above. Therefore, the water quality of local streams and other surface features within or adjacent to the Planning Areas would likely be further degraded by urban land use activities. However, Planning Areas within the Indian and American Valley Geographic Areas (see Table 3-8 on page 3-22 of Chapter 3 of this DEIR) are expected to experience the least amount of population increase. Therefore, these areas would likely experience relatively less adverse changes to water quality resulting from implementation of the proposed project.

**TABLE 4.6-7**
**MTIGATING POLICIES AND IMPLEMENTATION PROGRAMS**

| Public Health and Safety (PHS) and Water Resources (W) Elements | | | |
|---|---|---|---|
| Policies designed to minimize both construction and operation-related water quality impacts: | | | |
| PHS-6.5.4 | Contamination Prevention | W-9.2.5 | Wastewater Standards and National Pollutant Discharge Elimination System (NPDES) |
| W-9.2.1 | Participation in Water Quality Objectives | | |
| W-9.2.2 | Background Water Quality | | |
| W-9.2.3 | County Facilities | W-9.2.6 | Erosion and Sediment Control Measures |
| W-9.2.4 | Wildfire and Water Quality Controls | W-9.7.4 | Runoff Quality |
| | | W-9.7.5 | Best Management Practices |

The proposed project includes a number of policies (see **Table 4.6-7**, above) designed to address construction and operation-related water quality impacts including Policy W-9.2.5 which relates specifically to monitoring construction activities through NPDES enforcement, requiring the use of BMPs. Policy W-9.2.1 requires the County to support and assist in the development and implementation of TMDLs for the impaired water bodies and pollutants of concern identified by the RWQCB. Policy W-9.2.4 requires the County to design, construction, and maintain County facilities that minimize sediment and other water quality pollutants. Additionally, Policy W-9.2.4 requires the County to cooperate with wildlife management and fire protection agencies and implement a variety of post-fire erosion, sedimentation, and other water quality measures. Policies W-9.7.4 and W-9.7.5 require that all new development (including drainage systems) comply with applicable regulations regarding non-point source pollutant discharge requirements.

### Significance Determination

The proposed project is a comprehensive update to the County's existing General Plan. Adoption and implementation of the proposed policies and implementation programs under the proposed project (in addition to current local, state, and federal stormwater, grading, and erosion control

regulations described above) would ensure that water quality impacts resulting from nonpoint source pollution runoff related to residential, commercial, industrial, and public uses consistent with the proposed project would be reduced to a less-than-significant level.

This impact is considered ***less than significant***. No additional mitigation measures are required.

**Significance Conclusion**

Implementation of the proposed project would not result in significant water quality impacts and therefore associated impacts would be ***less than significant***.

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## Impact 4.6-2: Water Quality and Erosion or Siltation

| | |
|---|---|
| **LTS** | **The proposed project could result in increased soil erosion and sedimentation during construction activities, substantially degrading water quality in downstream waterways.** |
| | **Level of Significance Before Mitigation**: *Less than Significant* |
| | **Required Additional Mitigating Policies and Implementation Measures***: None* |
| | **Resultant Level of Significance:** *Less than Significant* |

Implementation of the proposed project would result in the construction of a wide range of uses, including residential, commercial, and industrial buildings; and public facilities. Erosion and sedimentation resulting from construction activities in the unincorporated parts of Plumas County would represent a significant source of particulate pollution conveyed in stormwater runoff. Grading and other earthmoving activities would alter drainage patterns and therefore have the potential to accelerate soil erosion well above natural background rates.

Although the construction of most new development would occur on relatively flat or low slope areas surrounding Planning Areas, the proposed project would allow some development on hillside areas with moderate to high erosion hazards. Slope limitations would be imposed on hillside development; however, development on moderate slopes (slopes between 15 and 25%) or on highly erosive soils is particularly susceptible to increased erosion and sedimentation, which has the potential to impair water quality. It is also possible that sediment would accumulate at the inlets of downstream storm drain systems, reducing the system's capacity to convey stormwater. Soil loss from erosion would generate costs to the public associated with the cleanup and maintenance of storm drains, culverts, and open roadside ditches.

