

3.8 Geology and Soils

This section provides background information regarding the hazards relating to the geology and soils present within the County, the regulations and programs relating thereto, and an assessment of the potential impacts of implementing the proposed General Plan Update. No specific key policy issues relating to geology and soils conditions have been identified through the General Plan Update process. Existing geology and soils conditions are described in Chapter 10: Geologic, Seismic, and Soil Hazards, of the *Natural Resources and Hazards Report*, September 2002 (Appendix D), which includes a discussion of bedrock geology and geologic hazards in the County. This report, which is available for review at the Planning Division public counter at 3015 H Street in Eureka during normal business hours, or for download at <http://humboldt.gov/571/Background-Reports>, is incorporated herein by reference, and summarized below. Where any discrepancies may exist between the referenced material and the material presented here, the material presented here should be considered as the most up to date and is to be relied upon for the environmental setting and analyses.

3.8.1 Geology and Soils - Environmental and Regulatory Setting

Geologic, Seismic, and Soil Hazards

Humboldt County is located within a seismically active area of California. The County is located within the two highest seismic risk zones of the California Uniform Building Code. Cape Mendocino (offshore of the County) experiences the highest concentration of earthquake events in the continental United States. In addition to causing ground shaking, an earthquake can trigger other natural disasters such as fire, landslides, and flooding, resulting in loss of life and property damage. Seismic hazards in the County include earthquake ground shaking, surface fault rupture, liquefaction, and tsunami potential in the coastal zone areas. Geologic hazards that are not specifically related to earthquakes include landslides and unstable soils.

Bedrock Geology

Two geologic provinces cover Humboldt County: the dominant Coast Ranges province in the central and southwest sections of the County, and the Klamath Mountains province in the northeast. The Coast Ranges province is comprised mainly of the Franciscan complex inland, sand, and other alluvial deposits located closer to the coast. The Klamath Mountains is comprised generally of older rocks, many of which are sedimentary (e.g., sandstone, chert, slate, and schist). The South Fork Mountain Ridge generally divides the two provinces. The predominant rock types are the Franciscan Complex and schists, covering over a million acres in the County, and the Tertiary-Cretaceous Coastal Belt rocks, covering 340,000 acres. The Franciscan Complex is a suite of rocks that originated on the deep sea floor and were later pushed up against the continental margin along the coast of California through plate tectonic forces. The following paragraphs summarize the geology of each planning watershed. Additional geologic data is provided for the planning watersheds in Volume II of the Natural Resources and Hazards report.

Eel River Basin. The Eel River basin is a mountainous area uplifted in the post-Miocene era and underlain by a deformed, faulted, locally sheared and, in part, metamorphosed accumulation

of subducted continental margin deposits. About 99 percent of the bedrock underlying the basin is sedimentary and metasedimentary.

The four planning watersheds in the Eel River Basin (South Fork Eel, Lower Eel, Middle Main Eel, and Van Duzen) are generally comprised of highly erodible rocks, including substantial amounts of Franciscan Complex rocks. Over 85 percent of the Middle Main Eel and 65 percent of the Van Duzen are Franciscan Complex. The Lower Eel and South Fork Eel planning watersheds contain some Coastal Belt rocks. Both the Lower Eel and South Fork Eel are comprised of over 50 percent Cenozoic Sedimentary rocks.

Klamath-Trinity Basin. The Klamath-Trinity Basin, composed of the Lower Klamath, Lower Trinity, and South Fork Trinity planning watersheds, is the only basin with notable amounts of plutonic and metavolcanic rocks. The Humboldt County portion of the basin encompasses the North Coast Ranges province. In the North Coast Ranges, landslides and soil slips are common due to the combination of sheared rocks, shallow soil profile development, steep slopes, and heavy seasonal precipitation. In addition, both the Lower Klamath and South Fork Trinity have substantial amounts of Franciscan Complex rocks. Jurassic marine sediments are the predominant bedrock type in the Lower Trinity planning watershed.

Mad-Redwood Basin. The geology of the Mad-Redwood Basin is complex and variable. The basin includes the Mad River, Redwood Creek, Eureka Plain, and Trinidad planning watersheds which all differ in their bedrock composition. Mad River, Redwood Creek, and Trinidad are composed primarily of Franciscan rock types, while Eureka Plain is mostly younger sedimentary rock.

Cape Mendocino. About 90 percent of the Cape Mendocino planning watershed is underlain by Tertiary-Cretaceous Coastal Belt rock. A highly active tectonic setting, combined with sensitive terrain and high rainfall amounts, make Cape Mendocino one of the most erodible watersheds in the state.

Seismic Hazards

Primary seismic hazard concerns include potential ground shaking and ground rupture along the surface trace of faults. Secondary seismic hazards are caused by the interaction of ground shaking with soft or unstable soils, resulting in liquefaction, settlement, and landslides. Tsunamis are also addressed in this section, as a secondary effect of seismic activity.

Faulting and Surface Rupture. A fault is a fracture in the crust of the earth along which rocks on one side have moved relative to those on the other side. Most faults are the result of repeated displacements over a long period of time. A fault trace is the line on the earth's surface defining the fault. Surface rupture occurs when movement on a fault deep within the earth breaks through to the surface. Not all earthquakes result in surface rupture. For example, the Loma Prieta Earthquake of 1989 caused major damage in the San Francisco Bay Area but the movement deep in the earth did not break through to the surface.

Fault rupture usually follows preexisting faults, which are zones of weakness. Rupture may occur suddenly during an earthquake or slowly in the form of fault creep. Sudden ruptures are more damaging to structures because they are accompanied by shaking.

The offshore and coastal regions of Humboldt County contain one of the most geologically complex areas in California. Three major faults, including the San Andreas, the Mendocino fracture zone, and the southern end of the Cascade subduction zone, all meet in what is known

as a “triple junction.” Three major plates of the Earth’s surface are defined and separated by these three faults: Pacific plate, Gorda plate, and North American plate. As a result of this unique geologic setting, the North Coast is vulnerable to several types of earthquakes from a variety of sources. Because a triple junction has to accommodate plate motion in several directions, its faulting is varied and its seismicity is high. The geometry of the triple junction renders it unstable, resulting in a likelihood that it will change with time. Because much of this area lies under the Pacific Ocean, geological information is limited.

Surface fault rupture is a particular type of seismic hazard that is specifically addressed by the California Alquist-Priolo Earthquake Fault Zoning Act. This act generally requires disclosure and avoidance. Humboldt County has a number of fault zones mapped under this law. The County utilizes a combining zone designation (G) to identify areas where special geologic study is required to identify the precise location of active fault traces to ensure structures for human occupancy are not placed astride them.

The Alquist-Priolo Special Studies Zones Act of 1972 is the primary state legislation related to earthquake fault zones. The Act seeks to reduce fault rupture hazards by regulating development near active faults and preventing construction of buildings used for human occupancy on the surface trace of active faults. According to the Act, no buildings intended for human occupancy may be constructed on or within 50 feet of an active fault trace. For the purposes of the Act, an active fault is one that has ruptured in the last 11,000 years. Surface rupture is the most easily avoided seismic hazard. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. The designated zone extends 200 to 500 feet on both sides of known active fault traces. Development proposed within an Alquist-Priolo zone is subject to a detailed geologic investigation.

Seismicity. The County is located within the two highest of five seismic risk zones specified by the California Uniform Building Code, and offshore Cape Mendocino has the highest concentration of earthquake events anywhere in the continental United States. The area near Cape Mendocino is a complex, seismically active region, where three crustal plates—the Pacific Plate, the Gorda Plate, and North American Plate—intersect to form the Mendocino Triple Junction.

The Juan de Fuca Plate, Gorda Plate, and Explorer Plate subducting beneath the North American Plate, form the Cascadia Subduction Zone, which runs offshore of Humboldt and Del Norte Counties north through Oregon and Washington states. Recent investigations have shown that this system has moved in unison in a series of great earthquakes (magnitude 8 to 9) over the last 20,000 years, most recently about 300 years ago, with events occurring at 300–500 year intervals.

The following is a brief description of each of the major fault zones that are present in Humboldt County from the Natural Resources and Hazards Report:

San Andreas Fault. The San Andreas Fault system is located south of the triple junction (just offshore of the southern section of the County), where the Pacific plate is moving at a rate of about two inches per year to the northwest (relative to North America). The irregular sliding motion, which is almost entirely horizontal, deforms the rocks along the plate boundary until the rocks can no longer withstand the strain. Then, when the rocks shift, energy is released along the fault, causing earthquake shaking.

Falor-Korbel (Mad River) Fault. This fault zone trends northwest to southeast through the central region of the County. Its northern end is on the coast near McKinleyville and the fault trace roughly parallels the Mad River.

Trinidad and Big Lagoon Faults. The Trinidad Fault is located near Trinidad, extending northwest to the coast near Trinidad State Beach. The Trinidad fault is potentially capable of generating an earthquake with a moment magnitude of 7.3. The Big Lagoon fault bisects Big Lagoon, north of Patrick's Point State Park.

Cascadia Subduction Zone. The forces are very different north of the triple junction, where the Gorda plate and its northern extension, the Juan de Fuca plate, collide with the North American plate. The Gorda plate slowly descends beneath the North American plate along the Cascadia Subduction Zone that extends approximately 750 miles north to the Canadian border. It is the first of a string of subduction zones to ring the Northern Pacific. Downward and eastward motion of the Gorda plate along this subduction zone dates back to at least 6 million years ago and continues today; this movement produced the volcanic Cascade Range in Washington, Oregon, and northern California.

Near its southern end, the subduction zone curves onshore, exposing nine major thrust faults along the Humboldt County coastline in the vicinity of Cape Mendocino. Thrust faults differ from the horizontally moving San Andreas Fault. Geologists have shown that during the last million years, the rocks on top of this group of North Coast thrust faults have been pushed a mile or more to the northeast relative to the rocks beneath.

The major active fault zones in the Humboldt area include the Cookskie and Petrolia shear zones. The Cookskie shear zone is a poorly defined section of sheared and broken rock that extends easterly from Punta Gorda. The Petrolia shear zone is a similar structure extending southeast through Petrolia along the Mattole River.

Until recently, scientists did not consider the Cascadia Subduction Zone a major earthquake threat. Prior to the April, 1992 Cape Mendocino earthquake, the Cascadia plate boundary was not known to have produced a major earthquake during the past 150 years. New evidence, however, indicates that the subduction zone is active and capable of producing great earthquakes (magnitude 8 to 9). Great earthquakes may occur as often as every 300 or 400 years, on average. There is good evidence that the last great earthquake on the Cascade subduction zone occurred about 300 years ago. However, the probability of such an earthquake occurring in the next few decades has not been estimated.

The above described seismic setting has the potential to cause significant ground shaking, leading to: (1) a serious liquefaction and subsidence hazard, particularly around the muds and sands of Humboldt Bay; (2) a nearshore tsunami striking the coast within 15 minutes of ground-shaking; (3) a significant landslide hazard countywide; and (4) surface fault rupture along the San Andreas, and possibly along the Little Salmon and Mad River Fault zones, and other active or potentially active faults in the County.

Since 1997, the California Uniform Building Code has required that in Seismic Zone 4 (most of Humboldt is in this zone), each listed ground motion fault shall be assigned a near-source seismic factor, to be used in building design. Applying these factors to building construction substantially increases building strength, and for large multi-story buildings, cost. In Humboldt County, there are "A" and "B" designated fault zone areas, with "A" zones (including the San Andreas and Little Salmon Faults) having more stringent design requirements.

Ground Shaking and Structural Damage. The fault systems in Humboldt County are historically very active with movement on the fault occurring in the last 200 years according to the Natural Resources and Hazards Report, "Ground Shaking and Structural Damage", Page 10-12), and thus are considered to have the potential to cause future earthquakes, surface rupture, and ground failure. Surface rupture is the direct effect of activity along an active fault. However, most damage to structures is caused by ground shaking, which may occur throughout a wide area (not just along the fault line). A logarithmic scale is used to measure earthquake magnitude, where each unit of measurement represents an increase of about 30 times in the energy released. Figure 3.8-1, Probabilistic Ground Shaking, shows the areas within Humboldt County that are more likely to experience high levels of ground acceleration, or shaking, during a seismic event over the next 50 years.

About 25 percent of all earthquake energy released in California during historic times has occurred along the Humboldt County coast. The size, location, and frequency of past earthquakes indicate what to expect in the future. Strong earthquakes with epicenters onshore have recurred about every 20 years.

Recent earthquake activity includes several large-scale events in the Cape Mendocino area. In 1992, three powerful earthquakes rocked the Cape Mendocino area (magnitudes 7.1, 6.6, and 6.7). Injuries and damage occurred in the nearby towns of Ferndale, Petrolia, Fortuna, Rio Dell, and Scotia, and the earthquakes were felt as far north as southern Oregon and over much of northern California. The earthquakes ranged in magnitude from 6.2 to 6.9. A magnitude 6.5 earthquake occurred in January 2010 causing tens of millions of dollars in structural damage in Humboldt County, largely in the City of Eureka.

Ground shaking is responsible for most loss of life and property damage during an earthquake and therefore it is important to accurately evaluate shaking hazards as a basis for improving building designs and standards. Shaking intensity depends on distance from the earthquake source and on local ground conditions (soil type plus slope). In addition to faults, the presence of soft sediments in the area around Humboldt Bay contributes to higher intensity ground shaking.

Recent work by the United States Geological Service (USGS) on ground shaking severity has led to the preparation of new building codes for some areas. State regulations regarding seismic hazards are contained in Title 24, Part 2, of the California Uniform Building Code. Recordings conducted during the 1989 Loma Prieta earthquake confirmed previous USGS projections that ground shaking is much more violent on soft sediments than on bedrock. According to the USGS, these records provided a firm basis for revising building codes to reflect the need for extra strength in structures built on soft ground. Because earthquake-resistant design and construction are essential to reducing earthquake losses, these Code revisions are a major step toward greater earthquake safety.

The extent of structural damage from ground shaking depends on several factors, including geology of the area (e.g., soil types), duration and intensity of the fault movement, and structure design and construction characteristics. Buildings most vulnerable to ground shaking damage are older, unreinforced masonry buildings. Reinforced concrete structures constructed under less stringent building codes (prior to 1965) have a much higher chance of fracturing. Single-family homes constructed of wood frames are one of the safest building types. Their ability to withstand large earthquakes can be further improved with foundation bolts, shear walls, and other strengthening devices.

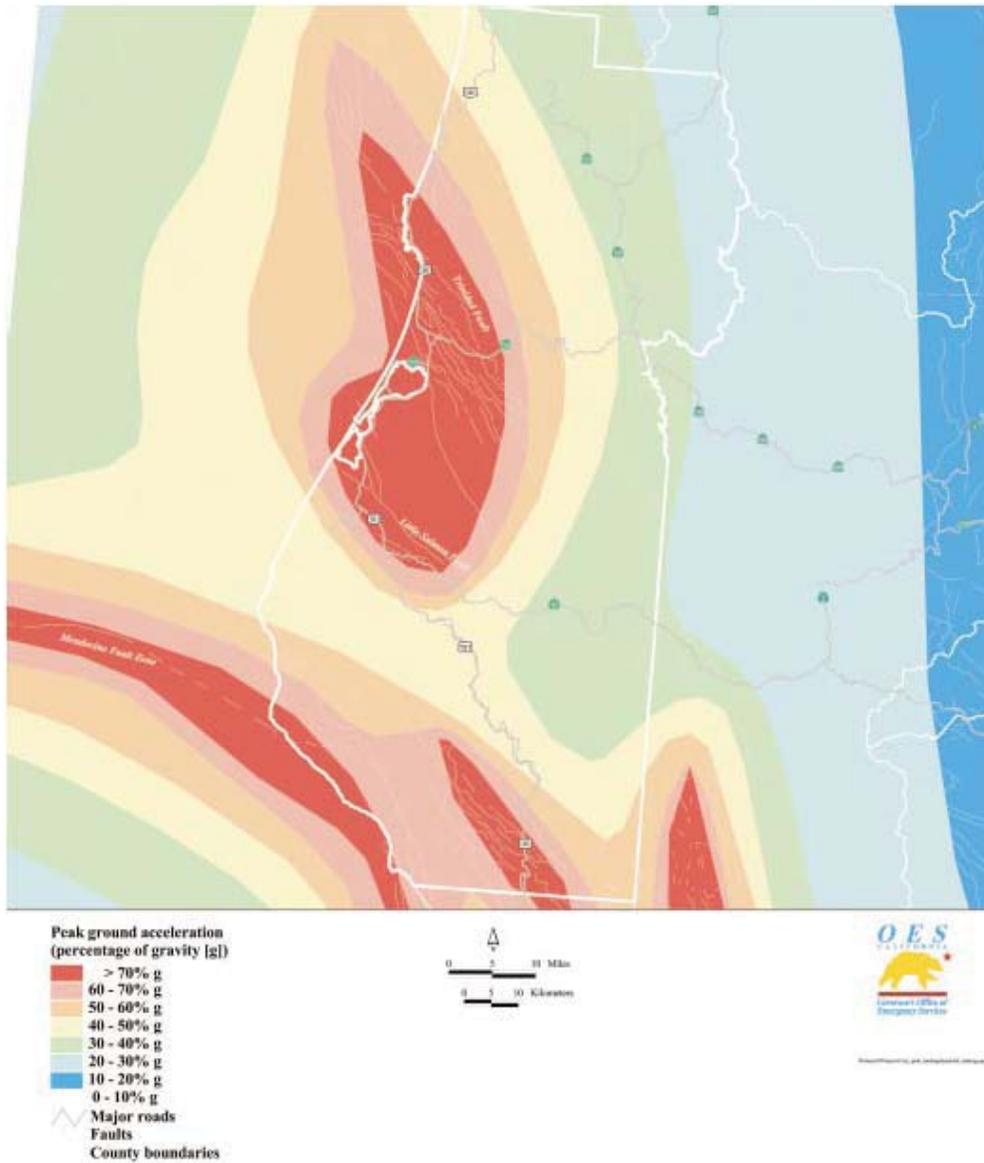
Liquefaction. Ground shaking gives rise to two secondary natural hazards, liquefaction and landsliding (landslides are discussed under Soil and Slope Hazards below). When shaken strongly, unconsolidated sandy deposits that are saturated with water can liquefy and form a slurry. This process is called “liquefaction.” Liquefaction involves a sudden loss in strength of a water-saturated soil, and results in temporary transformation of the soil into a fluid mass. The soil loses its capacity to bear the weight of buildings or to resist flowing downslope, even on nearly flat ground. Liquefaction may result in sinking, tilt, distortion, or destruction of buildings and bridges, rupture of underground gas lines and water mains, and cracking and spreading of the ground surface. To mitigate such hazards, soils engineering investigations can be required to determine appropriate foundation and building design.

Liquefaction potential depends on groundwater depth and alluvial thickness. Correspondingly, recent alluvial floodplain soils exhibit the highest liquefaction hazard. Research into the process and consequences of liquefaction in past earthquakes has linked liquefaction to hydrologic and geologic settings that are characterized by water-saturated, cohesionless, granular materials situated at depths of less than 50 feet. The following types of areas are identified as being favorable for liquefaction:

- Areas known to have experienced liquefaction during historic earthquakes.
- Areas of uncompacted fills containing liquefaction-susceptible-material that are saturated, nearly saturated, or may be expected to become saturated. Areas where sufficient existing geotechnical data and analyses indicate that the soils are potentially liquefiable.
- Areas containing young (less than 15,000 years) soils where there is limited or no geotechnical data.

Specific areas of high liquefaction potential are located near Humboldt Bay, coinciding with the presence of the bay's muds and sands.

Figure 3.8-1. Probabilistic Ground Shaking, 10 Percent Probability of Being Exceeded in 50 Years, 2002 Natural Resources and Hazards Report.



Data Sources:
 Probabilistic Seismic Hazard Assessment for the State of California, California Division of Mines and Geology CDMSHA 02-06-02, U.S. Geological Survey HP 706-706, 1996.
 Digital Database of Faults from the Fault Activity Map of California and Adjacent Areas, CSDEA, 2000, 1994.
 Major roads from Thomas Brothers Maps, Inc., 2002, 2001.

Figure 10-2
Probabilistic Ground Shaking, 10% Probability of Being Exceeded in 50 Years

Tsunamis. A tsunami, or large sea wave, may be produced by movement of the ocean floor resulting from either a nearby or distant earthquake. Tsunamis (and storm surges) are coastal flooding concerns; although rare, they are potentially catastrophic events. Tsunamis have historically been rare in California. Since 1812, California has experienced fifteen tsunamis with wave heights greater than three feet. Seven of these were destructive and eleven initiated from distant earthquakes near Alaska, Chile and Japan. The worst damage in California resulted from the 1964 Alaskan earthquake, some 1,500 miles away. The earthquake generated a tsunami that caused 12 deaths and severely damaged the harbor area at Crescent City in Del Norte County.

A tsunami resulting from the April 1992 Cape Mendocino earthquake reached Eureka in about 20 minutes, with wave heights of about one foot. The tsunami reached Crescent City in 50 minutes and was detected in Oregon, the San Francisco Bay Area, Santa Barbara, and Hawaii. Although not destructive, this event illustrates both how quickly a wave can arrive at nearby coastal communities and how long the danger period can last. The first wave arrived at Crescent City in less than an hour, but the highest waves, about one-and-a-half-feet tall, arrived nearly four hours later. Abnormally large waves continued for more than eight hours.

On March 11, 2011, a tsunami was triggered by the 9.0 Tōhoku earthquake in Japan that exceeded 8.0 feet in Crescent City. This tsunami destroyed the Crescent City harbor, sinking 35 boats and resulting in between \$12 and \$16 million in damage. Earthquakes in Russia's Kuril Islands in 2006 and 2007 resulted in tsunami runups of approximately seven feet in Crescent City. The 2006 tsunami in Crescent City was reported to behave like a river surging back and forth and resulted in approximately \$9.2 million in damage to the harbor.

Table 3.8-1, Tsunamis That Have Affected Humboldt County, displays information relating to tsunamis that have occurred in Humboldt County, and is derived from Table 18-1, Tsunamis That Have Affected North Coast California, from the Hazard Mitigation Plan. Although not in this table, Humboldt County experienced a small tsunami following the February 27, 2010 earthquake in Chile that resulted in unusual wave action in Humboldt Bay and was observed at the North Spit tidal gauge.

Table 3.8-1. Tsunamis That Have Affected Humboldt County.

Date	Origin of Tsunami	Impacted Areas	Runup (meters)	Observations/comments
3/19/1855	N. California	Humboldt Bay	Observed	Water in the bay agitated for 1 hour
4/25/1992	Northern CA Cape Mendocino	Humboldt Bay	0.3 Observed	Waves arrived at Humboldt Bay about 20 minutes after ground shaking.
		Clam Beach	0.6	Water level changed several feet
		Trinidad		Cars were struck on the beach
3/11/11	Japan	Humboldt Bay and coastline	Observed	

Source: Humboldt Operational Area Hazard Mitigation Plan (HMP), 2007; Humboldt County Community Development Services, 2011.

Very large earthquakes in other areas of the Pacific Ocean may generate tsunamis that could affect Humboldt County. Tsunami waves in the Pacific Ocean travel at hundreds of miles per hour and can reach California several hours after the earthquake. The International Tsunami Warning System monitors ocean waves after any Pacific earthquake with a magnitude larger than 6.5. If waves are detected, warnings are issued to local authorities who can order evacuation of low-lying areas, if necessary.

Smaller tsunamis have occurred along the North Coast and local earthquakes can produce damaging tsunamis that give very little warning time. The geologic record indicates that the Cascadia Subduction Zone has been a near-shore source for a number of significant tsunami events affecting Humboldt County, the most recent occurring about 300 years ago. The coastal area that could be affected by a tsunami is shown in the Natural Resources and Hazards Report Volume 1, Figure 10-4. This area is called the tsunami "run-up zone."

Soil and Slope Hazards

Soil Types

Agricultural Soils. There are a variety of soil types in Humboldt County. Some of the more abundant agricultural and lowland soils found in the County are the Ferndale series, a deep, well-drained soil formed on recent flood plains; the Bayside and the Loleta series, both deep, poorly drained soils found in depressed areas or on nearly level alluvial fans; and the Rohnerville, Carlotta and Hookton soils series, all moderately well-drained soils.

Rohnerville soils are found on relatively flat, high marine terraces. The Hookton soils are on sloping, dissected marine terraces and the Carlotta soils are found on flat, low-lying terraces. Most of these agricultural soils are rated 80-100 (good to excellent productivity) in the Storie Index of agricultural productivity. The exception is the Bayside soils where drainage problems may reduce agricultural potential.

Forest Soils. The forest soils of the County are, in general, medium textured, acid in reaction, and generally increasing in acidity with depth. They are permeable and well drained. In the lowlands, forest soils are formed on alluvial flood plains or low-lying terraces. Here, they are either unclassified or of the Carlotta and Ferndale groups. The most superlative old growth redwood groves are found on forest soils.

Grassland Soils. The general characteristics of grassland soils vary widely. They range from shallow loamy soils to deep clay soils. Their permeability ranges from moderate to slow. The general nutrient level of these grassland soils is higher than that of the adjacent forest soils. The major portion of these soils is intermingled with other soils in the Douglas fir zone beyond the fog belt. Some of these soils are formed on Franciscan parent material. Many of these are found in the shear zone or fault gouge material or on the melange material of the Franciscan Formation. This parent material weathers rapidly, forming a grey-blue clay subsoil (commonly called "blue goo") that tends to slip when wet. Thus, because of the parent material, these soils are found in landslide topography.

Woodland Soils. Most of the woodland soils are inland beyond the cool, foggy belt. They are intermingled with the conifer forest soils of the Douglas fir belt and the adjacent grassland soils. These are shallow soils, usually well drained, but permeability may be slow in some locations. The natural nutrient level of these soils tends to be somewhat higher than for the neighboring forest soils. Because the parent material is predominantly Franciscan melange, one should expect these soils to be relatively unstable.

In contrast to the information known or available on the County's bedrock geology, the available soils information is quite detailed. Soil-vegetation maps prepared by the California State Cooperative Soil-Vegetation Survey are available for Humboldt County at the 7.5-minute scale. These maps describe vegetation and soils, including parent rock materials, soil depth, erosion, and slope.

Slope Stability and Landslides

Slope stability refers to the landslide susceptibility of slopes composed of natural rock, soils, artificial fill, or combinations thereof. Landslides move along surfaces of separation by falling, sliding, and flowing, giving rise to many characteristic features. The features range in appearance from being clearly discernible, largely unweathered and uneroded, to highly weathered and eroded, recognized only by topographic configurations.

Landslides are characteristically abundant in areas of high seismicity, steep slopes, and high rainfall, but may be triggered by any or a mixture of the following: (1) type and structure of earth materials; (2) steepness of slope; (3) water; (4) vegetation; (5) erosion; and (6) earthquake-generated ground shaking.

The characteristics listed above are representative of the many complex variables contributing to the formation of landslides. The prediction of slope failure at a specific site, therefore, requires an analysis of all possible factors. Relative slope stability maps originally prepared as part of the Framework General Plan provide general identification of the relative slope stability hazard associated with various bedrock types. These maps do not identify the hazards at particular sites but indicate the relative likelihood of site instability.

Steep slopes, which are shown in Natural Resources and Hazards Report Volume 1, Figure 10-3, occur in a large portion of the County, including 775,203 acres in the 30–50 percent range and 531,179 acres with over 50 percent slopes. Slope information for each planning watershed is shown in Natural Resources and Hazards Report Volume 1, Table 10-2, (Appendix D), available at <http://humboldt.gov/571/Background-Reports>.

Soil instability is often reflective of the parent bedrock material. Soils found in Humboldt's landslide topography often include *mélange* materials of the Franciscan Formation, which breaks down into clay subsoil that tends to slip when wet.

Landslides include earthflows, debris slides and flows, and translational/rotational slides. Many landslides are complex and are subject to more than one type of landslide process. Landslides are not depicted on a countywide basis in the Natural Resources and Hazards Report, but both active and dormant slides are shown on the constraints maps in Chapter 14 of the Natural Resources and Hazards Report Volume 1. Active slides are those areas that are presently moving or have recently moved, as indicated by the presence of distinct topographic features (e.g., sharp barren scarps, cracks, and tipped trees) where major revegetation has not occurred. Dormant slides demonstrate little evidence of recent movement; slide features have been modified by weathering and erosion and vegetation has been reestablished.

A common occurrence in Humboldt County, particularly in the Cape Mendocino watershed area, is high sedimentation rates due to the high tectonic uplift and high stream incision rates into relatively weak bedrock units (Natural Resources and Hazards Report, Page 10-19). This combination of forces has produced a high incidence of landsliding adjacent to stream channels, including large slump-earthflows and extensive zones of debris sliding. Additional

details on stability issues in specific planning watersheds are provided in Volume II of the Natural Resources and Hazards Report.

Septic Suitability

A septic system is a biological method of wastewater treatment that can be very effective when it has been carefully designed and installed, as well as properly used and maintained. Septic systems can be sized to treat wastewater generated by single or multiple family dwellings as well as commercial and industrial facilities. Septic systems are designed to provide partial treatment of wastewater, with disposal of liquid wastewater to the soil in such a manner that it is further treated by soil organisms so that contaminants do not reach groundwater or streams.

Septic systems are used throughout Humboldt County in areas without municipal wastewater systems. Section 3.3 Utilities and Service Systems, estimates the number of houses within the service area of municipal wastewater system and the number of houses that likely utilize septic systems, or on-site wastewater systems, by planning watershed. It is estimated that there were approximately 17,653 homes utilizing on-site systems in 2010, with the largest number of systems in the Eureka Plain (4,068). See Table 3.3-7. Wastewater Service by System Type in Humboldt County in Section 3.3 (Utilities and Services) for a listing of the approximate number of septic systems by watershed.

A septic system typically consists of a septic tank and a leaching area. The tank is usually 1,000-2,000 gallons in size and is designed to trap solids and grease and provide initial, primary treatment of wastewater. Treatment in the septic tank is anaerobic (without oxygen) and produces a raw effluent that is still very high in bacteria and pathogens, dissolved solids and organics, ammonia, and organic nitrogen. The liquid then typically flows by gravity to a leaching area where it soaks into the soil, and where most of the treatment takes place. The total size of tank and leaching area needed is determined by the expected amount of wastewater flow into the system and capabilities of the soil to absorb water.

An important septic system design factor is the characteristics of the soil that will be used to filter and clarify the effluent before it reaches surface or groundwater. To determine septic suitability, soils must have a certain percolation rate, which is determined by conducting an on-site test. The percolation rate is a measure of a soils ability to absorb water. The type, size, and specific design characteristics of a septic system are dependent on the percolation rate(s) of on-site soils and expected wastewater load. In addition to percolation rate, several other important factors must be considered when locating a septic system, including: depth of groundwater, perched groundwater, and historic groundwater level; depth of bedrock; steepness of topography; presence of soils that could become seasonally saturated during times of intense rainfall; presence of soil types that may act as a barrier to effluent flow; and presence of landslides or other potentially unstable soil conditions.

The Land Use Program of the Humboldt County Department of Health and Human Services Public Health Branch is responsible for the review and approval of applications to construct septic systems. Determination of the septic suitability of soils is dependent on site-specific conditions and requires a thorough site investigation and analysis of the surface and subsurface characteristics. A septic system may have a limited or extended lifespan or can immediately fail if such analysis is not conducted.

3.8.2 Geology and Soils - Standards of Significance

This analysis uses the significance criteria from the California Environmental Quality Act (CEQA) Guidelines Appendix G. The proposed General Plan Update would result in a significant impact related to geology and soils if it would:

- a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
 - i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42.
 - ii. Strong seismic ground shaking.
 - iii. Seismic-related ground failure, including liquefaction.
 - iv. Landslides.
- b) Result in substantial soil erosion or the loss of topsoil.
- c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.
- d) Be located on expansive soil, as defined in Table 18-1-B of the California Uniform Building Code (1994), creating substantial risks to life or property.
- e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Items "a" is discussed in Impact 3.8.3.1, Exposure to Seismic-Related Hazards. Item "b" is discussed in Impact 3.8.3.2, Soil Erosion or the Loss of Topsoil. Items "c" and "d" are discussed in Impact 3.8.3.3, Soil Stability. Item "e" is discussed in Impact 3.8.3.4, Septic Suitability.

3.8.3 Geology and Soils - Impacts and Mitigation Measures

Impact 3.8.3.1: Exposure to Seismic-Related Hazards

Implementation of the General Plan Update would result in new land uses and development being located in portions of the unincorporated County that are subject to seismic ground shaking, and could therefore expose people or structures to hazards including fault rupture, seismic-related ground failure, landslides and tsunamis.

This impact analysis addresses item "a" of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.8.2 above. Pursuant to these standards, the proposed County General Plan Update would have a significant impact if it would:

- a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
 - i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or

- based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42.
- ii. Strong seismic ground shaking.
 - iii. Seismic-related ground failure, including liquefaction.
 - iv. Landslides.

Implementation of the General Plan Update would result in land uses and development in portions of the unincorporated area subject to ground shaking resulting from earthquakes. The County's seismic setting has the potential to cause significant ground shaking resulting in the following: (1) surface fault rupture hazards along the San Andreas fault, Cascadia Subduction Zone, and/or other active or potentially active faults in the County; (2) serious liquefaction hazards, particularly around the muds and sands of Humboldt Bay; ; and (3) significant landslide hazard countywide

Surface Fault Rupture

Surface rupture occurs when movement on a fault deep within the earth breaks through to the surface. The San Andreas Fault zone, Mendocino fracture zone, and the southern end of the Cascade subduction zone all meet within the offshore and coastal regions of Humboldt County, at what is known as a "triple junction." As a result, portions of Humboldt County are particularly vulnerable to surface fault rupture.

As indicated in the setting section above, pursuant to the Alquist-Priolo Special Studies Zones Act of 1972, active faults, which are those that have ruptured in the last 11,000 years, , are to be regulated. Based on Figures 10a through 10c, Humboldt County Bedrock and Faults, as noted in the 2002 *Natural Resources and Hazards Report* (Appendix D), known faults occur within most Humboldt County Planning Watersheds. However, Alquist-Priolo Zones are only mapped in the Trinidad, Mad River, Eureka Plain, Lower Eel and Van Duzen Planning Watersheds. .

The presence of active branches of a fault cannot be determined without site-specific geological investigation. However, areas that are planned for urban levels of development and contain Alquist-Priolo zones include portions of the McKinleyville Urban Development Area, Humboldt Hill Urban Development Area, the Hydesville Water Service Area, and areas around Arcata and Fortuna. As indicated above, Alquist-Priolo zones extend 200 to 500 feet on both sides of active fault traces. Proposed development within such areas requires the preparation of a detailed geologic fault evaluation report to limit potential hazards related to seismic activity. Therefore, Zoning Regulations along with the findings from the site-specific fault investigations prohibits a structure for human occupancy to be placed within fifty (50) feet of a trace of an active fault and requires the development and redevelopment of structures for human occupancy within the Alquist-Priolo Zone to conform to the recommendations and conclusions of the geologic report that has been concurred with by the County reviewing geologist.

The impacts of ground shaking on existing and future buildings are moderately low for most building types and settings. Most residential buildings in the County are one- or two-story wood frame structures, which are expected to perform adequately during earthquake events. The County expects that developers will continue to build this style of residential building because of construction costs. With the exception of McKinleyville and unincorporated areas directly surrounding the City of Eureka larger structures, which might be more susceptible to failure, are more likely to be found in the cities located around Humboldt Bay. Large structures within the cities are outside of the project area (unincorporated County) of these policy proposals. Ground shaking may have a substantial impact on the circulation system of the County. Freeway overpasses and bridges may be particularly susceptible to failure due to ground shaking. For the

past several years, Caltrans has been implementing, and will continue to implement, earthquake retrofit projects for state highway overpasses and bridges.

The severity of the ground shaking impact is dependent on the distance of a structure to the earthquake source, the magnitude of an earthquake, and the underlying deposits. It would be expected that for any given earthquake event, the ground shaking will be greatest where the soils are prone to significant or strong seismic wave amplification. Based on Figure 3.8-1, Probabilistic Ground Shaking, 10 Percent Probability of Being Exceeded in 50 Years, the Trinidad, lower portion of the Mad River, Eureka Plain, Lower Eel, lower Van Duzen, and upper portion of the South Fork Eel Planning Watershed, could be subject to high levels of ground shaking within the next 50 years. As a result, the areas surrounding Humboldt Bay (Manila, Samoa, South Eureka, and Humboldt Hill), and McKinleyville and Glendale areas, may experience loss of life and property due to strong seismic shaking. Within these areas, as well as other areas the County subject to the same seismic hazards, the California Uniform Building Code applies factors to building design in order to increase building strength..

Liquefaction

Implementation of the General Plan Update would result in planned growth areas that would place some new development in areas susceptible to seismic-related ground failure and settling. In general, flat land areas underlain by deposits susceptible to liquefaction would experience this type of ground failure. The setting section above indicates that areas of high liquefaction potential are located near Humboldt Bay, where soils include bay muds and sands.

Should the soils underneath a site experience liquefaction, various types of ground failure could occur, including lateral spreading, lurching, differential settlement, and flow failures, as well as non-liquefaction failure in weak natural deposits and man-made structural fills. These types of ground failures would cause damage to infrastructure, cause building damage or collapse, and result in damage to nonstructural building features. In addition, seismically triggered ground failures would create substantial obstacles for emergency responders in the event of an earthquake. Ground failures would cause roads to fail or cover roads with debris, blocking access and evacuation routes. This is most likely to occur around Humboldt Bay or in the Mad and Eel River bottoms, although ground failures could occur anywhere in Humboldt County.

Landslides

Implementation of the General Plan Update could expose people and structures to landslide related hazards. Landslides are common occurrence in Humboldt County and have caused substantial damage. Landslides commonly occur during periods of intense rainfall and are triggered when the soil's capacity to hold water is exceeded. Landslides can be slow or rapid, moving debris and mudflows that can cause substantial loss, injury or death. A significant number of landslides could occur at the same time during a strong earthquake. Typically, these landslides are located on unstable slopes, or are preexisting landslides that are seismically triggered and move as earthquake energy moves through the ground. In addition to these more common triggers, landslides can be caused by erosion, or human-induced causes such as improper grading, broken water lines, overwatering, or improper drainage control.

Landsliding is a major hazard concern in Humboldt County that cannot be eliminated. Many existing roads in hillside areas would continue to be affected by this hazard and in many cases, they require constant maintenance. Many existing communities are currently affected by this hazard or could be in the future. The most notorious was an area of instability along U.S. 101, commonly referred to as the Confusion Hill slide, which would close US-101 in both directions for

extended periods of time. Caltrans constructed two bridges over the Eel River, completed in October 2009, at a total cost of over \$50 million, bypassing the slide area. A massive slide blocked both lanes of U.S. 101 north of Garberville on March 30, 2011. It took several days to open the highway to one-way traffic.

Section 14.5 of the *Natural Resources and Hazards Report* shows the acreage of each Community Planning Area that is constrained by slopes greater than 30 percent and the acres of active or dormant landslides. Unstable or steep slopes are common throughout the County. Landslides are present in portions of the McKinleyville, Fieldbrook-Glendale, Blue Lake, Jacoby Creek, Eureka, Fortuna, Hydesville-Carlotta, Avenues (Stafford, Redcrest, Miranda), and Garberville-Redway-Benbow Community Planning Areas.

Landslides and locations of potential debris-flows are present throughout the County. It is possible in most cases to reduce this impact to future development by employing design and construction methods based on findings developed through site-specific geologic investigations.