Water quality impacts are addressed from a variety of perspectives as identified in the policies summarized below in **Table 4.6-8**. For example, Policy PHS-6.2.4 prohibits most development on slopes greater than 30% to help address both public safety and soil erosion concerns. Policy AG/FOR 8.6.4 promotes participation in agricultural programs that reduce soil erosion and increase soil productivity. Other policies incorporate Low Impact Development (LID) measures (swales, rain barrels, cisterns, etc.) and BMPs for stormwater quality protection (see policies W-9.2.6 and W-9.8.7). Additionally, policies COS -7.3.2 and W-9.2.5 require compliance with the NPDES permit including

application of best management practices (BMPs) to proposed development; regulation of stormwater runoff requiring that pollutants have been reduced to the maximum extent practicable; stormwater treatment requirements for new development including retention of existing vegetation, site design, stormwater treatment, LID and BMP measures.

**TABLE 4.6-8**
**MITIGATING POLICIES AND IMPLEMENTATION PROGRAMS**

| Conservation and Open Space (COS), Public Health and Safety (PHS), Agriculture and Forestry (AG/FOR), and Water Resources (W) Elements | | | |
|---|---|---|---|
| Policies designed to promote soil conservation and prevent future development in steep slope areas. | | | |
| COS-7.3.2 | Soil Erosion and Vegetation Protection | COS-7.3.5 | Soil Improvement Practices |
| COS-7.3.3 | Soil Limitations and Sewage Disposal | PHS-6.2.4 | Development on Slopes |
| COS-7.3.4 | Erosion Control Plan | AG/FOR- 8.6.4 | Soil Conservation |
| Policies designed to minimize sediment and erosion-related water quality impacts. | | | |
| W-9.2.1 | Participation in Water Quality Objectives | W-9.2.6 | Erosion and Sediment Control Measures |
| W-9.2.2 | Background Water Quality | W-9.8.7 | Sustainable Water Practices |
| W-9.2.4 | Wildfire and Water Quality Controls | | |
| W-9.2.5 | Wastewater Standards and National Pollutant Discharge Elimination System (NPDES) | | |

### Significance Determination

The proposed project is a comprehensive update to the County's existing General Plan. Adoption and implementation of the proposed policies and implementation programs under the proposed project (in addition to current local, state, and federal stormwater, grading, and erosion control regulations described above) would ensure that water quality impacts resulting from increased soil erosion and siltation related to residential, commercial, industrial, and public uses consistent with the proposed project would be reduced to a less-than-significant level.

This impact is considered ***less than significant***. No additional mitigation measures are required.

### Significance Conclusion

Implementation of the proposed project would not result in significant water quality impacts and therefore associated impacts would be ***less than significant***.

## Impact 4.6-3: Water Quality and Wastewater Disposal

| | |
|---|---|
| **LTS** | **The proposed project could result in sewer- and septic-related water quality impacts, including those associated with reuse of treated water and migration of septic tank leach field wastewater effluent to groundwater that could violate water quality standards.** |
| | **Level of Significance Before Mitigation**: *Less than Significant* |
| | **Required Additional Mitigating Policies and Implementation Measures***: None* |
| | **Resultant Level of Significance:** *Less than Significant* |

Implementation of the proposed project would result in the construction of a wide range of uses, including residential, commercial, and industrial buildings; and public facilities that would require wastewater treatment. All of Plumas County's treatment plants, including those operated by municipalities or wastewater management districts, are regulated under a permit issued by the RWQCB.

Individual septic systems serving individual residences would also degrade water quality. This is of particular concern in areas where historical development has resulted in a high concentration of older septic systems that may not have been designed and constructed using current standards or that are not regularly maintained or upgraded. Nitrate contamination of groundwater is a concern, especially in areas of permeable soils and relatively shallow groundwater.

These particular water quality impacts resulting from wastewater treatment sources are addressed in the following ways (see **Table 4.6-9**). Policies COS-7.3.1 and COS-7.3.3 include the mapping of areas with severe septic tank leach field suitability constraints and the siting of these facilities in appropriate locations that minimize groundwater impacts. Other policies (W-9.6.1 and W-9.6.2) require the County to ensure, through the development review process, that wastewater facilities and services (including the use of alternative wastewater treatment systems) will be adequate and operational to serve new development and meet capacity. Policy W-9.2.2 encourages the use of water management strategies, biological remediation and the best available technology to address water quality problems.