Tsunamis

Tsunamis are a threat to all communities situated along the west coast of the United States. Tsunamis are of special concern in Humboldt County due to its proximity to the Cascadia Subduction Zone. Implementation of the General Plan Update could result in new land uses and development in close proximity to the Pacific Ocean, Humboldt Bay, and the low-lying areas, and will therefore potentially expose people and structures to the risk of tsunamis generated primarily by high-magnitude earthquakes.

In Humboldt County, the most destructive tsunamis would damage or destroy any communities, structures, access routes, and utilities in low-lying areas such as the communities around Humboldt Bay and the Eel and Mad River deltas as well as Redwood Creek delta. Many structures in coastal communities are located above low-lying areas and many homes are located above likely tsunami inundation runup elevations. However, the low-lying areas of the communities described above could be adversely affected by a tsunami. A substantial number of homes in Manila, Samoa, and Fairhaven face a high level of risk, as they are located on the low-lying sand spit between Humboldt Bay and the Ocean. Existing and new development could be devastated without adequate emergency preparedness. However, even if such communities are prepared for evacuation, buildings in low-lying areas could be destroyed. In addition to the areas described above, the Humboldt County coast has many recreational use areas that could expose visitors to this hazard.

While a fair amount of investigation regarding tsunami risk has been undertaken, a probabilistic mapping of tsunami risk suitable for land use planning remains undone. Studies have been undertaken associated with PG&E's dry cask storage unit at King Salmon on Humboldt Bay, and for the Town of Samoa Master Plan project. Additionally, an interagency group called the Redwood Coast Tsunami Work Group has publicized a tsunami evacuation map for the Humboldt Bay region. These studies indicate the potential for a tsunami from 10 to 30 feet above mean sea level, possibly higher, to impact the Humboldt County coast, affecting an area similar to, but slightly larger than, the FEMA 100-year flood plain. Of note is that the potential for the highest tsunami waves comes from a near-source Cascadia Subduction Zone event, with a very short response time on the order of 15 minutes, possibly less.

Analysis of Relevant General Plan Update Policies

The primary goal of the General Plan Update Safety Element is to prevent unnecessary exposure to hazards and minimize loss to communities. The Safety Element contains Standard S-S1, Geologic Report Requirements, which requires that reports address geologic hazards and geologic conditions, and requires that the report be prepared in compliance with County Land Use and Development regulations for Geologic Hazards. These regulations (Humboldt County Code, Title III, Division 3, Chapter 6, Section 336-5) require proposed development (that is the subject of the geologic report) to be sited, designed and constructed in accordance with the recommendations of the report in order to minimize risk to life and property on the project site and for any other affected properties. Standard S-S2, Landslide Maps, requires the use of California Division of Mines and Geology, North Coast Watersheds landslide mapping as information in the review of developments. Standard S-S3 requires use of California Mines and Geology Board Policies and Criteria as standards of implementation within Alquist-Priolo Fault Hazard Zones. Standards S-S1 through S-S3, including Building Regulations, and Alquist-Priolo Zoning Regulations which are fundamental to these standards reduce the potential impacts in this category by preventing development in hazards areas or by requiring that development adhere to appropriate standards to address hazards.

The Safety Element also contains policies that would lessen the potential effects of the General Plan Update due to rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, and tsunami through planning and coordination. Policy S-P6, Structural Hazards, would apply and enforce state adopted building codes and Alquist-Priolo zone requirements to new construction in an effort to protect life and property. Through Policy S-P7, Improved Information, Humboldt County would encourage the development of detailed scientific analysis of Cascadia Subduction Zone earthquake risks, probabilities, and anticipated effects to inform future land use planning. Policy S-P8, Earthquake Mitigation Planning, sets the standard for the potential for a local earthquake in excess of magnitude 9.0 (Richter scale) to be considered in disaster planning, risk assessment, and pre-disaster mitigation efforts. Through Policy S-P9, Cascadia Event Disaster Response, the County shall maintain readiness for a comprehensive response to a major earthquake consistent with the nationwide emergency management hierarchy and the adopted Emergency Response Plan for the Humboldt Operational Area. Finally, through Policy S-PX1, Site Suitability, new development may be approved only if it can be demonstrated that the proposed development will neither create nor significantly contribute to geologic instability or geologic hazards.

As noted above, Standard S-S1, Geologic Report Requirements, specifies that reports prepared consistent with County Building Regulations addressing geologic hazards and geologic conditions be prepared as part of the review of discretionary development and ministerial permits. This standard lessens potential environmental effects relating to surface fault rupture, strong seismic ground shaking, and landslides. Standards S-S2, Landslide Maps, and S-S3, Alquist-Priolo Fault Hazard Zones, would utilize California Division of Mines and Geology Landslide Mapping and Policies and Criteria for Alquist-Priolo Fault Hazard Zones as North Coast Watersheds landslide mapping. The use of mapping from these sources would identify areas subject to hazards and the application of regulations specified by the standards would ensure that potential impacts associated with known hazards are reduced.

Conclusion

The General Plan Update could expose a significant number of persons to the geologic hazards which exist throughout the County. Pursuant to Policy S-S1, Geologic Report Requirements, and S-S3, Alquist-Priolo Fault Hazard Zones, development planned for hazardous areas would require

detailed assessments and mitigation under the Plan. The Policies and Standards referenced above combined with the hazard awareness and emergency preparedness policies and programs of the General Plan Update would minimize the exposure of people and development to the adverse effects of surface fault rupture within an Alquist-Priolo Earthquake Fault Zone. These policies and programs would reduce the number of new structures built on active fault traces and improve building construction within such areas. However, while these measures would reduce the exposure of people and structures to the adverse effects of surface fault rupture for minor to moderate events to a less-than significant-level, they would not do so for severe events. Therefore, this impact is **potentially significant**.

Mitigation

No feasible mitigation measures are available to reduce the exposure of people and structures to the effects of severe surface fault rupture events.

Level of Significance after Mitigation

Humboldt County is subject to: serious liquefaction and subsidence hazards; the highest concentration of earthquake events anywhere in the continental U.S. and is located the closest county to the Cascadia Subduction Zone which can produce earthquakes of magnitude 9 and devastating tsunamis; significant landslide hazards countywide; and fault rupture zones associated the San Andreas, Little Salmon, and Mad River faults are present in the County which can generate highly destructive earthquakes. Although it is possible to limit impacts associated with minor to moderate events from these hazards through the policies, standards, and regulation described above, it is not feasible to limit impacts from the most significant hazards. Therefore, this would remain a **significant unavoidable impact**.

Impact 3.8.3.2 Soil Erosion or the Loss of Topsoil

Development of roads, storm drainage infrastructure, homes, and commercial structures consistent with the General Plan Update could result in increased erosion and the loss of topsoil.

This impact analysis addresses item "b" of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.8.2 above. Pursuant to these standards, the proposed County General Plan Update would have a significant impact if it would:

- b) Result in substantial soil erosion or the loss of topsoil.

Development of roads, storm drainage infrastructure, homes, and commercial structures consistent with the General Plan Update could result in increased erosion and the loss of topsoil. Erosion is frequently accelerated by site preparation activities such as excavation and grading, and cuts and fills. Exposed rock or soil surfaces associated with development-related site preparation can lead to increased erosion. Erosion potential can also be enhanced by changing the permeability or runoff characteristics of the soil, or by modifying or creating new drainages. Once development has been completed, slopes that are not effectively contoured, compacted, or revegetated may also be susceptible to erosion.

Erosion can have adverse effects on water quality from increased sediment loads carried in runoff, and can result in slope instability both during and after construction activities have been completed. Unless specific erosion controls are in place, people and structures could be exposed to increased risk of injury or damage resulting from mudslides, landslides, or other

downslope movement of soil or rock. Development in hilly areas and along river and stream banks is most susceptible to erosion-related effects.

As indicated in Section 10, Geologic, Soil and Seismic Hazards, of the *Natural Resources and Hazards Report*, slope stability and erosion are a major concern in Humboldt County. For example, over 90 percent of the land within Cape Mendocino, South Fork Eel and Lower Trinity Planning Watersheds are at a slope of 15 percent or greater. The degree of slope and instability of the soils in these areas contributes to hazards associated with erosion.

Approximately 13 percent of peak housing development that is projected to occur during the General Plan Update planning period, or 137 units, is expected occur on resource lands or lands planned for rural residential development. In many instances, rural residential development or residential development within resource lands involves the construction of, or improvements to, unpaved access roads and driveways and the disturbance of previously undeveloped land for parking, structures, and on-site utilities. In addition, in most cases land planned rural residential or for timber production is in hilly topography. Development in such areas would be expected to contribute to increases in erosion such that water quality could be substantially impacted, and could result in soil erosion in greater quantities than land planned for urban development. Proposed development in urban areas, especially non-discretionary development would not be expected to involve offsite improvements on previously undeveloped and would therefore require less ground disturbance.

Analysis of Relevant General Plan Update Policies

The General Plan Update contains policies to protect soils in agricultural areas, as well as on slopes, to avoid erosion. The Water Resources Element Policies WR-P8, Erosion and Sediment Discharge, and WR-P36, Erosion and Sediment Control Measures specifies that erosion and sediment control measures, as appropriate, be incorporated into development design. Policy WR-Px2, Mitigate Controllable Sediment Discharge Sites, requires that discretionary development involving a site identified as part of the TMDL Controllable Sediment Discharge Inventory must be conditioned to mitigate sediment. This policy, in combination with Standard WR-S7, Total Maximum Daily Loads (TMDLs) Implementation, would require that discretionary development be conditioned to reduce or prevent further impairment consistent with applicable TMDLs. Standard S-S1, Geologic Report Requirements, requires that site-specific reports addressing geologic hazards be prepared for both discretionary and ministerial projects. Additionally, the implementation measures of the General Plan Update include provisions for applying grading and zoning ordinance requirements to address soil erosion and to require erosion control measures for all grading activities.

Conclusion

The General Plan Update requires that site-specific reports addressing geologic hazards be prepared and that grading standards and best management practices be employed to reduce sedimentation and avoid erosion. However, adding additional development areas of soil instability would increase erosion such that water quality could be substantially negatively impacted, or substantial soil erosion could result. Therefore, impacts in this regard would be potentially significant.

Mitigation

Mitigation Measure 3.8.3.2.a. To lessen impacts relating to water quality resulting from increased erosion, the following mitigation is required:

Implement Mitigation Measures 3.10.3.1.a and 3.10.3.1.b from Impact 3.10.3.1: Degrade Water Quality or Exceed Waste Discharge Requirements in Chapter 3.10, Hydrology and Water Quality.

Level of Significance after Mitigation

Adoption of the additional or revised policies described above would minimize soil erosion impacts of future land uses and reduce this impact to a **less than significant level**.

Impact 3.8.3.3. Soil Stability

Implementation of the General Plan Update could result in new development being located within a geologic unit or on soil that is unstable or could become unstable as a result of the development, thereby causing landslides, lateral spreading, subsidence, liquefaction, or collapse, or on expansive soil which could create substantial risks to life and property.

This impact analysis addresses items “c” and “d” of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.8.2 above. Pursuant to these standards, the proposed County General Plan Update would have a significant impact if it would:

- c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.
- d) Be located on expansive soil, as defined in Table 18-1-B of the California Uniform Building Code (1994), creating substantial risks to life or property.

Buildout of the General Plan Update would result in the development of new structures within a geologic unit or on soil that is unstable or that would become unstable as a result of the new development, potentially resulting in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. This potential impact is similar to the Impact 3.8.3.1 Exposure to Seismic-Related Hazards, and Impact 3.8.3.2 Soil Erosion or the Loss of Topsoil, which analyze potential impacts to development in the unincorporated area located in areas subject to ground shaking, ground failure, or resulting from landslides, erosion, or other unstable slope conditions resulting from earthquakes. However, under Policy S-PX1, Site Suitability, new development may be approved only if it can be demonstrated that the proposed development will neither create nor significantly contribute to or be impacted by geologic instability or geologic hazards.

Humboldt County has adopted the California Building Code (CBC). The CBC provides soil classification guidelines for expansive soils. If a structure would be located on expansive soils, as defined by the CBC criteria, then special design considerations would be required. Title III, Land Use and Development Division 3, Building Regulations Chapter 6 - Geologic Hazards may require a preliminary soils report and geologic investigation, respectively. Preliminary soils and geologic investigation reports, typically, would report the presence of expansive soils. Where geologic hazards and other conditions are present (such as average slopes on the site are less than 15 percent and the building site is not on fill or marshlands), the Building Regulations provide discretion to the Building Official to waive geologic report requirements.

Analysis of Relevant General Plan Update Policies

Potential impacts resulting from development within unstable areas are addressed through geological report requirements for development projects as specified under standard S-S1,

Geologic Report Requirements. Geological reports specify standards and construction requirements necessary to ensure that development does not occur in unstable areas or that specific construction techniques are required to address site stability.

Conclusion

Implementation of the General Plan Update policy and programs would require geologic reports, where necessary, and the avoidance of areas with expansive soils or geotechnical engineering to reduce impacts of expansive soils. This impact would be **less than significant**.

Mitigation

None required.

Impact 3.8.3.4. Septic Suitability

Implementation of the General Plan Update could result in new development utilizing septic systems that may be proposed in areas with soils that are not suitable for wastewater treatment.

This impact analysis addresses item “e” of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.8.2 above. Pursuant to these standards, the proposed County General Plan Update would have a significant impact if it would:

- e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Development within urban development areas would likely be served by municipal wastewater treatment systems. Approximately 30 percent of projected development during the General Plan Update planning period is projected to occur outside areas served by wastewater systems, and would need to be served by on-site septic systems. Potential development utilizing septic systems may be proposed in areas with soils not suitable for wastewater treatment.

The suitability of a property for on-site disposal would depend on many variables including topography, type and thickness of appropriate soils, percolation rate, and depth to groundwater and bedrock. Existing County regulations require new development to demonstrate to the County Public Health Branch Land Use Program that soils on the site are suitable for the use of a standard septic system. Sites with inadequate soils and other unfavorable site characteristics, would be required to utilize alternative septic systems, such as mound and pressurized systems, or may not be allowed to have on-site disposal systems.

Analysis of Relevant General Plan Update Policies

The General Plan Update contains policies and standards that address both proposed new systems and existing failing septic systems. Impacts of such activities could be significant if not properly addressed. Under Policy GP-P6, Use of On-Site Sewage Systems within Urban Development Areas, the utilization of on-site sewage disposal systems shall not be acceptable for new subdivisions in the Urban Development Area, unless the Planning Commission makes specific factual findings that: 1) the extension of services is physically infeasible; or 2) the area is not planned for service in the service provider's Municipal Service Review and other written long-term plans; or 3) the services are not reasonably available in a timely manner. This policy limits the possible use of septic systems and therefore, limits the potential for septic failure. Policy

RL-P2, Water Withdrawal, requires that the cumulative impacts of water withdrawal from surface and groundwater sources and cumulative impacts from on-site sewage disposal systems shall be assessed during the zoning and subdivision, and during discretionary review of land designated for rural residential development in critical watersheds. The application of this policy ensures that the installation of new septic systems would not significantly contribute to the further degradation of soils or water supplies.

The General Plan Update contains policies to maintain septic regulations consistent with the Basin Plan and to establish programs to abate failing septic systems that represent a health hazard. Under Policy WR-Px6, Alternative Disposal Systems, the County supports programs and ordinance revisions that modify the permit process for alternative disposal systems to make such systems more accessible to individual households under conditions that do not threaten public health. Policy IS-P20, On-Site Sewage Disposal Requirements, requires that regulations governing construction and maintenance of on-site sewage disposal systems are maintained to protect health and safety, and to reflect changes in state law which would include the Basin Plan. This policy also recognizes and allows alternative onsite treatment systems that meet state standards. Policy WR-P14, Pathogen and Nutrient Discharge from Septic Systems, supports programs to reduce coliform bacteria and nitrate discharges from septic systems.

There are two Implementation Measures that address septic systems. Implementation Measure WR-IM5, Septic Systems, would require that the County pursue the abatement of failing septic systems that represent a health and safety hazard. Implementation Measure WR-IM7, Basin Plan Septic Requirements, directs the County to update and amend existing County septic regulations to reflect the latest Basin Plan standards for design and maintenance of on-site wastewater systems.

Conclusion

The General Plan Update would require that new on-site wastewater disposal systems meet the current requirements of the Basin Plan and state law. Therefore, potential for impacts resulting from development in areas incapable of adequately supporting the use of septic systems would be a **less than significant impact**.

Mitigation

None required.

3.9 Mineral Resources

This section provides background information regarding mineral resources within the County, the regulations and programs that provide for their protection and development, and an assessment of the potential impacts of implementing the proposed General Plan Update. Existing mineral resource conditions are described in Chapter 7, Mineral and Energy Resources, of the *Natural Resources and Hazards Report*, September 2002 (Appendix D), which includes a discussion of mineral (including sand and gravel) extraction. This report, which is available for review at the Planning Division public counter at 3015 H Street in Eureka during normal business hours or for download at <http://humboldt.gov/571/Background-Reports>, is incorporated herein by reference and summarized below. Where any discrepancies may exist between the referenced material and the material presented here, the material presented here should be considered as the most up to date and is to be relied upon for the environmental setting and analyses.

3.9.1 Mineral Resources - Environmental and Regulatory Setting

Mineral Resources

The public depends on several categories of minerals found in the County for a variety of everyday uses. For example, non-metallic industrial minerals such as sand and gravel are used to make concrete for construction of buildings and asphalt to pave roads. Importing minerals long distances results in a high ratio of transportation cost to the value of the mineral. A common assumption is that the cost of transporting sand and gravel typically doubles for each 35 miles it is transported. But in addition to monetary costs, mineral transport has adverse impacts on the circulation system, as well as impacts related noise and air pollutant emissions. The local availability of mineral resources for local projects helps reduce these impacts. The predominant mining activity in the County is the extraction of aggregate resources (stone, sand, and gravel).

Humboldt County has significant mineral resources. About eighty-five extraction sites around the County produce sand and gravel, metals, stone, and clay. Mining provides an input resource to a number of key activities in the construction industry, primarily the raw materials for concrete used in foundations. Mining materials are also used for road construction, maintenance, and repair. Other important uses include fill materials, snow and ice control, railroad grade ballast, and as a filtration system for onsite sewage disposal systems.

However, Humboldt County is one of 16 counties within California where the State Geologist has not classified the land based on the known or inferred mineral resource potential of that land, pursuant to SMARA classifications. The Mineral Land Classification process identifies lands that contain economically significant mineral deposits. The primary goal of mineral land classification is to ensure that the mineral resource potential of lands is recognized and considered in land use planning. The classification process includes an assessment of the quantity, quality, and extent of aggregate deposits in a study area.

Sand and Gravel. Sand and gravel extraction constitute the major portion of mining activity in the County, both in terms of quantity of material produced and value of extracted resource. The volume of in-stream gravel and sand extracted in 2015 was 272,240 cubic yards, 68 percent of the 400,919 cubic yards approved for extraction. According to Section 7.1, Mineral Extraction of Chapter 7, Mineral and Energy Resources of the Natural Resources and Hazards Technical Report, the majority of gravel and sand extracted activity took place along the Eel River-Van Duzen River complex (76 percent), and the Mad River (22 percent). The remainder was extracted from Willow Creek and the Trinity River.

Gravel extraction requires either an individual permit from the US Army Corps of Engineers covering a single operator, or a Letter of Permission (LOP) covering a group of operators that have not pursued individual permits. Both individual permits and LOPs are discretionary actions by the US Army Corps of Engineers. Because issuing the individual permit or LOP could affect threatened, endangered, or special status species, the Corps will conduct consultation with the National Marine Fisheries Service and/or the US Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act, depending on the species potentially affected. These agencies will then issue Biological Opinions describing their findings related to species effects from the proposed project.