**TABLE 4.6-9**
**MITIGATING POLICIES AND IMPLEMENTATION PROGRAMS**

| Conservation and Open Space (COS) and Water Resources (W) Elements | |
|---|---|
| Policies designed to ensure adequate levels of wastewater treatment infrastructure include the following: | |
| W-9.6.1 Adequate Facilities and Services<br>W-9.6.2 Alternative Wastewater System Approval | W-9.9.1 Coordinated Infrastructure Planning |
| Policies designed to minimize water quality impacts include the following: | |
| COS-7.3.1 Sensitive Soils and Mapping<br>COS-7.3.3 Soil Limitations and Sewage Disposal<br>W-9.2.2 Background Water Quality<br>W-9.2.4 Wildfire and Water Quality Controls | W-9.2.5 Wastewater Standards and National Pollutant Discharge Elimination System (NPDES)<br>W-9.2.6 Erosion and Sediment Control Measures |

### Significance Determination

The proposed project is a comprehensive update to the County's existing General Plan. Adoption and implementation of the proposed policies and implementation programs under the proposed

project (in addition to current local, state, and federal regulations described above) would ensure that water quality impacts resulting from wastewater treatment discharge related to residential, commercial, industrial, and public uses consistent with the proposed project would be reduced to a less-than-significant level.

This impact is considered ***less than significant***. No additional mitigation measures are required.

### Significance Conclusion

Implementation of the proposed project would not result in significant water quality impacts and therefore associated impacts would be ***less than significant***.

---

## Impact 4.6-4: Groundwater Supplies and Recharge

| | |
|---|---|
| **SU** | **The proposed project could deplete groundwater supplies or interfere with groundwater recharge.** |
| | **Level of Significance Before Mitigation**: *Potentially Significant* |
| | **Required Additional Mitigating Policies and Implementation Measures***: No Additional Mitigation Available* |
| | **Resultant Level of Significance:** *Significant and Unavoidable* |

As discussed previously, most groundwater basins in the County (with the exception of the Sierra Valley ) have no known groundwater management plans, groundwater ordinances, basin adjudications, or have experienced significant declines in groundwater levels. **Table 4.6-10** provides an estimate of new water demand associated with the proposed project for each geographic area of the County. As shown in the table, new demand is relatively small with both the American and Indian Valley areas experience relatively minor increases over the life of the general plan. As the water demand figures include both primary (permanent residents) and secondary homes, it assumed that overall demand associated with permanent County residents will be lower than the total new water demand (2,066 acre feet) identified in Table 4.6-10.

As groundwater is assumed to continue being the primary potable water source in Plumas County, increased demand on County groundwater supplies could result in the decline of groundwater levels within portions of the County, in particular those experiencing the majority of future growth (i.e., Almanor, Mohawk, and Sierra Valley) and those having previously experienced significant groundwater declines (i.e., Sierra Valley Groundwater Basin). In addition to pumping, implementation of the proposed project could also affect groundwater levels indirectly, by reducing the net volume of stormwater that is able to recharge the underlying aquifer. Construction of new buildings, roads, and other hardscape surfaces under the proposed

**TABLE 4.6-10**
**PLUMAS COUNTY ESTIMATED NEW WATER DEMAND FROM URBAN USES UNDER THE PROPOSED PROJECT (2035)**

| | Primary Homes (Population) | Second Homes (Population) | Total Population (1) | 2035 New Water Demand (Acre Feet) (2) |
|---|---|---|---|---|
| Almanor Geographic Area | 425 (948) | 1,565 (3,490) | 4,438 | 863 |
| American Valley Geographic Area | 172 (384) | 170 (379) | 763 | 148 |
| Indian Valley Geographic Area | 55 (123) | 221 (492) | 615 | 120 |
| Mohawk Valley Geographic Area | 195 (435) | 1,316 (2,935) | 3,370 | 655 |
| Sierra Valley Geographic Area | 218 (486) | 428 (954) | 1,440 | 280 |
| **Total** | **1,065 (2,375)** | **3,700 (8,251)** | **10,626** | **2,066** |

Notes: (1) Population estimates see DEIR Chapter 3, page 3-22.
(2) Assumes per capita water use for Sacramento Valley River Area of 174 gallons per capita per day per California Water Plan Update 2009.

project would result in a net increase in impervious surface area, which limit the infiltration of stormwater into the underlying aquifer. Under circumstances where a considerable increase in impervious surfaces could occur, the sum total of reduced infiltration capacity associated with such surfaces can result in a net reduction in groundwater recharge. A net reduction in groundwater recharge would reduce the rate at which pumped groundwater is replenished, and could therefore result in further drawdown of the aquifer.