Rock and Metals. Rock extraction sites—mines, pits, and quarries—are located throughout the County. Mines and quarries in Humboldt County primarily produce shale, stone (base and subbase), and clay. General Plan Update Figure 10.1, Rock and Mineral Extraction Sites of the Mineral Resources Chapter of the Conservation and Open Space Elements displays the location of mining sites within the County. Almost all of these, except the clay quarries, are hard rock quarries. Information on extraction totals is considered proprietary. However, there are 32 active hard rock quarries permitted in the County, with a permitted annual potential yield of approximately 660,000 cubic yards per year. Extraction amounts vary depending on local demand. Rock quarries significantly augment the in-stream sand and gravel mining operations in the County. These quarries provide rock products of various sizes that may not be obtainable from in-stream operations or may be able to provide sand and gravel at more competitive rates due to location or reduced permitting expenses. Most recent surface mining applications in the County have been for upland rock quarry operations due to these factors.

Local Regulation. To address state, federal, and County permitting requirements in a coordinated manner and to implement mitigations required in program environmental impact reports for in-stream gravel mining, the County established the County of Humboldt Extraction Review Team (CHERT) through the adoption of Resolution 96-37. The CHERT consists of four members appointed by the Humboldt County Board of Supervisors with expertise in hydrology, fluvial geomorphology, fisheries, and river ecology. CHERT members serve as agents of the County for the purpose of providing technical expertise and reviews of mining proposals for in-stream gravel operations within the County.

All activities of CHERT are performed in accordance with the provisions of the Public Resources Code, Division 2, Chapter 9, Section 2774 and requirements of the California Government Code governing conflicts of interest, including Section 87100 et seq. CHERT prepares a post-extraction information report on the previous season's mining activities that is available to the public and provides recommendations for extraction quantities and methods, disturbance minimization measures, and potential mitigations. The CHERT is also concerned with possible adverse impacts to infrastructure such as levees, bridges, and the water district facilities. The Corps of Engineers and the California Department of Fish and Wildlife also makes use of the CHERT review process for assessing gravel extraction effects, including impacts to listed salmonids and designated critical habitat.

Surface mining is not specifically identified as a primary and compatible use in the Framework General Plan or inland Zoning Regulations, except for the Rural Residential Agriculture Zone where Surface Mining is identified as a conditional use type. However, during the review of mineral extraction projects, the County has found surface mining to be a compatible temporary use. Humboldt County Ordinance 2117 implements the provisions of the Surface Mining and Reclamation Act of 1975 (Public Resources Code Sections 2710 and following, hereafter SMARA) and establishes county-wide surface mining regulations. These regulations are intended to protect the quality of the County's environment, limit land uses that would be incompatible with preservation and use of natural resources, and to assure the community of adequate supply of these resources for present and future generations. A conditional use permit and reclamation plan and adherence to development standards is required for surface mining operations. These regulations apply to all surface mining throughout the County.

In the 1980s and early 1990s numerous surface mining conditional use permits were issued with a permit term of fifteen years, subject to renewal. More recently, a number of these permits have come up for renewal, and through the renewal notification and hearing process it has become apparent that there are more concerned neighboring property owners than existed at the time of initial permit issuance. In one instance, approximately 72% of parcels adjacent to an active extraction operation or haul route changed ownership since the initial permit issuance. A number of these ownership changes represent the sale of vacant parcels that were later developed for residential uses. The new residents consider the mining operations incompatible with residential uses. This issue has brought to the forefront the need to address compatibility of surface mining operations with adjacent uses, and the need to advise potential future property owners of existing mining operations.

3.9.2 Mineral Resources - Standards of Significance

This analysis uses the significance criteria from the CEQA Guidelines Appendix G. The proposed General Plan Update would result in a significant impact on mineral resources if it would:

- a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Items "a" and "b" are discussed in Impact 3.9.3.1, Loss of Known Mineral Resources.

3.9.3 Mineral Resources - Impacts and Mitigation Measures

Impact 3.9.3.1: Loss of Known Mineral Resources

Implementation of the General Plan could include land use map changes or policies that would result in the loss of availability of a known mineral resource of value to the region and the residents of the state or the loss of a mineral site delineated in the local general plan, specific plan or other land use plan.

This impact analysis addresses items "a" and "b" of the significance criteria described in 3.9.2. Section 2531.2 of the current General Plan identifies sand, gravel, and quarry sites that will be reviewed when processing permits to avoid land use incompatibilities. Permitted mineral extraction sites within the unincorporated County are generally identified in General Plan

Update Figure 10.1, Rock and Mineral Extraction Sites, of the Mineral Resources Chapter of the Conservation and Open Space Elements. There are 146 Assessor's Parcels mapped as part of the current County SMARA geographic information system database. This database provides information regarding the extraction site location, mine identification number, operator, number of the County issued permit, and some information regarding the activities at the site.

However, not all areas of Humboldt County have been comprehensively investigated by the state or the County for the purpose of identifying potential mineral deposits. Development consistent with the General Plan Update could occur in locations where the presence or extent of an important mineral resource has not been clearly delineated and access to those minerals could be restricted or eliminated due to development.

Analysis of Relevant General Plan Update Policies

The General Plan Update Conservation and Open Space Elements Mineral Resources Chapter contains policies, such as Policy MR-P1, Production and Conservation, which encourages the production and conservation of minerals, while preserving to the maximum extent feasible environmental resource values. Policy MR-P3, Identify Mineral Deposits, directs the County to maintain an inventory of the County's mineral deposits and mining sites. This policy, in combination with Policy MR-P8, Future Development Planning, would help ensure that incompatible uses are not planned adjacent to mineral extraction sites and that future development will not interfere with the utilization of identified mineral deposits. Implementation Measure MR-IM2, Mapping of Mineral Deposits and Mine Sites, requires that the County maintain GIS maps of the County's known mineral deposits and mining sites; however, this this mapping requirement does not include unknown mineral deposits (i.e. there is no requirement to search for and map unknown deposits).

Standard MR-S3, Permitted Land Use Designations, specifies that mining operations subject to SMARA are conditionally permitted in all land use and zoning designations. This standard would resolve any current ambiguities regarding the inland zoning districts within which aggregate extraction or surface mining is permitted. Further, Standard MR-S5, Forest and Agricultural Borrow Pits, specifies that, subject to the issuance of a grading permit (if required by County Code), borrow pits to support farming activities, and timber road construction and maintenance operations, are a principally permitted use when operated within SMARA exemption parameters and the activity is otherwise consistent with the Conservation and Open Space chapter of the General Plan Update.

The General Plan Update includes additional policies intended to protect existing mining sites. Policy MR-P2, Right to Mine, requires that discretionary projects in the vicinity of vested and permitted surface mining extraction sites or along existing haul routes record a notice of the right to mine against the property for which a discretionary permit is sought. This notice advises current and future owners that the existing mining operations have a permitted right to continued mining operations. Implementation Measure, MR-P9, Location of Mineral Haul Routes, directs the design of mineral haul routes to avoid incompatible areas, when feasible. MR-IM4, Combining Zone, directs the County to establish a mineral resources (MR) combining zone to facilitate implementation of the County's regulations for surface mining, conservation, and reclamation. This measure is intended to ensure compatibility of adjacent uses and would apply the combining zone to parcels with permitted surface mining operations. It also provides for notification to parcels within 1,000 feet of permitted surface mining extraction sites and along existing haul routes.

Conclusion

The General Plan Update seeks to identify mineral resources within the County as well as support their conservation, development, and utilization. These objectives are achieved through the implementation of policies that require the identification and inventory of mineral deposits and mining sites and that protect the right to mine. In addition to mapping mineral deposits and mining sites, policies and programs in the General Plan Update provide for notification to surrounding uses around mining operations in order to avoid issues relating to land use compatibility. The implementation of the policies and programs identified above and compliance with applicable surface mining and reclamation laws will limit the potential for loss of significant mineral resources. Therefore, this impact would be would be **less than significant**.

Mitigation

None required.

3.10 Hydrology and Water Quality

This section provides background information regarding hydrology and water quality conditions within the County, and an assessment of the potential impacts of implementing the proposed General Plan Update. Existing hydrology and water quality conditions are described in Chapter 1, Water Resources and Volume II: Detailed Watershed Characteristics and Regulatory Framework Analysis of the *Natural Resources and Hazards Report*, September 2002, which includes a discussion of watersheds and surface water, groundwater, stormwater, the regulatory framework, and policy issues. Existing utilities and service systems conditions are described in the Community Infrastructure and Services Technical Report, 2008 (Appendix Q), and in the Water Resources Technical Report, 2008 (Appendix P), which include discussions of water and wastewater system condition and capacity, storm water, and water quality. These reports, which are available for review at the Planning Division public counter at 3015 H Street in Eureka during normal business hours, or for download at <http://humboldt.gov/571/Background-Reports>, are incorporated herein by reference and summarized below. Where any discrepancies may exist between the referenced material and the material presented here, the material presented here should be considered as the most up to date and is to be relied upon for the environmental setting and analyses.

3.10.1 Hydrology and Water Quality - Environmental Setting

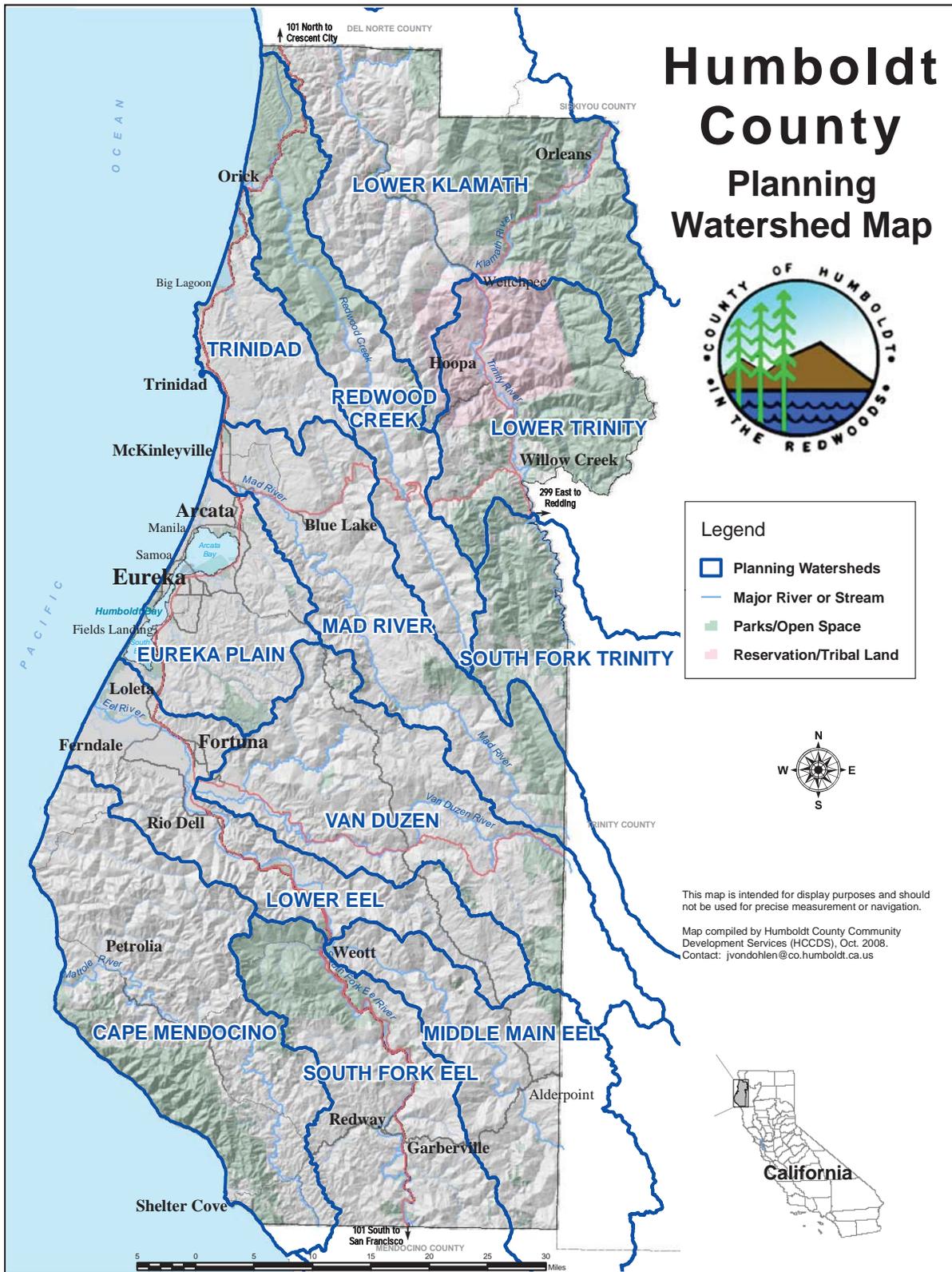
Humboldt County Watersheds

A watershed is an area of land within which all rain and snowfall drains or seeps into a particular stream, water body, or aquifer. Humboldt County is part of the California Water Resource Control Board's Klamath-North Coast Hydrologic Basin Planning Area, which includes all watersheds draining into the Pacific Ocean from the Oregon border south through the Russian River Basin. Land use planning utilizing watershed mapping allows the environment to be studied along its natural lines of division, particularly in the case of water, biological, forest, agricultural, and in some cases cultural resources. A map of the planning watersheds that are used in the General Plan Update is shown below in Figure 3.10-1. A discussion of their water quality concerns, can be found later in this section.

Humboldt County Water Quality

Nonpoint source pollution, also known as polluted runoff, is the leading cause of water quality impairments in California and the nation. Nonpoint sources, including natural sources, are the major contributors of pollution to impacted streams, lakes, wetlands, estuaries, marine waters, and ground water basins. Unlike pollution traceable to a single location or "point" (such as a wastewater treatment plant), nonpoint source pollution comes from many diffuse sources and is principally caused by stormwater, snowmelt, or agricultural runoff moving across and diffusing into the ground (Natural Resources and Hazards Report, Page 1-40). The runoff picks up natural and human pollutants and deposits them throughout the natural watershed in rivers, lakes, coastal areas, and aquifers.

Figure 3.10-1. Humboldt County Planning Watershed Map.



The United States Environmental Protection Act (US EPA) states that nonpoint source pollution is the leading cause of water quality problems. In California, nonpoint source pollution is estimated to represent 80 percent of the state’s water pollution. Its effects on specific waters vary and may not always be fully assessed, but overall it has harmful effects on drinking water, recreation, fisheries, and wildlife. Nonpoint source pollution can result from a wide range of human activities, including agriculture, forestry, transportation, boating and other marine activity, and general urban activity. Suspended sediments are the largest mass of pollutants (Natural Resources and Hazards Report, Page 1-40).

Septic systems are individual wastewater treatment systems typically comprised of a septic tank and leach field, and utilized where community wastewater treatment systems are not available. Septic systems can be sources of nonpoint source pollution and are in use in each planning watershed within the County. If not properly designed or maintained, septic systems can percolate inadequately treated sewage into surface or groundwater and result in contamination. See Section 3.8, Geology and Soils, for a detailed description of existing septic systems in Humboldt County.

Total Daily Maximum Load. Section 303(d) of the federal Clean Water Act and 40 CFR §130.7 require states to identify water bodies that do not meet water quality standards and are not supporting their beneficial uses. These waters are placed on the Section 303(d) List of Water Quality Limited Segments, also known as the 303(d) List of Impaired Water Bodies. The 303(d) List identifies the pollutant or stressor causing impairment and establishes a schedule for developing a control plan to address the impairment. Placement on this list generally triggers development of a pollution control plan called a Total Maximum Daily Load (TMDL) for each water body and associated pollutant/stressor on the list.

The TMDL process leads to a "pollution budget" designed to restore the health of a polluted body of water and provides a quantitative assessment of water quality problems, contributing sources of pollution, and the pollutant load reductions or control actions needed to restore and protect the beneficial uses of an individual water body impaired from loading of a particular pollutant. More specifically, a TMDL is defined as the sum of the individual waste load allocations for point sources, load allocations for non-point sources, and natural background such that the capacity of the water body to assimilate pollutant loading (the loading capacity) is not exceeded. In other words, a TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, which will insure the protection of beneficial uses. This calculation also includes a margin of safety and consideration of seasonal variations. In addition, the TMDL contains the reductions needed to meet water quality standards and allocates those reductions among the pollutant sources in the watershed.

Table 3.10-1, Humboldt County 2006 303(D) List of Quality Limited Segments, below shows water bodies in Humboldt County that have been identified as impaired:

Table 3.10-1. Humboldt County 2006 303(D) List of Water Quality Limited Segments

TMDL Listed Water Bodies in California Water Body	Basin	TMDL Stressor	Size Affected	TMDL Completion Date
South Fork Trinity	Klamath-Trinity	Sedimentation/Siltation/ Temperature	1161 miles	2001*
Lower Trinity	Klamath-Trinity	Sedimentation/Siltation	1256 miles	2001*
Klamath River	Klamath-Trinity	Nutrients/ Organic Enrichment/Low Dissolved Oxygen Temperature	609 miles	2010 and 2019

Table 3.10-1. Humboldt County 2006 303(D) List of Water Quality Limited Segments

TMDL Listed Water Bodies in California Water Body	Basin	TMDL Stressor	Size Affected	TMDL Completion Date
Mattole River	Mattole	Sedimentation/Siltation/ Temperature	503 miles	2003* **
Redwood Creek	Mad-Redwood	Sedimentation/Siltation/ Temperature	332 miles	1998*
Mad River	Mad-Redwood	Sedimentation/Siltation/ Temperature/Turbidity	654 miles	2007* **
Freshwater Creek	Eureka Plain	Sedimentation/Siltation	84 miles	2011
Freshwater Creek	Eureka Plain	Sedimentation/Siltation	12.5 miles	Unknown
Jacoby Creek	Eureka Plain	Sediment	19 miles	2019
Elk River	Eureka Plain	Sedimentation/Siltation	88 miles	2011
Humboldt Bay	Eureka Plain	PCB's	16075 Acres	2019
Lower Eel	Eel River	Sedimentation/Siltation/ Temperature	426 miles	2007* **
South Fork Eel	Eel River	Sedimentation/Siltation/ Temperature	943 miles	1999* **
Middle Main Fork Eel	Eel River	Sedimentation/Siltation/ Temperature	674 miles	2005* **
Van Duzen River	Eel River	Sedimentation/Siltation	585 miles	1999*
Clam Beach, Luffenholtz Beach, Moonstone County Park, Trinidad State Beach	Trinidad	Indicator Bacteria	2.54 miles	2019

20012 CWA Section 303(d) List Of Water Quality Limited Segments, North Coast Regional Water Quality Control Board

* On November 29, 2004, the North Coast Regional Water Quality Control Board (RWQCB) adopted via Resolution R1-2004-0087 the Total Maximum Daily Load Implementation Policy Statement for Sediment Impaired Receiving Waters in the North Coast Region, also known as the Sediment TMDL Implementation Policy. The Sediment TMDL Implementation Policy is the TMDL implementation plan for the North Coast Region's sediment impaired Waterbodies that do not have a Board-approved implementation Plan (Action Plan). The Resolution also directs RWQCB staff to develop a Work Plan that sets priorities for addressing excess sediment at a watershed-specific scale and describes how and when available authorities and permitting and enforcement tools will be used. The Regional Water Board Staff Work Plan to Control Excess Sediment in Sediment-Impaired Watersheds was completed in June 2008 via Resolution R1-2008-0057.

** Temperature TMDLs have been completed and approved by the USEPA in the year shown. However, these TMDLs do not yet have Action Plans approved by the RWQCB, and RWQCB staff do not currently have a schedule for completing these temperature TMDL Action Plans.

The North Coast Regional Water Quality Control Board (RWQCB) has developed a *Work Plan to Control Excess Sediment in Sediment-Impaired Watersheds* (April 2008), available at: http://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/sediment_workplan/. The Work Plan was developed by RWQCB staff to fulfill the RWQCB's direction under the TMDL Implementation Policy Statement for Sediment Impaired Receiving Waters in the North Coast Region (Resolution No. R1-2004-0087). The resolution directed RWQCB staff to develop a Work Plan that sets priorities for addressing excess sediment at a watershed-specific scale and describes how and when available authorities and permitting and enforcement tools will be used to improve water quality.