Several elements of the proposed project contain policies (see **Table 4.6-11**) that address groundwater and impervious surfaces. Policy 9.1.1 addresses preparation of a regional groundwater management plan to support sustainable management of groundwater resources. Policies W-9.1.2 and AG/FOR-8.6.1 supports the preservation of areas that provide important groundwater recharge benefits. Other policies from the Conservation and Open Space Element (policies COS-7.1.3 and 7.1.4) support the preservation of key open space areas to promote habitat preservation and groundwater recharge. The Water Resources Element also includes a variety of water conservation policies seek to minimize water consumption associated with planned growth. Policy W-9.8.2 requires the County to support new development and practices that use recycled water wherever practical. Policy W-9.8.3 requires the County to support compact forms of development that minimize the conversion of additional open space areas and support continued groundwater recharge activities.

**TABLE 4.6-11**
**MITIGATING POLICIES AND IMPLEMENTATION PROGRAMS**

| Conservation and Open Space (COS), Agriculture and Forestry (AG/FOR), and Water Resources (W) Elements | | | |
|---|---|---|---|
| Policies designed to minimize impacts to groundwater resources include the following: | | | |
| COS-7.1.3 | Collaborative Open Space Land Use Management | AG/FOR-8.6.2 | Preserve Water Resources |
| | | W-9.1.1 | Groundwater Management |
| COS-7.1.4 | Conservation Easements | W-9.1.2 | Groundwater Recharge Area Protection |
| AG/FOR-8.6.1 | Groundwater Recharge Areas | W-9.1.3 | Groundwater Demand Reductions |
| Policies designed to address water conservation and reuse include the following: | | | |
| W-9.8.1 | Water Conservation | W-9.8.4 | Existing Development |
| W-9.8.2 | Recycled Water Use | W-9.8.6 | Agricultural Water Use |
| W-9.8.3 | Compact Development | W-9.8.7 | Sustainable Water Practices |

### Significance Determination

The proposed project is a comprehensive update to the County's existing General Plan. At the 2035 Planning Horizon, there would be nearly 4,765 additional dwellings within the unincorporated County than exists today. As described above, groundwater recharge rates could be affected through several factors including increased impervious surfaces and increased demand on County groundwater supplies by future growth. Future growth could result in the decline of groundwater levels within portions of the County, in particular those basin areas experiencing the majority of future growth (i.e., Almanor, Mohawk, and Sierra Valley) and those having previously experienced significant groundwater declines (i.e., Sierra Valley Groundwater Basin). While most water purveyors (identified above in Table 4.6-5) report having sufficient water supply to meet both existing and future (2030) estimates of demand, current and future estimates of groundwater availability and groundwater recharge rates under future water year (wet and dry year) and growth scenarios are not available for all groundwater basins and/or water purveyors identified in Section 4.9 "Public Services, Recreation Resources, and Utilities" of this DEIR. Additionally, the specific locations of these future dwellings, their design, their relationship to other development and land uses, and the character of their surroundings cannot be accurately determined that far into the future. Consequently, implementation of the proposed project would increase water demand within the County. This additional development would further stress both groundwater supply and quality in various groundwater basins throughout the County. No additional mitigation is currently available to reduce the significance of this impact to a less than significant level. Therefore, this is a ***significant and unavoidable*** impact.

### Significance Conclusion

Overall, policies included as part of the proposed project have been developed to avoid and minimize adverse impacts on groundwater resources to the maximum extent practicable. However, the additional water demand and resultant impacts to groundwater resources would be an irreversible consequence associated with implementation of the proposed project through the 2035 Planning Horizon. No feasible mitigation is available to reduce the significance of this impact to a level of less than significant. Therefore, this remains a ***significant and unavoidable*** impact.

## Impact 4.6-5: Exceed Capacity of Stormwater System

| | |
|---|---|
| **LTS** | **The proposed project could alter existing drainage patterns resulting in increased erosion or siltation, or could increase surface runoff in a manner that would result in flooding on or off site.** |
| | **Level of Significance Before Mitigation**: *Less than Significant* |
| | **Required Additional Mitigating Policies and Implementation Measures***: None* |
| | **Resultant Level of Significance:** *Less than Significant* |

Implementation of the proposed project would result in development that could affect existing surface drainage patterns or the re-alignment of smaller drainages or waterways within the County. For example, the construction of new buildings, roads, and infrastructure provided for under the proposed project would require the grading of existing areas and, as a result, the alteration of existing drainage patterns. In addition, buildout of the proposed project would support a net increase in impervious surfaces. These changes to existing drainage patterns could result in unintended increases in stormwater runoff within the Planning Areas, as well as increased water ponding or flooding within areas not currently subject to these conditions. Additionally, increases in stormwater flow from locations within the Planning Areas could overwhelm existing downstream stormwater infrastructure, resulting in increased incidences of flooding or ponding.

Water flow pattern changes can also result in increases in erosion and sedimentation within and outside of the Planning Areas. For example, an increase in flow volumes or velocities, especially where stormwater flows become concentrated, could increase erosion capacity of existing or proposed drainages. Faster flowing waters generally hold the potential to carry a larger mass of sediment than slower flowing waters. Therefore, increases in stormwater volume, or changes in drainage patterns that could lead to the concentration of stormwater flows, especially where those flows would be directed over loose sediments, could result in increased erosion or sedimentation, either on site or downstream of individual Planning Areas.

The magnitude of these effects depends on the size, shape, and nature of the affected watershed; the total impervious surface in the watershed; the nature of the storm drain system; the natural geologic stability of the creek system; and the extent that the drainage system incorporates peak flow reduction methodologies (e.g., porous pavement, onsite stormwater detention, or inpipe detention). Typically, upland watersheds with short, steep drainage pathways and watersheds with brushland and forest covers are more susceptible to adverse effects from changed runoff patterns due to urbanization than are more gently sloping areas with grassland cover. In addition to watershed hydrologic changes from urbanization, the widespread conversion of forested and hillside areas to cultivated crops can significantly alter runoff and erosion (drainage patterns), damaging watershed processes—especially in watersheds with unstable geology.

As shown in the table below, policies included in the Water Resources and Public Health and Safety elements (see **Table 4.6-12**) would require implementation of adequate stormwater control facilities; ongoing storm drainage planning and management; requirements for demonstration of no net increase in stormwater flows associated with new development; prioritization of new storm drainage infrastructure

where deficient service exists; detention basin siting specifications; stormwater detention and drainage system design criteria, stormwater quality management, and other measures. Policies included in the Open Space and Conservation Element provide for the minimization of stormwater flows and water quality pollutants, including incorporation of Low Impact Development measures for stormwater and erosion management; and preservation of natural open space areas that provide drainage and flood control benefits.

**TABLE 4.6-12**
**MITIGATING POLICIES AND IMPLEMENTATION PROGRAMS**

| Conservation and Open Space (COS), Public Health and Safety (PHS), and Water Resources (W) Elements | | | |
|---|---|---|---|
| Policies designed to minimize sediment and erosion-related water quality impacts include the following: | | | |
| COS-7.3.2 | Soil Erosion and Vegetation Protection | W-9.2.4 | Wildfire and Water Quality Controls |
| COS-7.3.3 | Soil Limitations and Sewage Disposal | W-9.2.5 | Wastewater Standards and National Pollutant Discharge Elimination System (NPDES) |
| COS-7.3.4 | Erosion Control Plan | | |
| W-9.2.1 | Participation in Water Quality Objectives | W-9.2.6 | Erosion and Sediment Control Measures |
| W-9.2.2 | Background Water Quality | | |
| Policies designed to minimize off-site flooding and erosion-related impacts include the following: | | | |
| W-9.7.1 | Natural Stormwater Drainage Courses | PHS-6.4.5 | Multi-Purpose Flood Control Measures |
| W-9.7.2 | Downstream Peak Flows | PHS-6.4.6 | Flood Control Design |
| W-9.7.3 | Maintenance of Stormwater Runoff Systems | PHS-6.4.7 | Limit Surface Runoff |
| W-9.7.4 | Runoff Quality | PHS-6.4.8 | Storm Water Retention/Detention and Groundwater Infiltration |
| W-9.7.5 | Best Management Practices | | |
| W-9.7.6 | Interagency Cooperation | | |

### Significance Determination

The proposed project is a comprehensive update to the County's existing General Plan. Adoption and implementation of the proposed policies and implementation programs under the proposed project (in addition to current local, state, and federal stormwater, grading, and erosion control regulations described above) would ensure that water quality impacts resulting from increased soil erosion and siltation related to residential, commercial, industrial, and public uses consistent with the proposed project would be reduced to a less-than-significant level. Additionally, implementation of the above mentioned policies will also ensure that potential impacts of future development of on- and offsite drainage infrastructure would be reduced to a less-than-significant level. Although flooding would continue to occur in flood-prone areas, this is considered an existing condition for the purposes of CEQA review, and the policies and programs of the proposed project would ensure that flooding in these areas would not increase.