As part of that effort, the RWQCB is currently developing "Measures to Control Excess Sediment," a proposed Basin Plan amendment for developing an in-stream flow water quality objective. The objective will likely be a qualitative objective to ensure that natural hydrologic connectivity is maintained and protected in a manner that produces the seasonal patterns and ranges of flow necessary to support beneficial uses. In its current form, the proposed amendment will include a prohibition against the discharge or threatened discharge of excess sediment from human

activities to waters of the state. Excess sediment is defined as soil, rock, and sediments discharged to waters of the state in an amount that could be deleterious to beneficial uses or cause a nuisance. The proposed amendment also includes an implementation plan with guidance for landowners and for RWQCB staff. Under the implementation plan, new projects will be encouraged to prevent, minimize and monitor sedimentation and use adaptive management.

The following is a discussion of water quality within the twelve Humboldt County Planning Watersheds that is summarized from the Natural Resources and Hazards Report.

South Fork Eel. The Eel River, including the Lower, Middle Main, and South Fork Eel, supports one of the largest remaining native coho salmon populations and one of the largest coastal Chinook populations in California. The South Fork Eel is designated by the USEPA as sedimentation, siltation, and temperature impaired and is considered to have more serious water quality problems than the river segments that feed it. High seasonal rainfall combined with a rapid runoff rate on unstable soils delivers large amounts of sediments to the river. Due to heavy winter rainfall running through highly unstable soils, the Eel River may transport more sediments than any other river of its size in the world. These sediments are deposited throughout the lower gradient reaches of the system. In addition, pursuant to California Water Code Section 1205, the Eel River has been declared by the RWQCB as “fully appropriated,” finding that the supply of water in the stream system is being fully applied to beneficial uses where the previous water rights decisions have determined that no water remains available for appropriation.

Lower Eel. See South Fork Eel Planning Watershed above.

Middle Main Eel. The Middle Main Eel is designated as sedimentation, siltation, and temperature impaired by the USEPA. The following nonpoint source pollution issues were identified by the RWQCB staff and relate directly to concerns about the Eel River cold water fishery: stream sedimentation; past and current timber harvest practices; potential impacts from dairies and grazing; herbicide application on private and public lands; and inter-basin transfers of water. In addition, the state has declared the Eel River to be fully appropriated.

Lower Klamath. The Lower Klamath Watershed includes several important spawning tributaries for salmon and steelhead and, in combination with the Trinity River watershed, supports one of the largest runs of Chinook salmon in the state, second only to the Sacramento River watershed. Issues affecting the Lower Klamath include water quality conditions associated with the operation of the Klamath River dams, as well as timber and mining operations. Also important is the possible removal of the Klamath River dams and the struggle for scarce water resources among various interests, including Native American tribes; farmers; commercial and sport fishermen; and local, state, and federal resource managers. In addition, the state has declared the Klamath River to be fully appropriated.

South Fork Trinity. The South Fork Trinity River drains an area containing steep, unstable slopes adjacent to some of the most rapidly eroding terrain in the United States. Vegetation within the portion of this watershed located in Humboldt County consists primarily of timberlands and oak woodlands, with limited areas of chaparral. Unstable geology and erosion-producing land use practices have been blamed for the many mass-wasting events triggered by the 1964 flood, which have adversely affected the South Fork’s fishery. Unpaved roads generate about twice the levels of sediment loading as timber harvesting. Roads are the most significant component of management-related sediment production. In addition, the state has declared the South Fork Trinity River to be fully appropriated.

Lower Trinity. The Trinity supports several anadromous fish populations, including Chinook salmon, coho salmon, and steelhead trout, and has the second largest run of Chinook salmon in the state in combination with the Klamath River. Sources of pollution include abandoned mine sites in the Hoopa Valley and sedimentation from natural sources, roads, and timber operations. The state has declared the Trinity River to be fully appropriated.

Van Duzen. The Van Duzen watershed maintains an aquatic habitat that supports coho and Chinook salmon, steelhead trout (particularly summer stocks), rainbow trout, pacific lamprey, as well as other species. The deposition of sediment, especially within the lower mainstream channel, can restrict passage of salmon and steelhead to spawning and rearing reaches, especially during low flow years. As a result, this watershed is 303(d) listed for sedimentation and siltation. The state has also declared the Van Duzen River to be fully appropriated.

Redwood Creek. Redwood Creek is sedimentation, siltation, and temperature impaired according to the 303(d) list. Land management patterns and practices have contributed to increased erosion beyond natural rates through landsliding and gullying and stream bank erosion. Close to 45 percent of the sediment load in Redwood Creek is directly related to soil erosion from dirt roads. The resultant erosion causes sediment to enter the stream, filling deep pools and depositing silt in spawning gravels.

Cape Mendocino. The Mattole River is designated as sediment and temperature impaired by the USEPA. The North Coast Watershed Assessment Program found that summer stream temperatures in much of the Mattole Basin are not within the range of temperatures that fully support healthy salmon and steelhead populations. The reduction of stream flow caused by human diversions results in increased in water temperatures in some areas that is not supportive of salmon and steelhead populations. Aggradation from fine sediment and the lack of logs and stumps in some stream channels has reduced channel diversity needed to support salmon and steelhead populations.

Trinidad. Water supply is an important issue in this watershed. The Luffenholtz watershed, the source of water for the City of Trinidad, is designated as a critical watershed area due to capacity and water quality concerns. The Westhaven Community Service District water system is barely able to meet current maximum day demands. The coastal beaches between Westhaven and Trinidad, including Clam Beach, Moonstone County Park, Luffenholtz Beach, and Trinidad State Beach, are impaired by indicator bacteria.

Mad River. The Mad River supports runs of anadromous salmonids including Chinook salmon, coho salmon, and steelhead and cutthroat trout. Except for cutthroat trout, all anadromous salmonids in the Mad River are federally protected. The Mad River is listed on the 303(d) list of impaired waters for sediment and temperature impairment. The primary pollution issues for the watershed are forestry-related, along with urbanization and associated industrial and public point sources (such as discharges of municipal effluent). In addition, the state has declared the Mad River to be fully appropriated.

Eureka Plain. According to the 303(d) list of impaired waters, water quality issues within the watershed include sedimentation and siltation within the Freshwater and Elk watersheds and the presence of dioxin toxin equivalents in Humboldt Bay. The upper hillslope areas of the watershed, while populated to varying degrees, are primarily occupied by timber production and harvesting activities, with coast redwood as the predominant harvested species. Freshwater streams support production of anadromous salmonids, including steelhead and cutthroat trout, coho and Chinook salmon. The deltas of the Elk River and Mad River Slough support commercial and sport shellfish production and harvesting. Past practices and continued problems with

harvesting techniques and road construction have added to stream sedimentation, in varying degrees, in all the drainages in the watershed. Storm water runoff from all watersheds draining to the Bay convey indicators of bacterial contamination that impacts shellfish harvest. Seasonal and rainfall-based shellfish harvesting closures are used to mitigate the effects of nonpoint source runoff. A shellfish Technical Advisory Committee was established in November of 1995 to address nonpoint source runoff issues. In addition, the state has declared Jacoby Creek to be fully appropriated.

Humboldt County Hydrology

Surface Water. Surface water in Humboldt County is captured within each of the watersheds that are defined above. Surface water originates as precipitation in the form of rain or snow, and flows on the surface through streams or rivers or is stored in lakes and ponds. The USEPA also defines water that flows below ground level as ground water under the influence of surface water if it has a significant occurrence of insects or other macroorganisms, algae, organic debris, or large-diameter pathogens; or if it exhibits significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions. Surface water conditions in Humboldt County are generally described in the discussion of planning watersheds above. Further detail regarding surface water conditions within each of the Humboldt County planning watersheds can be found in the *Natural Resources and Hazards Report*.

Groundwater. The western portion of Humboldt County is defined as part of the California Coastal Basin Aquifer. Individual aquifers in Humboldt County are located in the valleys of the Klamath Mountains and the Coast Ranges and are distributed along California's Pacific Coast. This region has been subjected to intense tectonic forces for millions of years leading to folding and faulting and the rise of the Klamath and Salmon Mountains in Northern California. Terrestrial, marine, and volcanic rocks deposited in intermontane valleys compose the aquifers referred to as coastal basin aquifers.

Humboldt County is in the North Coast Hydrologic Area and has four principal groundwater basins: Hoopa Valley, Mad River Valley, Eureka Plain, and Eel River Valley, and ten minor basins (see Table 3.10-3, below). The Mad River Valley, the Eureka Plain, and the Eel River Valley are a part of the Coastal Basins. The hydrologic basins in Humboldt County provide very large surface water volumes. While mean annual runoff in Humboldt County from the major rivers and streams is approximately 23 million acre feet, over 80 percent of this flow occurs during November through March, and the total potential annual groundwater yield of the entire County is only approximately 100,000 acre feet. Ground water has been developed for individual domestic requirements, the agricultural demands of the Eel and Mad River delta areas, and to provide supplements to municipal water supply. Potential concerns are saltwater intrusion in coastal areas and the effects of groundwater withdrawal on streams that rely on groundwater recharge to sustain flows during the dry season. See Figure 3.10-2 Groundwater Basins in Humboldt County and Table 3.10-3 Humboldt County Ground Water Basins for detailed information regarding Humboldt County groundwater resources.

Several communities rely on local aquifers as water sources, including the City of Arcata. Arcata reports that aquifers in its planning area are generally less than 100 feet deep. While there are approximately 60 small groundwater contamination sites in the city, the municipal water supply is not threatened. Groundwater quality is not expected to change in the near future, as few new homes and businesses are expected to withdraw water from wells. The City's water system in north Arcata is currently drawing one million of the approximately two million gallons per day which the local aquifer can provide.

Humboldt Community Services District is currently able to deliver 1,500 gallons per minute (or 2,400 acre-feet per year) to the Humboldt Hill area from wells located within the Eureka Plain groundwater basin. According to the USGS, the quality of groundwater in the Eureka Plain is generally acceptable for most uses, although concentrations of dissolved iron in water from many wells may exceed the US EPA's secondary drinking-water recommendation of 300 micrograms per liter, and ionic and bacterial levels make this groundwater unsuitable for domestic or municipal use.

McKinleyville lies within the Mad River Valley Basin, which is fed by the lower Little River and Mad River. Groundwater is primarily used for pastureland irrigation in this area, with industry and public-supply withdrawals benefiting to a lesser degree. Current rates of withdrawal do not appear to exceed recharge rates. Agricultural activities, sewage disposal, and fertilizer use deposit nutrient- and bacterium-rich water into the local aquifer, but groundwater pollution is not considered significant

The Avenue of the Giants Community Planning Area (including Stafford, Redcrest, Weott, Myers Flat, Miranda, and Phillipsville) is associated with the Eel River groundwater basins, with the prime source being the Eel-Van Duzen delta. According to the Natural Resources and Hazards Report (Page 1-38), approximately 10,000 acre-feet of the estimated annual yield of 40,000 to 60,000 acre-feet are currently being pumped for agriculture. The Eel River groundwater basin water is considered suitable for individual domestic needs as well as for irrigation. Groundwater in rural Humboldt County is generally directed to individual domestic needs and irrigation for farmed areas of the deltas and the Eel River groundwater basin's well water is considered suitable for these uses.

State law passed in 2014 (AB 1739), the Sustainable Groundwater Management Act (SGMA), is intended to achieve sustainable management of groundwater resources for long-term reliability for multiple benefits while avoiding undesirable results. The State Department of Water Resources (DWR) assigned priority ratings to groundwater basins throughout the state. Compliance with the SGMA is required for basins that are identified as "high" or "medium" priority. The Eel River Valley groundwater basin has been assigned an initial priority of "medium,". The other 13 mapped groundwater basins in the County have been given a "very low" priority, although the groundwater basin boundaries and prioritizations could change in the future based on local habitat considerations, stream flows and improved hydrologic and geologic information. The SGMA identifies two compliance options for "high" or "medium" priority basins: one is forming a Groundwater Sustainability Agency and adopting a Groundwater Sustainability Plan; and the other is for an entity to submit a Groundwater Sustainability Plan Alternative if basins conditions demonstrate that the basin has operated under sustainable yield for the past ten years.

The County of Humboldt Public Works Department (HCPWD) has been acting as the lead for compliance with the SGMA for the Eel River groundwater basin. The HCPWD coordinated the formation of the Eel River Valley Groundwater Working Group to assist with a groundwater program in response to SGMA. The HCPWD received a Department of Water Resources (DWR) Prop 1 Grant to complete the Eel River Valley Groundwater Basin Assessment (Basin Assessment). The Basin Assessment is a geologic and hydrogeologic investigation to support a determination of whether or not the basin is being managed sustainably without causing undesirable results. The results of the Basin Assessment indicate that there is sufficient evidence to prepare an Alternative for compliance with the SGMA. The Alternative is intended to accomplish the same goals as a Groundwater Sustainability Plan without the formation and administration of a Groundwater Sustainability Agency. The Eel River Valley Groundwater Basin Groundwater Sustainability Plan Alternative was submitted prior to the January 31, 2017, deadline and is under consideration by DWR.

Figure 3.10-2. Groundwater Basins in Humboldt County.

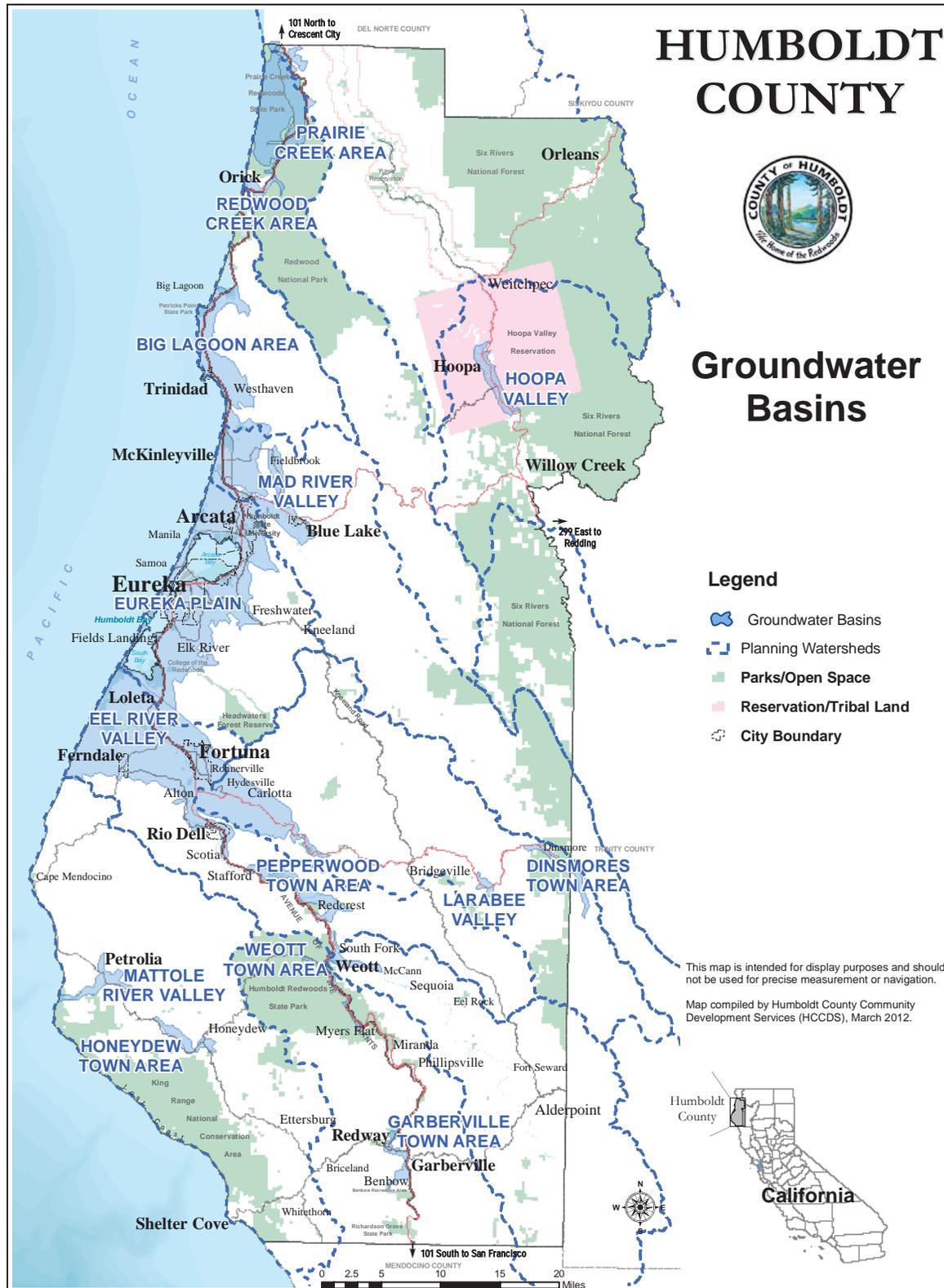


Table 3.10-3. Humboldt County Ground Water Basins.

Basin	Planning Watershed	Area (Acres)	Rain (Inches)	Extraction (Acre Feet)	Useable Storage	Well Yields (GPM)	Useable Storage	Well Completion Reports		Municipal Water Providers
								Municipal or Ag	Domestic	
Garberville	South Fork Eel	2,100	57 - 63	67	Not Available	Not Available	Not Available	Not Available	8	Garberville SD, Redway CSD
Weott	South Fork Eel	3,650	55 - 61	110	Not Available	Not Available	Not Available	Not Available	1	Weott CSD, Myers Flat MWA
Pepperwood	Lower Eel	6,290	45 - 53	947	Not Available	Not Available	Not Available	Not Available	Not Available	None
Eel River Valley	Lower Eel	73,700	41 - 55	100,000	49,000	<1,200	49,000	12	219	Loleta CSD, Del Oro Water Co. Hydesville CWD, Riverside CSD, City of Rio Dell, City of Fortuna
Big Lagoon	Trinidad	34,000	53 - 65	240	Not Available	Not Available	Not Available	Not Available	60	Big Lagoon CSD, Westhaven CSD
Dinsmore	Van Duzen	2,300	57 - 61	124	Not Available	Not Available	Not Available	Not Available	13	None
Larabee Valley	Van Duzen	970	63	Not Available	Not Available	Not Available	Not Available	Not Available	1	None
Hoopa Valley	Lower Trinity	3,900	59 - 63	316	19,200	<300	19,200	1	47	None
Redwood Creek	Redwood Creek	2,000	59 - 69	580	Not Available	Not Available	Not Available	1	11	Orick CSD
Prairie Creek	Redwood Creek	20,000	59 - 75	4	Not Available	Not Available	Not Available	Not Available	Not Available	None
Mattole	Cape Mendocino	3,150	63 - 75	147	Not Available	Not Available	Not Available	Not Available	49	None
Honeydew	Cape Mendocino	2,370	71 - 79	20	Not Available	Not Available	Not Available	Not Available	2	None
Dows Prairie School	Mad River	14,000	39 - 53	2,100	10,500	Not	10,500	6	289	None

Basin	Planning Watershed	Area (Acres)	Rain (Inches)	Extraction (Acre Feet)	Useable Storage	Well Yields (GPM)	Useable Storage	Well Completion Reports		Municipal Water Providers
								Municipal or Ag	Domestic	
Area (Mad River Valley)						Available				
Mad River Lowland (Mad River Valley)	Mad River	25,600	39 - 53	25,000	6,335	<120	6,335	1	32	City of Arcata
Eureka Plain	Eureka Plain	37,400	37 - 47	6,100	Not Available	400	Not Available	12	162	Humboldt CSD, City of Eureka

CSD – Community Services District

Source: California’s Groundwater Bulletin 118 - Update 2003 Basin/Subbasin Descriptions by Hydrologic Region.