This impact is considered ***less than significant***. No additional mitigation measures are required.

### Significance Conclusion

Implementation of the proposed project would not result in significant water quality or drainage impacts and therefore associated impacts would be ***less than significant***.

## Impact 4.6-6: Housing within a 100-Year Flood Hazard Area

| | |
|---|---|
| **LTS** | **The proposed project could result in the construction of housing within areas that are subject to 100-year flooding.** |
| | **Level of Significance Before Mitigation**: *Less than Significant* |
| | **Required Additional Mitigating Policies and Implementation Measures***: None* |
| | **Resultant Level of Significance:** *Less than Significant* |

As discussed previously, delineated flood zones are located throughout the County and associated with local watercourses (see Figure 4.6-2 above). For the most part, all of the Planning Areas where facilities could be constructed are located outside of the existing floodplain areas, as defined by FEMA. However, under limited circumstances, the potential for housing construction could occur within an area subject to 100 year flooding, which could expose people to flooding hazards.

As shown in the table below, policies included in the Public Health and Safety Element (see **Table 4.6-13**) support the protection of housing and residents from risks associated with flooding. For example, Policy PHS-6.4.1 requires the County to continue participation in the National Flood Insurance Program. Additionally policies require the County to maintain eligibility for flood insurance; developments are required to provide a minimum of 100-year flood protection, and development would be regulated in accordance with local, state, and federal requirements with respect to flooding. .

**TABLE 4.6-13**
**MITIGATING POLICIES**

| Public Health and Safety (PHS) Element | | | |
|---|---|---|---|
| Policies designed to minimize flooding impacts include the following: | | | |
| PHS-6.4.1 | Coordination with Federal Emergency Management Agency, United States Army Corps of Engineers and Department of Water Resources Division of Flood Management | PHS-6.4.3 | New Parcels in Floodplain |
| | | PHS-6.4.4 | Floodplain Development Restrictions |
| | | PHS-6.4.5 | Multi-Purpose Flood Control Measures |
| | | PHS-6.4.6 | Flood Control Design |
| PHS-6.4.2 | Development in Floodways and Dam Inundation Areas | PHS-6.4.7 | Limit Surface Runoff |

### Significance Determination

Development consistent with the proposed project within designated 100-year flood hazard zones is discouraged by proposed policies. Any such development would be subject to development standards aimed at minimizing on- and offsite flood damage. Implementation of the above policies and their corresponding implementation programs would reduce potential impacts associated with development within flood hazard areas to a less-than-significant level.

This impact is considered ***less than significant***. No additional mitigation measures are required.

### Significance Conclusion

Implementation of the proposed project would not result in significant water quality or drainage impacts and therefore associated impacts would be ***less than significant***.

## Impact 4.6-7: Impeding or Redirecting Flood Flows

| | |
|---|---|
| **LTS** | **The proposed project could result in the construction of facilities within areas that are subject to flooding, which could redirect or impede flood flows.** |
| | **Level of Significance Before Mitigation**: *Less than Significant* |
| | **Required Additional Mitigating Policies and Implementation Measures***: None* |
| | **Resultant Level of Significance:** *Less than Significant* |

For the most part, all of the Planning Areas where facilities could be constructed are located outside of existing floodplain areas, as defined by FEMA. However, the installation of any such facilities within the 100-year floodplain, unless properly designed and managed, could result in interference with existing flood flows. Such effects could be detrimental to existing or proposed uses, where flooding does not presently occur, but could as a result of implementation of new development.

As shown in the table below, policies included in the Water Resources Element (see **Table 4.6-14**) would require implementation of adequate stormwater control facilities; ongoing storm drainage planning and management; requirements for demonstration of no net increase in stormwater flows associated with new development; prioritization of new storm drainage infrastructure where deficient service exists; detention basin siting specifications; stormwater detention and drainage system design criteria, stormwater quality management, and other measures. Policy W-9.2.6 provides for the minimization of stormwater flows and water quality pollutants, including incorporation of Low Impact Development measures that provide drainage and flood control benefits. Additional policies from the Public Health and Safety Element (PHS-6.4.1 through PHS-6.4.7) require new development within flood hazard zones to be constructed in accordance with applicable regulations in order to minimize potential flood damage. With implementation of the water flood risk/drainage measures identified under these policies, this impact is considered ***less than significant***.

**TABLE 4.6-14**
**MITIGATING POLICIES AND IMPLEMENTATION PROGRAMS**

| Public Health and Safety (PHS) and Water Resources (W) Elements | | | |
|---|---|---|---|
| Policies designed to minimize off-site flooding and erosion-related impacts include the following: | | | |
| W-9.2.6 | Erosion and Sediment Control Measures | W-9.7.6 | Interagency Cooperation |
| W-9.7.1 | Natural Stormwater Drainage Courses | PHS-6.4.5 | Multi-Purpose Flood Control Measures |
| W-9.7.2 | Downstream Peak Flows | PHS-6.4.6 | Flood Control Design |
| W-9.7.3 | Maintenance of Stormwater Runoff Systems | PHS-6.4.7 | Limit Surface Runoff |
| W-9.7.4 | Runoff Quality | PHS-6.4.8 | Storm Water Retention/Detention and Groundwater Infiltration |
| W-9.7.5 | Best Management Practices | | |
| Policies designed to minimize flooding impacts include the following: | | | |
| PHS-6.4.1 | Coordination with Federal Emergency Management Agency, United States Army Corps of Engineers and Department of Water Resources Division of Flood Management | PHS-6.4.3 | New Parcels in Floodplain |
| | | PHS-6.4.4 | Floodplain Development Restrictions |
| | | PHS-6.4.5 | Multi-Purpose Flood Control Measures |
| | | PHS-6.4.6 | Flood Control Design |
| PHS-6.4.2 | Development in Floodways and Dam Inundation Areas | PHS-6.4.7 | Limit Surface Runoff |

### Significance Determination

Development consistent with the proposed project within designated 100-year flood hazard zones is discouraged by proposed policies. Any such development would be subject to development standards aimed at minimizing on- and offsite flood damage. Implementation of the above policies and their corresponding implementation programs would reduce potential impacts associated with development within flood hazard areas to a less-than-significant level.

This impact is considered ***less than significant***. No additional mitigation measures are required.

### Significance Conclusion

Implementation of the proposed project would not result in significant water quality or drainage impacts and therefore associated impacts would be ***less than significant***.

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## Impact 4.6-8: Dam Inundation and Flood Hazards

| | |
|---|---|
| **SU** | **The proposed project could result in the development of areas that are located within an existing dam failure inundation zone.** |
| | **Level of Significance Before Mitigation**: *Potentially Significant* |
| | **Required Additional Mitigating Policies and Implementation Measures***: No Additional Mitigation Available* |
| | **Resultant Level of Significance:** *Significant and Unavoidable* |

The County has several large regulated dams within its boundaries whose potential failure would cause severe inundation. As discussed above under the Environmental Setting section, in the extremely unlikely event of failure of these facilities, portions of several Planning Areas could be inundated, as shown in Figure 4.6-2. Implementation of the proposed project would result in the construction of additional housing, commercial, industrial, and other uses near several of the dam inundation areas. Implementation of the proposed project would result in a net increase in the number of persons located within a dam failure inundation zone; however, the project would not directly or indirectly contribute to a potential failure of either dam.

### Significance Determination

As stated above, the County will implement a variety of policies designed to address floodplain issues by requiring the preservation of floodplain areas, permitting development that addresses floodplain issues, updating FEMA flood maps, and updating flood management requirements. However, implementation of the proposed project would still result in a net increase in the number of persons located within a dam failure inundation zone. Therefore, implementation of the proposed project including the adoption of the policies and implementation programs listed above would still result in a ***significant and unavoidable*** impact

### Significance Conclusion

Therefore, implementation of the proposed project including the adoption of the policies and implementation programs listed above would still result in a ***significant and unavoidable*** impact. No additional technologically or economically feasible mitigation measures are currently available to reduce this impact to a less than significant level.