Stormwater

Stormwater Drainage Systems. Stormwater is an important factor in the distribution of sediments, chemicals, and other natural and human-produced compounds, throughout a watershed. Runoff from heavy rains picks up these potential pollutants and carries them downstream, where they may be deposited or may remain suspended in sensitive ecological areas. With Humboldt County's wet climate and large amount of land dedicated to timber production and agriculture, pollution due to stormwater runoff is a particularly important issue. The Federal Water Pollution Control Act, commonly referred to as the Clean Water Act (CWA), prohibits the discharge of pollutants into waters of the United States unless the discharge complies with a National Pollutant Discharge Elimination System (NPDES) permit. Section 402(p) of the 1987 amendments established a framework for regulating municipal, industrial and construction stormwater discharges under the NPDES program. In California, the State Water Resources Control Board (SWRCB) and the nine RWQCBs issue NPDES permits. In 1999, USEPA established regulations, known as Phase II NPDES program, requiring permits for stormwater discharges from Small Municipal Separate Storm Sewer Systems (MS4; the USEPA categorizes MS4s as either "small," "medium," or "large"), and from construction sites disturbing between one and five acres of land. The Phase II requirements were developed for regulating water quality affected by smaller municipalities and construction projects not covered by the Phase I NPDES permitting requirements.

The HCPWD is responsible for storm drainage within the unincorporated areas of the County and also maintains flood control levees along the Eel River at Sandy Prairie, the Mad River at Blue Lake, and Redwood Creek at Orick. The *Community Infrastructure and Services Technical Report* found that, aside from McKinleyville and the unincorporated area around Eureka, the majority of the County does not have improved storm water conveyance systems, and what does exist varies in condition. Much of the infrastructure is very old and is reaching the end of its design life. Outside of the County's urban areas, stormwater follows a natural drainage pattern before either infiltrating or entering a waterway. The County maintains a significant number of culverts (estimated in the thousands) under County roadways. These culverts are located throughout the County's many drainage swales, creeks and streams.

In February 2013, the State Water Resources Control Board adopted the current version of the MS4 Permit. The purpose of the MS4 Permit is to control the discharge of pollutants to stormwater drainage systems which ultimately drain to natural waterways. The state has stipulated that the MS4 Permit applies to McKinleyville, the unincorporated Eureka area, and Shelter Cove within unincorporated Humboldt County. Other areas with minor amounts of drainage infrastructure but that are not subject to MSR Permit requirements include Redway, Manila, King Salmon, Fields Landing, Loleta, and Willow Creek.

The MS4 Permit requires the County to ensure that certain development projects comply with post-construction stormwater requirements based on "low impact development" (LID) standards. These standards, effective as of July 1, 2015, are intended to maintain a site's pre-development runoff characteristics by using design techniques that capture, treat, and infiltrate stormwater on site.

The MS4 General Permit specifies two size classes for post-construction requirements. Projects that create and/or replace 2,500 to 5,000 square feet of impervious surface ("small projects") will need to implement one or more designated site design measures to reduce project site runoff. Examples of site design measures include disconnection of rooftop drainage from impervious areas, tree planting and preservation, rain barrels, vegetated swales, and porous pavement.

Projects that create and/or replace 5,000 square feet or more of impervious surface (“regulated projects”) will need to implement site design measures based on more detailed procedures and demonstrate compliance with runoff reduction thresholds. Some projects may be required to construct bioretention facilities. In addition, projects in the larger size category will need to comply with source control measures to minimize the contact between pollutants and stormwater runoff.

Procedures, standards, and specifications for implementing the post-construction requirements of the MS4 Permit are contained in the Humboldt Low Impact Development Stormwater Manual V2.0. This manual will also be used by the cities of Eureka, Arcata, Fortuna, and Trinidad for compliance with the MS4 Permit. Humboldt LID Stormwater Manual V2.0 and associated documents are available on the North Coast Stormwater Coalition website, <http://northcoaststormwatercoalition.org/>.

The Humboldt County Code addresses nonpoint source pollution and sedimentation under Title III, Land Use and Development Division 3, Building Regulations Section 331-12, Grading, Excavation, Erosion, and Sedimentation Control (hereafter, County Grading Ordinance). Grading permits are intended to control and reduce erosion, reduce sediment delivered to drainages and streams, and protect fish habitat and other biological resources. According to the County Grading Ordinance, projects larger than one acre or that meet other criteria specified in the erosion and sediment control plan requirements must include implementation measures “based on recommendations contained in the latest edition of the State of California Erosion and Sediment Control Handbook or State Water Resources Control Board Best Management Practice Construction Handbook”, or equivalent best management practice erosion and sediment control guides, to prevent sedimentation or damage to onsite and offsite property.

For small projects that do not require a grading permit and for building permits that do not also require a grading permit, applicants can agree to adhere to a list of erosion control standards and specify implementation measures from a list provided by the County that will be used to comply with Erosion and Sediment Control Standards in the County’s Grading Ordinance. The 2016 California Green Building Standards (Chapter 4, Residential Mandatory Measures, Section 4.106, subsections 1 through 3, Site Development, which took effect in January 2017) relating to new construction, add to and compliment the procedures described above and specify more rigorous storm water management criteria to prevent erosion and retain sediment on site. Requirements for projects less than one acre within MS4 areas will be subject to much more stringent requirements.

Timber and agricultural production are important industries in Humboldt. Timber and agricultural practices have the potential to impair water quality and contribute to water quality violations in Humboldt County. These practices include timber harvesting, grazing, and dairy operations. These land use activities can also be sources of nutrients and contribute to temperature impairments.

Timber harvest and management activities are subject to the Z’berg-Nejedly Forest Practice Act of 1973, or the Forest Practice Act. The California Department of Forestry and Fire Protection (CAL FIRE) regulates timber harvest activities pursuant to the California Forest Practice Rules (Title 14, California Code of Regulations, Chapters 4, 4.5 and 10), which implement the Forest Practice Act. The Forest Practice Rules contain regulations regarding direct and cumulative impacts to watersheds from sediment, water temperature, organic debris, chemical contamination, and peak flow. A timber harvest plan must comply with the quantitative or narrative water quality objectives set forth in the RWQCB Water Quality Control Plan for the North Coast Region, or Basin

Plan. Activities which are not exempt from the local regulation pursuant to Public Resources Code Section 4516.4 are subject to County grading, excavation, erosion, and sedimentation control regulations.

The Humboldt County Resource Conservation District (HCRCDD) is a special district that was formed in 1987 to assist private landowners in voluntary planning, design, and installation of soil and water conservation practices in Humboldt County. Recognizing the potential water quality effects of agricultural operations, the HCRCDD has received grants to help local dairies improve their operations and water quality by implementing state of the art water quality management systems. The grant provides funding to support practices and demonstrations such as manure distribution, heavy use area protection, roof runoff management, and waste storage structures. The HCRCDD provides design services, permitting help, and on selected projects, cost share payments to a dairy operator for project implementation. The HCRCDD recently began providing custom nutrient management plans to local dairy operators. The purpose of nutrient management plans is to adequately supply nutrients for plant production and to properly utilize manure or organic by-products as a plant nutrient source, while minimizing agricultural nonpoint source pollution of surface and ground water resources.

Flooding. Flood hazards in Humboldt County are attributable to rivers and streams, dam failure, and coastal high water hazards (tsunamis and flood tides), with river flooding being by far the most prevalent. Flooding is a concern for many waterways in Humboldt County, including the Eel River (including the Van Duzen and South Fork), the Mad River, Eureka Plain (especially Freshwater and Jacoby Creeks), and the Trinity River.

Seventy percent of precipitation in Humboldt County occurs from November to March, and major floods have resulted from a succession of intense rainstorms during these months. The two worst floods in Humboldt County history occurred in December 1955 and December 1964, causing tens of millions of dollars in damage and numerous fatalities.

The 1955 flood occurred following weeks of above-normal precipitation in the County, with rainfall measurements in Cummings reaching as high as 24 inches over three days. Flood damage in the Eel River Basin exceeded \$22 million, with one reported fatality and 43,000 acres flooded. Heavy debris carried by high velocity river flows is faulted for much of the damage.

Heavy rains accompanied by runoff from an unusually large snowpack led to the flooding of the Mad and Eel Rivers in 1964. Total damages reached \$100 million, with entire communities (including Pepperwood, the site of the 1955 fatality) being destroyed and 19 fatalities recorded. Millions of board feet of lumber, thousands of acres of prime farmland, and 4,000 head of livestock were also lost.

Floods are commonly described as having a 10-, 50-, 100-, or 500-year recurrence interval, meaning that floods of these magnitudes have (respectively) a 10, 2, 1, or 0.2 percent chance of occurring on average in any given year. These measurements reflect averages of likelihood of occurrence, but it is possible that two or more rare floods (with a 100-year or higher recurrence interval) could occur within a short period of time.

Assigning recurrence intervals to the discharges of historic floods is valuable both as a rough comparison among the magnitudes of different flood intervals on a given waterway, as well as a way of showing the intensity of a storm over a large area. The recurrence intervals shown for various waterways in Humboldt County in December 1964 point to the relative effects the storm had on different watersheds. For example, flooding along the Eel River was much more severe than along Jacoby Creek, even when factoring in their size difference.

Standard measurement of floodplains includes demarcation of areas expected to be flooded during floods with these recurrence intervals, as determined by the Army Corps of Engineers. The Federal Emergency Management Agency (FEMA) has adopted the 100-year (1 percent annual chance) flood as the base for floodplain management purposes. FEMA has mapped flood-prone areas. The maps provide the basis for regulating floodplains in conformance with the National Flood Insurance Program. The County has adopted floodplain regulations in order to continue participation in the federal flood insurance program.

Humboldt County's 100-year floodplains are shown in Natural Resources and Hazards Report Volume 1, Figure 11-1. As shown on these maps, the largest 100-year floodplain areas are the Eel River delta and Lower Eel River up to its confluence with the South Fork Eel; the Van Duzen River upstream of its confluence with the Lower Eel River; the region between the lowest five miles of the Mad River and the northern end of Humboldt Bay; the Mad River ten miles upstream of its mouth; the downstream ends of the Elk River, Salmon Creek, and Freshwater Creek (on the Eureka Plain); and the Maple Creek delta in the Trinidad planning watershed. The Natural Resources and Hazards Report, Vol. 1 discusses FEMA's designated 100-year flood zones in Humboldt County's planning watersheds, with respect to Community Planning Areas (CPAs) and other populated areas.

Other flooding concerns include ocean storm surges and dam failure. Storm surges occur when coastal storms produce large ocean waves that sweep across coastlines, inundating low-lying areas and causing flooding. If a storm surge occurs at the same time as high tide, flooding is more extensive. Dams provide some degree of flood control but also present a possible hazard in the event of failure. Hazards from dam failure are those associated with the downstream inundation that would occur given a major structural failure of a nearby impoundment. Such failures would most likely be caused by geologic phenomena including seismic events and slope stability problems. Five dams are located in adjacent counties on rivers that drain into Humboldt County, and the failure of any one of these structures could significantly impact Humboldt County. Trinity Dam and Ruth Dam pose the most substantial risk due to their large volumes and, in the event of a failure, short downstream warning times. The County maintains emergency response plans for the Trinity, Ruth (Matthews), Scott, Copco, and Iron Gate dams. Chapter 8, Dam Failure, of the 2014 Humboldt Operational Area Hazard Mitigation Plan, provides a detailed discussion of dam failure hazards and potential impacts to Humboldt County resulting from dam failure. The Humboldt Operational Area Hazard Mitigation Plan is available on the internet at <http://humboldt.gov/506/Local-Hazard-Mitigation>.

3.10.2 Hydrology and Water Quality - Standards of Significance

This analysis uses the significance criteria from the California Environmental Quality Act (CEQA) Guidelines, Appendix G. The proposed General Plan Update would result in a significant impact related to hydrology and water quality if it would:

- a) Violate any water quality standards or waste discharge requirements.
- b) 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).

- c) 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.
- d) 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.
- e) 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.
- f) Otherwise substantially degrade water quality.
- g) 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.
- h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- j) Inundation by seiche, tsunami, or mudflow.

Items "a", "c" and "f" are discussed together in Impact 3.10.3.1, Degrade Water Quality or Exceed Waste Discharge Requirements, Item "b" is discussed in Impact 3.10.3.2, Deplete Groundwater Supplies or Interfere With Groundwater Recharge, Items "d" and "e" are discussed in Impact 3.10.3.3, Alter the Existing Drainage Patterns or Exceed the Capacity of Stormwater Drainage Systems, and Items "g" through Items "j" are discussed as part of Impact 3.10.3.4, Housing within a 100-year Flood Hazard Area or Expose People or Structures to Flooding from Levee or Dam Failure, Tsunami, or Mudflow.

3.10.3 Hydrology and Water Quality - Impacts and Mitigation Measures

Impact 3.10.3.1: Degrade Water Quality or Exceed Waste Discharge Requirements

Implementation of the General Plan Update could result in increased stormwater runoff; mobilization of sediment, household chemicals, metals, hydrocarbons, nutrients and other pollutants; sanitary sewer overflows; and vegetation removal; all of which can have potentially significant impacts on water quality.

This impact analysis addresses items "a", "c", and "f" of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.10.2 above. Pursuant to these standards, the proposed County General Plan Update would have a significant impact if it would:

- a) Violate any water quality standards or waste discharge requirements.
- c) 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.
- f) Otherwise substantially degrade water quality.

Development allowed under the General Plan Update would result in impervious surfaces in the form of new structures, roadways, parking areas, and supporting. New surfaces such as roofs; concrete or asphalt sidewalks, parking lots or roads; as well as areas of compacted soil would

likely be impervious to rainwater. Stormwater moves over impervious surfaces and collects natural and human generated substances such as sediment, nutrients, and trace metals, and carries them to the drainage system and eventually to wetlands, streams, rivers, and coastal waterways. Impervious surfaces increase the amount of stormwater runoff and significantly impede or prevent the natural percolation of rainwater into the soil, resulting in higher levels of mobilized sediment and other pollutants entering receiving water bodies as a nonpoint source pollutant, thereby decreasing the quality of receiving waters.

Based on DOF projections, approximately 1,721 new housing units will be constructed by the planning period population peak, 2028. Approximately 90 percent of those units are expected to be located within more urbanized areas (Community Planning Areas and Coastal Zone Areas), and approximately 10 percent would be located within rural areas outside community planning areas.

In an analysis comparing the stormwater runoff between lower and higher density development, the USEPA found that "with more dense development, runoff rates per house decrease by approximately 74 percent from the least dense scenario; for the same amount of development, denser development produces less runoff and less impervious cover than low-density development; and for a given amount of growth, lower-density development uses more of the watershed" (Protecting Water Resources with Higher-Density Development, US EPA, Findings/Discussion page 26).

Projected growth during the General Plan Update planning period may result in the use of materials and substances that could impair water quality. Land Use activities could involve the storage and handling of materials and substances such as automotive fluids, fertilizers, and household cleaners that, if used improperly, could be mobilized by stormwater and impair water quality. Sediment sources, besides construction sources noted above, could include landslides, roads and parking lots, unprotected slopes, and disturbed areas. Organic compound sources derive from automotive fluids on roads and parking areas, pesticides and herbicides. Nutrients include fertilizer in lawns and gardens, food waste, discharges from septic and sewer systems, and sediment. Trace metals sources include oil and grease, compounds on roads and parking lots, roofing, construction sites, and industrial and commercial uses. Land use activities can also result in the removal of vegetative cover along watercourses, which can result in increased water temperatures with detrimental effects on fish and other aquatic organisms.

Increases in receiving water temperatures can also result from the intensification of stormwater flows which would be a consequence of an increase in impervious surfaces. Impervious surfaces act as heat collectors that warm urban runoff as it passes over them. Elevated temperatures can also be caused by increased flows that result in wider and shallower stream channels. Elevated temperatures disrupt aquatic organisms that have finely tuned temperature limits, such as trout, salmon and the insects on which they feed, by decreasing the amount of dissolved oxygen in the water column which can lead to a shift in algae growth.

New development under the General Plan Update would involve construction activities which typically involve soil disturbance resulting from grading, excavating and trenching within a project site. Stormwater runoff from construction sites can contain sediments mobilized due to of these activities. Spills or leaks from heavy equipment and machinery, staging areas, or building sites can also enter runoff. Typical pollutants may include petroleum products and heavy metals from equipment, and construction materials such as paints, solvents, and cleaning agents. Sediment from erosion of graded or excavated surface materials, leaks or spills from equipment, or inadvertent releases of construction materials may degrade water quality if runoff containing the sediment enters receiving waters in sufficient quantities to exceed water quality objectives.

Based on the 303(d) list above, most watersheds within Humboldt County are impaired by sedimentation, siltation, and temperature. In addition, Humboldt Bay is impaired by polychlorinated biphenyls (PCBs), which have been demonstrated to cause cancer and other serious non-cancer health effects, and coastal beaches between Westhaven and Trinidad are impaired by bacteria. Water quality in streams would be further affected by polluted runoff from urban and rural growth during the General Plan Update planning period. The loading of pollutants typically increases in the downstream direction as development density increases towards the bottom of the watershed. The local receiving waters (e.g., Humboldt Bay, the Eel River delta, and the Pacific Ocean) would be affected substantially more when the urbanized areas of separate watersheds that outlet to the same receiving water body.

Water quality could also be affected by the reuse of treated wastewater from sewer plants and graywater for agriculture, landscaping, and as a replacement for other non-potable water demands, which has been identified as a way to reduce water consumption. Depending on the extent of treatment that is applied to the wastewater, over-application can result in excessive runoff entering waterways, or the leaching of constituents contained in the wastewater (such as salts, nutrients, estrogenic substances, and pharmaceuticals) to the groundwater.

Water quality may also be degraded where historical development on small lots has resulted in a high concentration of older septic systems that may not have been designed and constructed using current standards, or are not regularly maintained or upgraded. Organisms associated with human waste may become present in surface water and groundwater when the septic treatment process is not completed due to a faulty system. Septic systems are utilized on rural properties throughout the County and in numerous, less dense urban areas that do not have municipal wastewater systems, such as Orick, Willow Creek, and Westhaven.

Section 3.8, Geology and Soils, describes the existing conditions relating to the use of on-site septic systems in Humboldt County and the existing programs in place to regulate the development of use of such systems. Pursuant to Assembly Bill 885, a bill passed in 2000 relating to onsite sewage systems (AB 885), the SWRCB has developed statewide regulations for onsite wastewater treatment systems. Pursuant to Assembly Bill 885, Humboldt County has prepared a Draft Local Agency Management Program (LAMP) for managing onsite wastewater (septic) treatment systems. Humboldt County is writing one to comply with the state mandate contained in the Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems (OWTS Policy, State Water Resources Control Board Resolution NO. 2012-0032, http://www.waterboards.ca.gov/water_issues/programs/owts/board_adopted_policy.shtml)).

Analysis of Relevant General Plan Update Policies

The General Plan Update contains policies intended to reduce sediment in runoff water and protect soils in agricultural areas, as well as on slopes. These same policies direct new development into areas with suitable soils and serve to minimize erosion. General Plan Update implementation measures would result in an update to the grading and zoning ordinance to address soil erosion and to require erosion control measures for all grading activities. By appropriate designation of land uses, the General Plan Update would reduce sedimentation impacts associated with new development activities. The County has adopted several ordinances to address the potential for increased sedimentation from new development, including grading, excavation, erosion, and sedimentation control, geological hazards, and Streamside Management Area (SMA) regulations, which would be amended, pursuant to WR-IMx1, Update Water Quality Regulations, to reflect policies contained in the Water Resources and Conservation and Open Space Elements.

Water Resources Element. The following Water Resources Element policies, standards and implementation measures are intended to reduce water quality impacts. Water Resources (WR) Policy WR-P3, Proactive Protections, directs the County to focus regulatory attention and educational efforts in specified watersheds where threats to water quality (such as the sources of sediment, siltation, and temperature analyzed above) would have potentially significant cumulative effects. Policy WR-P4, Critical Municipal Water Supply Areas, would require that the County designate all or portions of watersheds as “Critical Water Supply Areas” if cumulative impacts from land uses within the area have the potential to significantly impact the quality or quantity of municipal water supplies. Policy WR-P5, Critical Watershed Areas and would require that the County designate all or portions of watersheds as “Critical Watersheds” if cumulative impacts from land uses within the area have the potential to create significant environmental impacts to threatened or endangered species, including coho salmon or steelhead habitat. Pursuant to Standard WR-S3, Development within Critical Watershed Areas, performance standards that would apply to ministerial and discretionary development would be adopted by ordinance, and would require that projects be designed to avoid the take of endangered or threatened species by reducing cumulative impacts to aquatic habitat to below levels of significance. Discretionary development would also be subject to supplemental permit conditions. WR-P5 WR-S3 has the potential to apply to all planning watersheds within Humboldt County as each contains either coho salmon or steelhead habitat that could be affected by cumulative impacts from land uses within the watershed.

Policy WR-Px2, Mitigate Controllable Sediment Discharge Sites, requires that discretionary development involving a site identified as part of the TMDL Controllable Sediment Discharge Inventory be conditioned to mitigate (meaning to eliminate or avoid) sediment. Policy WR-P8, Erosion and Sediment Discharge, states that all projects requiring a grading permit must comply with performance standards adopted to minimize erosion and the discharge of sediments into surface runoff, drainage systems, and water bodies. Standard WR-S8, Erosion and Sediment Discharge, requires that ministerial and discretionary project must conform to grading ordinance standards for erosion and sediment control. Policy WR-P9, County Facilities Management, requires design, construction, and maintenance of County buildings, roads, bridges, drainages, and other facilities to minimize stormwater runoff erosion and discharge of sediments and other pollutants. Policy WR-P36 Erosion and Sediment Control Measures, requires that erosion and sediment control measures be incorporated into development design and improvements. Policy WR-P30, Natural Stormwater Drainage Courses, requires that natural drainage courses be retained and protected from development impacts that would alter the natural drainage courses, increase erosion or sedimentation, or have a significant adverse effect on flow rates or water quality. Policy WR-P30 further requires that natural vegetation within riparian and wetland protection zones be maintained to preserve natural drainage characteristics and that storm water discharges be dissipated so that they do not contribute to additional erosion, and filtered and cleaned of pollutants where feasible.

Policy WR-P31, Downstream Stormwater Peak Flows, requires that peak downstream stormwater discharge shall not exceed the capacity limits of off-site drainage systems or cause downstream erosion, flooding, habitat destruction, or impacts to wetlands and riparian areas. Further, WR-P31 also requires that new development must demonstrate that post-development peak flow discharges will mimic natural flows to watercourses and avoid impacts to Beneficial Uses of Water. Policies WR-P34, Commercial and Industrial Activities, WR-P35, Oil/Water Separation, and WR-P39, Reduce Toxic Runoff, are intended to minimize storm water contamination from commercial, industrial, and residential uses and from new parking lots.

Policy WR-P38, Storm Drainage Impact Reduction, requires the use of Low-Impact Development (LID) standards to reduce the quantity and increase the quality of stormwater runoff from new developments in watersheds with known significant cumulative impacts from stormwater runoff. For all other watersheds, the policy requires the preparation of storm drainage development guidelines with incentives to encourage LID standards to reduce the quantity and increase the quality of stormwater runoff from new developments. This policy would allow the County to facilitate development that incorporates project elements to reduce storm water flow and would therefore reduce sedimentation, siltation, and the transmission of pollutants through the storm water system. In addition, Implementation Measure WR-IM25, Drainage Ordinance, requires that the County develop and maintain an ordinance that regulates stormwater drainage consistent with the General Plan.

Standard WR-S7, Total Maximum Daily Loads (TMDLs) Implementation, specifies that discretionary development within watersheds containing impaired water bodies as defined under Section 303(d) of the federal Clean Water Act and governed by TMDL implementation plans shall be conditioned to reduce or prevent further impairment consistent with applicable TMDLs. This standard, along with Policy WR-P38, Storm Drainage Impact Reduction, will limit further degradation of impaired waters that could occur because of discretionary projects, but would not reduce or prevent further degradation from ministerial permits. Implementation Measure WR-IM10, TMDL Controllable Sediment Discharge Inventory and Reduction Program, requires the County to map impaired water bodies as defined under Section 303(d) of the federal Clean Water Act with associated impairment parameters, water quality objectives, and pollution budgets contained in TMDL implementation plans, and to seek funding to identify controllable sediment discharge sites and establish a program to prioritize, treat, monitor, and subsequently reevaluate such sites.

Implementation Measure WR-IMx, Graywater Re-use Standards, requires the County to update and amend the existing County Code to implement the revisions to the State California Plumbing Code, Title 24, Part 5, Chapter 16A regarding Graywater Standards, as reflected in SB1258. Implementation Measure WR-IMx1, Update Water Quality Regulations, requires the County to amend the Grading, Excavation, Erosion, and Sedimentation Control Regulations and Division 1, Planning Zoning Regulations Chapter 6 - General Provisions and Exceptions Section 314-61.1 Streamside Management Area Ordinance to reflect the new erosion, sediment control, vegetation, restoration, and stormwater drainage policies and standards contained in the Water Resources Element, and the Biological Resources Chapter of the Conservation and Open Space Elements and evaluate as part of the five-year Housing Element Update to determine if additional measures are needed to protect water quality. Implementation Measure WR-IMx2, Unpermitted Development Ordinance for Critical Watersheds, requires the County to prepare an ordinance to provide increased enforcement capabilities for un-permitted development within critical watershed areas if the development impacts water resources, and to work with the State Departments of Water Resources, and Fish and Wildlife, to address illegal water diversions and over-subscribed water right allocations.

Conservation and Open Space. The Biological Resources Section of the Conservation and Open Space Element contains policies relating to SMAs, and which also relate to wetland, and riparian buffer areas. These policies establish setbacks, maintain natural vegetation, and allow filtration and infiltration of stormwater. Planned development within and adjacent to SMAs and other wet areas would be subject to protections contained in Biological Resources (BR) Policies BR-P4, Development within Stream Channels, BR-P5, Streamside Management Areas, BR-P6, Development within Streamside Management Areas, and Policy BP-P7, Wetland Identification. These policies would require that the County continue to identify SMAs and other data regarding intermittent streams with in-channel wetland characteristics and riparian vegetation

(SMAs are further defined in Standard BR-S5, Streamside Management Areas Defined). These policies as well as associated standards limit development within stream channels and SMAs to essential non-disruptive projects consistent with Standard BR-S6, Development in Stream Channels, and BR-S7, Development within Streamside Management Areas, and where mitigations have been provided to minimize any adverse impacts.

When permitted development occurs within SMAs, Standard BR-S9, Erosion Control, is imposed to limit potential impacts due to sedimentation. In addition, the presence of wetlands near project areas shall be determined during the project review process and wetlands, as defined by Standard BR-S11, Wetlands Defined, would be protected pursuant to Standard BR-S10, Development Standards, consistent with the standards for SMAs, including buffers and setbacks where appropriate. Policy BR-P11, Agency Review, requires that the County request Department of Fish and Wildlife, and other appropriate trustee agencies, to review development plans within streamside management and sensitive habitat areas, and National Marine Fisheries Service or U.S. Fish and Wildlife Service to review development plans within critical habitat areas where a federal permit or funding is involved. This policy also states that recommendations to reduce potential impacts below levels of significance shall be considered during project approval.

Safety Element. Safety Element policies would also contribute to the protection of water quality. Safety (S) Policy S-P1, Reduce the Potential for Loss, would require that new development be planned to reduce the potential risks resulting from natural and manmade hazards such as steep slopes and unstable soils areas, which would have secondary benefits to the environment, especially in terms of reduced sedimentation from erosion and improved water quality. Standard S-S1, Geologic Report Requirements, would require the preparation of geologic reports that would disclose site conditions that could contribute to sedimentation and siltation.

Impact 3.3.1 Wastewater Services in Section 3.3, Utilities and Services, provides a detailed analysis of wastewater treatment plant capacity. A number of WWTPs in Humboldt County are currently not meeting North Coast RWQCB permit requirements for wastewater treatment and disposal. Regarding these existing permit violations, the North Coast RWQCB has issued orders that contain programs and timelines for permit compliance, and monitors the efforts of operators to meet North Coast RWQCB requirements. The Community Infrastructure and Services Element of the General Plan Update was developed to provide policies and programs to ensure service capacity keeps pace with development, thereby minimizing the chance for a sanitary sewer overflow with accompanying water quality impacts. If it were not feasible to increase capacity, several policies would ensure that approved development is limited to available permitted capacity. Policy IS-P1, Coordination with Service Providers, requires that the County cooperate with wastewater system operators to system needs and service limitations consistent with the Plan and capital improvement plans. Policy IS-P4, Requirements for Discretionary Development, requires that service needs be assessed with discretionary development and to only approve development where service can be adequately provided or would otherwise not impact health, welfare and safety or future infrastructure plans. Policies IS-P8, Infrastructure and Services Capacity, and IS-P9, Capacity of Facilities and Land Use Decisions, require that the County monitor wastewater service capacity in coordination with service providers.

Impact 3.8.3.4, Septic Suitability in Section 3.8, Geology and Soils, provides a detailed analysis of development on soils incapable of adequately supporting the use of septic systems. That analysis identifies a series of policies that ensure that waste discharge associated with the use of on-site septic systems complies with state laws and addresses the siting of proposed new systems and the identification of existing failed septic systems. Policies that lessen the potential effects of

new on-site septic systems include IS-P20, On-Site Sewage Disposal Requirements, Policy WR-P14, Pathogen and Nutrient Discharge from Septic Systems, RL-P2, Water Withdrawal, and, Implementation Measure; WR-IM5, Septic Systems. Policy WR-Px6, Graywater and Alternative Disposal Systems, call for supporting programs and ordinance revisions that modify the permit process for graywater and other alternative disposal systems to make such systems more accessible to individual households. Implementation Measure WR-IM5, Septic Systems, directs the County to pursue the abatement of failing septic systems that have been demonstrated to represent a health and safety hazard.

Conclusion

A significant portion of Humboldt County drains to watersheds that are impaired by sedimentation, siltation, and temperature a. As a result, development that is projected to occur during the General Plan Update planning period could further degrade impaired water bodies. To address this, the General Plan Update focuses regulatory attention and protections in watersheds where future development would result in cumulative water quality impacts

The General Plan Update policies propose to lessen potential impacts by conducting planning on a watershed basis and focusing regulatory efforts within impaired watersheds; updating sediment and erosion control regulations to reflect the new Water Resources and Conservation and Open Space Element standards described above; controlling the discharge of other pollutants (such as oils, fertilizers, pesticides and other chemicals, encouraging low-impact development design to reduce stormwater flows and improve water quality, and implementing a drainage ordinance to regulate stormwater drainage consistent with the General Plan.

While these policies and programs would reduce some of the adverse impacts to water quality associated with non-point source pollution from projected development r during the General Plan Update planning period, clear standards would need to be established to implement sediment and erosion controls, and additional implementation measures would be required to amend the grading ordinance, low impact development standards would be required to be mandatory within impaired watersheds. Without clear standards and additional storm drainage protections, especially within impaired watersheds, projected development during the planning period could substantially degrade water quality, result in substantial erosion or siltation on- or off-site, or violate water quality standards or waste discharge requirements. As a result, development under the GPU could result in potentially significant hydrology and water quality impacts.

Mitigation

Mitigation 3.10.3.1.a. The following policy and implementation measure shall be added to the Water Resources Element to lessen impacts resulting from erosion, sedimentation, and siltation:

***WR-Px. Continue to Implement Water Quality Regulations.** Continue to implement Division 3, Building Regulations, Section 331-12, Grading, Excavation, Erosion, and Sedimentation Control Regulations, and Division 1, Planning Zoning Regulations Chapter 6 - General Provisions and Exceptions Section 314-61.1 Streamside Management Area Ordinance.*

Mitigation 3.10.3.1.b. The following policy shall be modified to apply to all development in order the Water Resources Element to improve water quality within watersheds subject to TMDL Controllable Sediment Discharge Inventories:

WR-Px2. Mitigate Controllable Sediment Discharge Sites. ~~Proposed Discretionary~~ development applications involving a site identified as part of the TMDL Controllable Sediment Discharge Inventory shall be conditioned to reduce sediment discharge.

Level of Significance after Mitigation

The proposed mitigations would demonstrate that the County will continue to implement and strengthen existing regulations that are intended to reduce water quality impacts. Adoption of the additional or revised policies described in the above Mitigation Measures would therefore minimize water quality impacts of future land uses and development to the extent practicable. However, without quantifiable thresholds, there is no guarantee that even with the adoption and implementation of these mitigations would reduce this impact to a less than significant level. Therefore, this impact remains **significant and unavoidable**.

Impact 3.10.3.2: Deplete Groundwater Supplies or Interfere With Groundwater Recharge

Implementation of the General Plan Update would result in additional development that could impact groundwater recharge and supply.

This impact analysis addresses item “b” of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.10.2 above. Pursuant to these standards, the proposed County General Plan Update would have a significant impact if it would:

- b) 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).

As described in Impact 3.10.3.1, Degrade Water Quality or Exceed Waste Discharge Requirements, implementation of the General Plan Update would result in the construction of additional impervious surfaces that would increase stormwater flows. Impervious surfaces would also decrease the land area available for the infiltration of rainwater by the soil, thereby reducing groundwater recharge. The development of streets and drainage systems, as well as construction on hillsides that typically require the construction of retaining walls and subsurface drainage features, can also divert groundwater to surface drainage systems and further minimizes groundwater recharge.

Approximately 1,721 housing units are projected to be developed by the General Plan Update planning period population peak. Of the 1,721 new units, approximately 1,378 would be located within the groundwater basins listed in the Setting Section above, of which 133 would likely need to utilize on-site groundwater wells or surface water diversions. The following table lists the allowable units that could be constructed within each groundwater basin. It should be noted that additional non-residential development would also be expected to be developed within and these groundwater basins, with similar impacts.

Table 3.10-4. New Housing Units (2028) within Humboldt County Groundwater Basins.

Groundwater Basin	Predominant Planning Watershed ¹	Inside Service Area	Outside Service Area
Garberville Town Area	1-South Fork Eel	71	6
Weott Town Area	1-South Fork Eel	3	0
Eel River Valley	2-Lower Eel	80	5
Pepperwood Town Area	2-Lower Eel	0	1
Dinsmores Town Area	7-Van Duzen	0	1
Larabee Valley	7-Van Duzen	0	0
Prairie Creek Area	8-Redwood Creek	0	0
Redwood Creek Area	8-Redwood Creek	3	0
Honeydew Town Area	9-Cape Mendocino	0	0
Mattole River Valley	9-Cape Mendocino	0	0
Big Lagoon Area	10-Trinidad	0	3
Mad River Valley	11-Mad River	292	17
Eureka Plain	11-Mad River	729	167
Total		1,177	201

1. Groundwater basins as mapped by the Department of Water Resources and cross planning watershed boundaries.

Source: Humboldt County Planning and Building Department, 2017

Approximately 75 percent of projected residential development would occur within the service area of the Humboldt Bay Municipal Water District (HBMWD), including approximately 86 percent of planned development within the Eureka Plain Planning Watershed and 96 percent within the Mad River Planning Watershed. The HBMWD Groundwater Management Plan (April, 2006) indicates that "groundwater recharge is achieved by inundation of the recharge areas in the Mad River channel" through the District's operation of Matthews Dam and Ruth Lake (Section 5.3, Operation of Matthews Dam and Ruth Lake). As a result, additional development within the basin would not have a direct impact on the volume of groundwater available to HBMWD, but additional development adjacent to the Mad River channel could have an impact on the quality of the groundwater. In addition, planned development within the Eureka Plain and Mad River Planning Watersheds could impact the recharge of the Mad River Valley and Eureka Plain groundwater basins not related to the HBMWD operation of Matthews Dam.

All of the water service areas directly overlie or are adjacent to one of the groundwater basins listed in the Setting Section above except the Miranda Community Services District (CSD), Resort Improvement District (RID) No. 1 (Shelter Cove), Willow Creek CSD (water and wastewater service areas), Alderpoint County Water District (CWD), Benbow Water Company, Orleans CSD, and Phillippsville CSD. Urban levels of development are planned within each of these service areas, and rural levels of development are also planned in areas that overlie other groundwater basins. Within watersheds dominated by permeable soils, the development of additional impervious surfaces and the conversion of forest and agricultural lands could reduce groundwater recharge areas. As a result, impacts to groundwater supplies and private well

production could occur in areas where groundwater wells are used by municipal, residential, and agricultural uses.

Table 3.10-4, New Housing Units within Humboldt County Groundwater Basins, above, displays available information about each Humboldt County groundwater basin and indicates that that Mad River Valley, Eel River Valley, and Eureka Plain are the most developed basins in terms of the number of municipal, agricultural, and domestic wells. A review of water level data available from the California Department of Water Resources Water Data Library, which maintains groundwater level data for 18 wells in the County (<http://www.water.ca.gov/waterdatalibrary>), seems to indicate that groundwater surface elevations in the County are generally stable. However, available information regarding Humboldt County groundwater aquifer production or capacity is not sufficient to support conclusions regarding groundwater capacity. Better estimates of groundwater supply are needed to ensure that wells associated with new housing units outside the boundaries of water services providers would not surpass the capacity of a particular aquifer under various future rainfall scenarios.

In addition, the development of new groundwater wells has the potential to intercept contaminated groundwater from historic land uses in the area. Applications for new well permits are submitted to the Department of Health and Human Services Public Health Branch, Environmental Health Land Use Program. The Land Use Program follows the procedures established in Title VI - Water and Sewage, Division 3, Wells, of the Humboldt County Code. The County Code applies the Department of Water Resources Water Well Standards (Bulletins 74-81 & 74-90 combined). Division 3, Wells, of the County Code and Bulletins 74-81 and 74-90 establish minimum application requirements and standards for well installation that are intended to protect the health, safety, and general welfare of County residents.

As described in the earlier section, the Eel River Valley Groundwater Basin (Basin) as "medium" priority requiring a groundwater sustainability planning. Humboldt County has prepared a Groundwater Sustainability Plan (GSP) Alternative in collaboration with stakeholders representing agricultural, municipal, and environmental interests, as the local response to the Sustainable Groundwater Management Act (SGMA).

The GSP Alternative found that groundwater levels at the Basin scale have been generally stable, including during the droughts of 1976-1977 and 1987-1992, and recent drought conditions from 2013 through 2015. Well elevation levels generally do not drop below a minimum elevation during droughts. Groundwater use is a small percentage of annual recharge and a small percentage of groundwater storage volume. Water use within the Basin over the next five years is projected to be closely comparable to existing conditions. The position of the seawater/freshwater transition zone mapped in 2016 is comparable to the extent measured in 1975.

Existing data indicate acceptable water quality and the absence of a contaminant plume affecting water supplies. The underlying conditions for potential land subsidence are not present. Late-summer low-flows are a concern in the Lower Eel River and Lower Van Duzen River; however, the primary anthropogenic factors are upstream diversions, sedimentation and post-flood sediment deposits, and changing forest composition at the watershed scale. Multiple lines of evidence demonstrate that groundwater use within the Basin is not causing undesirable results associated with beneficial uses of interconnected surface waters.

Based on the GSP Alternative, Humboldt County concludes Humboldt County concluded, that the Basin is being managed sustainably for beneficial uses without undesirable results, and a GSP

Alternative is the most appropriate compliance option for achieving the goals of SGMA. This GSP Alternative includes a goal-setting framework that is appropriate for Basin conditions and the current state of scientific data and understanding, along with a monitoring plan and commitments for annual reporting and a five-year assessment.

Analysis of Relevant General Plan Update Policies

Potential impacts to new development supplied domestic water from on-site water wells resulting from the General Plan Update is addressed through the following policies, standards and implementation measures. Implementation Measure WR-IM11, Watershed Data, seeks funding to support studies relating to water quality and quantity as well as to identify and map important groundwater recharge areas. A number of other policies and programs that are intended to protect water resources, and groundwater in particular, include: WR-P1, Sustainable Management, directs that land use decisions conserve, enhance, and manage water resources on a sustainable basis. Policy WR-P2, Protection for Surface and Groundwater Uses, requires that impacts on beneficial uses are mitigated (meaning eliminated or avoided) during the review of discretionary permits. WR-P12, Groundwater Quality Protection, protects groundwater from contamination that could result from discretionary commercial and industrial development. Finally, Implementation Measure WR-IM12, Sustainable Groundwater Management Plans, supports the development of Sustainable Groundwater Plans consistent with state law.

The General Plan Update also contains policies intended to address groundwater supply associated with rural development reliant upon on-site sewage disposal. For the zoning and subdivision of all areas designated for rural residential development the Rural Land Chapter of the Land Use Element contains Rural Land (RL) Policy RL-P2, Water Withdrawal, which requires an assessment of the cumulative impacts of water withdrawal from surface and groundwater sources. Additionally, WR-P6, Subdivision Water Supply, requires that any subdivision of land shall be conditioned to require evidence of sufficient water supply during drought conditions to meet the projected demand associated with the proposed subdivision. Under this policy, sufficient water supply shall include the requirements of the proposed subdivision and existing and planned future uses. A written service letter from a public water system written in conformance with this policy is required prior to subdivision development. Subdivisions to be served through on-site water supplies or private water systems must provide evidence of sufficient water supply to the County Department of Environmental Health. Standard RL-S4, Subdivision Standards, establishes standards for rural subdivisions, including the use of current standards of the Division of Environmental Health as proof of adequate water for domestic use.

The Housing Element also contains Housing Policy H-P29, Reduce and Avoid Impacts to Biological Resources, which requires that the County refer all building permit applications that would result in the withdrawal of water from perennial streams or rivers, or from wells within 100 feet of a perennial stream or river, or from springs within 100 feet of a perennial stream or river, to the Department of Fish and Wildlife for comments and recommendations.

Finally, with Policy WR-Px1, Requirements for Water Storage in Flow Impaired Watersheds, the County will require new development that is proposed within flow impaired watersheds, that will not be served by public water, and that seeks to rely upon surface water, to install water storage capable of providing 100 percent of the necessary water storage volume for the summer low-flow season. In addition, a forbearance agreement eliminating water withdrawals during low-flow season is required as a performance standard for the project.

Although there is no indication that wells have yet been impacted, saltwater intrusion is a concern in coastal areas that utilize groundwater for municipal or agricultural purposes or that

may be subject to the effects of sea level rise. Policy WR-P13, Saltwater Intrusion, requires that discretionary projects involving groundwater withdrawals in proximity to coastal areas shall demonstrate that groundwater supplies will not be adversely affected by saltwater intrusion.

Under Implementation Measure WR-IM8, Watershed Planning, the County is tasked with maintaining relevant land use data on watershed basis to support watershed based management and decision-making processes. Consistent with that measure, Implementation Measure WR-IM11, Watershed Data, directs the County to seek and secure funding to evaluate the quality and quantity of water resources in each of the watershed basins, and to support studies that correlate the quality and quantity of water captured, stored, and contained within watersheds to the needs of beneficial water uses by residents, local industry, agriculture, and the natural environment. This measure also seeks to identify and map important groundwater recharge areas. In addition, through Implementation Measure WR-IM12, Sustainable Groundwater Plans, the County would support the development of Sustainable Groundwater Plans consistent with California Water Code.

Conclusion

Development allowed under the General Plan Update could result in significant impacts to groundwater recharge and groundwater supplies. To address this, the General Plan Update provides protections for groundwater basins within critical watersheds and assesses potential cumulative impacts to groundwater as part rural subdivisions and zone reclassifications.

In addressing depletion of groundwater supplies or interference with groundwater recharge, the General Plan Update approach was to develop a comprehensive set of policies, standards and implementation measures that would safeguard against depletion of or interference with groundwater as a consequence of new development that may occur under the Plan. Among these are policies directly related to groundwater supply protections such as: RL-P2, WR-P6, and RL-S4. Requirements for water storage in flow impaired watersheds is addressed by WR-Px1. Finally, a watershed approach to groundwater supply issues is included with Implementation Measures WR-IM8 and WR-IM11.

Most of the County's watersheds are listed on the 303(d) list of impaired water bodies because of high water temperatures associated with low streamflows, While WR-PX1 will reduce impacts of new development on temperature-impaired watersheds to less than significant levels by disallowing water withdrawal from streams during the dry months, the GPU does not include policies that encourage existing and new development to enhance groundwater storage capacity.

Mitigation

Mitigation 3.10.3.2.a. The following policy shall be added to the Water Resources Element to improve groundwater recharge capacity:

WR-Px. Enhance Groundwater Recharge Capacity. Encourage watershed management practices that enhance infiltration of rainfall into the groundwater.

Level of Significance after Mitigation

Adoption of the policies, standards, and implementation measures identified above as well as Mitigation Measure 3.10.3.1.a would reduce adverse impacts to groundwater resources and

wells that may result from development allowed under the General Plan Update to a **less than significant level**.

Impact 3.10.3.3: Alter the Existing Drainage Patterns or Exceed the Capacity of Stormwater Drainage Systems

Implementation of the General Plan Update would result in additional impervious surfaces and soil compaction that could result in increased stormwater runoff that alters drainage patterns and that could exceed existing stormwater drainage capacity.

This impact analysis addresses item “d” and “e” of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.10.2 above. Pursuant to these standards, the proposed County General Plan Update would have a significant impact if it would:

- d) 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.
- e) 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.

As described in Impact 3.10.3.1: Degrade Water Quality or Exceed Waste Discharge Requirements, implementation of the proposed General Plan Update would result in additional impervious surfaces and the compaction of soils adjacent to developed areas that would increase peak flow rates of stormwater runoff. In addition to reducing water quality, such development could alter drainage patterns and potentially increase runoff in volumes that would exceed the existing stormwater drainage systems in the County.

In undeveloped areas, rainfall collects and flows at a natural rate through the soil as subsurface flow and on the surface through natural drainages. In contrast, developed areas, where portions of the land surface are covered by impermeable surfaces, have less capacity to store rainfall. Impermeable surfaces such as roads, roofs, parking lots, and sidewalks store little water, reduce infiltration of water into the ground, and accelerate runoff to ditches and streams. Even in areas with low density development, where lawns and other permeable landscaping would be common, rainfall can saturate thin soils and produce overland flow which runs off quickly. Because of accelerated runoff from development or construction activities, the peak discharge, volume and frequency of floods could increase in nearby streams (U.S. Geological Survey Fact Sheet 076-03, Effects of Urban Development on Floods, <https://pubs.usgs.gov/fs/fs07603/>).

Specific construction projects are not contemplated as a part of the General Plan Update; however, there will be construction activities in support of growth projected to occur during the planning period. Land-disturbing construction activities associated with such development would likely include grading and excavation, construction of new building foundations, roads, driveways, and trenches for utilities, and could result in the localized alteration of drainage patterns. Temporary ponding and/or flooding could result from such activities, from temporary alterations of the drainage system (reducing its capacity for carrying runoff), or from the temporary creation of a sump condition due to grading.

Pursuant to the Humboldt County Code and the National Pollutant Discharge Elimination System (NPDES) permit program administered by the state, Stormwater Pollution Prevention Plans are prepared and Best Management Practices (BMPs) are required to be implemented for

construction sites greater than one acre. In compliance with grading permits, the development of future land uses as designated in the proposed General Plan Update would continue to implement BMPs, such as the following examples:

- Minimizing disturbed areas. Clearing of land is limited to that which will be actively under construction in the near term, new land disturbance during the rainy season is minimized, and disturbance to sensitive areas (e.g., steep slopes and natural watercourses) or areas that would not be affected by construction is minimized.
- Stabilizing disturbed areas. Temporary stabilization of disturbed soils is provided whenever active construction is not occurring on a portion of the site, and permanent stabilization is provided by finish grading and permanent landscaping.
- Protecting slopes and channels. Outside of the approved grading plan area, disturbance of natural channels is avoided, slopes and crossings are stabilized, and increases in runoff velocity caused by the project is managed to avoid erosion to slopes and channels.
- Controlling the site perimeter. Upstream runoff is diverted around or safely conveyed through the project and is kept free of excessive sediment and other constituents.
- Controlling internal erosion. Sediment-laden waters from disturbed, active areas within the site are detained.

Implementation of appropriate BMPs as part of compliance with construction permits would reduce the potential for the development of future General Plan Update land uses to 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 flooding on or off site.

Impact 3.10.3.1, Degrade Water Quality or Exceed Waste Discharge Requirements, above, provides a description of the regulations contained in f the Humboldt County Code that address nonpoint source pollution and sedimentation under Title III, Land Use and Development Division 3, Building Regulations Section 331-12, Grading, Excavation, Erosion, and Sedimentation, and Section 314-61.1 Streamside Management Area Ordinance. These regulations are intended to reduce erosion and sedimentation and protect stream courses and wetland areas.

Analysis of Relevant General Plan Update Policies

The proposed General Plan Update includes goals and policies that reduce the potential for the substantial alteration of existing drainage patterns through development, which could result in runoff and flooding on or off site. The Land Use Element, Water Resources Element and Safety Element, various goals and policies to reduce such impacts.

Community Infrastructure and Services Policy IS-P9, Capacity of Facilities and Land Use Decisions, evaluate the capacity and sizing of drainage facilities to determine adequacy for proposed land uses and discretionary development. Policy IS-P16, Drainage and Flood Control, and Implementation Measure IS-IM13, Drainage and Flood Control Plan, directs the County to develop and maintain a countywide drainage and flood control plan to guide capital improvements and maintenance. These policies and programs provide that drainage facilities are planned with development and limit the likelihood that runoff water would exceed the capacity of existing or planned stormwater drainage systems.

The Conservation and Open Space Element also contains protections to prevent alteration of existing drainage patterns by development that could result in flooding on or off site. Biological Resources Chapter Policy BR-P4, Development within Stream Channels, specifies that

development within stream channels shall only be permitted when there is no lesser environmentally damaging feasible alternative, and where the best feasible mitigation measures have been provided to minimize adverse environmental effects. Standard BR-S9, Erosion Control, requires that development within Streamside Management Areas minimize land clearing and vegetation removal; long slopes be minimized to increase infiltration and reduce water velocities down cut slopes by such techniques as soil roughing, serrated cuts, selective grading, shaping, benching, and berm construction and control concentrated runoff.

The Water Resources Element has a goal to utilize natural drainage and onsite infiltration, WR-G9, Storm Drainage, and contains specific policies and standards to minimize the alteration of existing drainage patterns through development which could result in flooding on or off site. Policy WR-P30, Natural Stormwater Drainage Courses, requires that natural drainage courses be retained and protected from development impacts on flow rates or water quality. Policy WR-P31, Downstream Stormwater Peak Flows, requires that peak stormwater discharge not exceed the capacity limits of off-site drainage systems or cause downstream erosion, or flooding. Additionally, under this policy new development shall demonstrate that post-development peak flow discharges will mimic natural flows to watercourses and avoid impacts to Beneficial Uses of Water. Policy WR-P32, New Drainage Facilities, specifies that where it is necessary to develop additional drainage facilities, they shall be designed to be as natural in appearance and function as is feasible; all drainage facilities shall be designed to maintain maximum natural habitat of streams and their streamside management areas and buffers; and detention/retention facilities shall be managed in such a manner as to avoid reducing streamflows during critical low-flow periods. Policy WR-P38, Storm Drainage Impact Reduction, requires the use of Low-Impact Development (LID) standards to reduce the quantity and increase the quality of stormwater runoff from new development and redevelopment projects in areas within the County's MS4 boundary or as triggered under other Regional Water Board permits. This policy also states that for all other watersheds, the County is directed to develop storm drainage development guidelines with incentives to LID standards to reduce the quantity and increase the quality of stormwater runoff from new developments. The County's intent to develop and utilize low impact development standards is further echoed in Implementation Measure WR-IM26, Low Impact Development Methods, which requires projects to utilize best management practices for Low Impact Development to meet surface water run-off standards.

Conclusion

The proposed General Plan Update policies described above reduce the potential for the substantial alteration of existing drainage patterns through development that could result in flooding on or off site and additional sources of pollution. The Community Infrastructure and Services Element provides for a drainage and flood control plan limit the likelihood that runoff water would exceed the capacity of existing or planned stormwater drainage systems. The Conservation and Open Space Element contains standards for erosion control and to control concentrated runoff. The Water Resources Element contains requirements for low impact development standards in urbanized areas and incentives for their use elsewhere; requires that natural drainage courses be retained, and establishes requirements for downstream peak stormwater flows by policy. Adoption of the policies, standards, and implementation measures identified above would reduce adverse effects relating to the alteration of drainage patterns or increased runoff from development allowed under the General Plan Update to a **less than significant level**.

Mitigation

None required.

Impact 3.10.3.4: Housing within a 100-year Flood Hazard Area or Expose People or Structures to Flooding from Levee or Dam Failure, Tsunami, or Mudflow

Implementation of the General Plan Update would result in additional development located in areas subject to flooding, tsunami, and mudflows.

This impact analysis addresses item “g” through “j” of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.10.2 above. Pursuant to these standards, the proposed County General Plan Update would have a significant impact if it would:

- g) 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.
- h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- j) Inundation by seiche, tsunami, or mudflow.

A significant flood hazard exists along the County's major rivers. Population increases as anticipated in the General Plan Update may result in additional life and property being exposed to these hazards. Floodplain or floodway encroachment could alter flood-carrying capacity along watercourses, possibly creating additional hazards. Residential land uses designations planned in areas subject to flooding would have the highest potential to expose populations to risk of flooding.

Flooding can inundate and cause water damage to structures, bury structures, knock them off their foundations, or completely destroy them by the impact of high velocity water and debris, which can include sizable boulders. Impacts resulting from flooding include the loss of life and/or property; health and safety hazards; disruption of commerce, water, power, and telecommunications services; loss of agricultural lands; and infrastructure damage. Areas at the greatest risk of flooding include the lowlands near the Eel River (including the Van Duzen and South Fork), the Mad River, Eureka Plain (especially Freshwater and Jacoby Creeks), and the Trinity River. The following table contains a listing of projected new dwelling units on parcels that are within or touch the FEMA 100-Year Flood Zone or Floodway.

Table 3.10-5. Projected Additional Housing Units within 100-Year Flood Zone.

Planning Watershed	Projected Additional Housing Units - 2028
1 - South Fork Eel	20
2 - Lower Eel	4
3 - Middle Main Eel	0
4 - Lower Klamath	0
5 - South Fork Trinity	0
6 - Lower Trinity	0
7 - Van Duzen	0
8 - Redwood Creek	0
9 - Cape Mendocino	0
10 - Trinidad	0
11 - Mad River	30
12 - Eureka Plain	27
Total	81
Source: Humboldt County Planning and Building Department	

Dam failure would cause a flood hazard similar to that described above, except that inundation would occur more rapidly. There are 20 dams of concern that are either in Humboldt County or impound rivers that flow through the County (see Humboldt Operational Area Hazard Mitigation Plan Update Volume 1: Planning-Area-Wide Elements-Chapter 8. Dam Failure, Table 8-1. Dams in the Planning Area or with Inundation Areas that extend into the Planning Area (in order of storage capacity) <http://www.humboldt.gov/DocumentCenter/Home/View/1003>). A failure of any of these dams would threaten life and property to some degree. Dam failure inundation areas affect lands planned for development along the Klamath, Trinity, and Mad Rivers, including Willow Creek, Orleans, and Glendale. Resource lands adjacent to the Middle Fork and Lower Eel River could also be affected by dam failure on that river. The time from dam failure until the resulting floodwaters reach developed portions of the County will be five and one half hours on the Mad River (Robert W. Matthews Dam), about six hours on the Eel River (Van Arsdale Dam), and seven hours on the Trinity River (multiple dams, see Humboldt Operational Area Hazard Mitigation Plan Update Chapter 8. Dam Failure, Section 8.2.5 Warning Time). The Humboldt County Emergency Operations Plan contains response procedures that would be implemented in the event of dam failure. The potential effects of flooding from dam failure (additional to current baseline conditions) are not considered to be significant.

Mass movement (a collective term for landslides, debris flows, falls and sink holes, and which are caused by a combination of geological and climate conditions, as well as the encroaching influence of urbanization pursuant to Part 2, Chapter 12 of the Humboldt Operational Area Hazard Mitigation Plan, 2014, which provides more information regarding mass movement) are common in Humboldt County and occur particularly in response to intense, short-duration storms, and in combination with larger earthquakes. The most recent mass movement events in the County occurred during the winter storm of 2005-06. Humboldt County was declared and designated a county for "California Severe Storms, Flooding, Mudslides, and Landslides" by FEMA after this event. This designation was in large part due to the record high rains and winds of the 2005-06 winter storms resulting in thousands of large and small-scale landslides along every

major transportation corridor of the County (U.S. Highways 101, 299, 96 and 36). In the winter of 1996-97, a mudslide that started in timberlands above the community of Stafford was approximately 100 yards wide and destroyed seven homes. Mass movement is a major hazard concern throughout Humboldt County that cannot be eliminated. Based upon the projected distribution of development consistent with the General Plan Update, new development could occur within throughout the County that could be subject to impacts from mass movement. It would be possible to reduce this impact to future development through site-specific geologic investigations. In most cases, landslides can be mitigated using the findings of geologic investigations and current design and construction methods.

The Section 3.8.1 Geology and Soils -Environmental Setting of the Geology and Soils describes the seismic setting in Humboldt County, tsunamis that have occurred within the County in the past and the likelihood of tsunamis in the future. Impact 3.8.3.1, Exposure to Seismic-Related Hazards, analyzes tsunami hazard associated with the General Plan Update and determined that tsunamis are a significant hazard in Humboldt County due to its proximity to the Cascadia Subduction Zone. Implementation of the General Plan Update could result in new land uses and development in close proximity to the Pacific Ocean, Humboldt Bay, and the low-lying areas near the shore, and therefore would potentially expose people and structures to the risk of tsunamis generated primarily by high-magnitude earthquakes. Recent studies indicate there is potential for a tsunami from 10 to 30 feet above mean sea level, possibly higher, to impact the Humboldt coast, affecting an area similar to, but slightly larger than the FEMA 100-year flood plain. Of note is that the potential for the highest tsunami waves is from a near-source Cascadia Subduction Zone event, resulting in a very short response time, on the order of 15 minutes, possibly less.

Tsunami inundation areas lie almost exclusively within the Coastal Zone, where they are addressed as part of the Hazards section of the certified Local Coastal Program and the Coastal Act. Most existing and planned development that is located within mapped tsunami evacuation areas is located within the Humboldt Bay segment of the Humboldt County Coastal Zone. The tsunami hazard policy in the Humboldt Bay Area Plan was amended in 2012 to prohibit new habitable living space below the predicted tsunami run-up elevation calculated at maximum tide plus a minimum of three (3) feet to account for future sea level rise and one foot of freeboard space, as well as other measures to reduce tsunami hazard (Section 3.17(B)(3)). Humboldt County was awarded a grant from the California Coastal Commission in 2014 to amend the Humboldt Bay Area Plan, which will include the completion (or substantial progress towards completion) of a Tsunami Safety Plan based on the Tsunami-Ready Guidelines of the National Weather Service, for each Humboldt Bay Area Plan community. The grant also includes developing tsunami safety mapping and policy options for updating the Local Coastal Plan tsunami hazards policy. The grant requires that the County incorporate tsunami inundation mapping, and review and revise as necessary tsunami hazard and risk analysis and policies developed for the Samoa Town Master Plan, as well as the ongoing work of other agencies conducting accurate tsunami inundation mapping for all potential annual occurrence rates for Humboldt Bay. This new tsunami hazard policy will likely serve as the template for updates to other Coastal Zone segments within the County.

Humboldt County Code Division 3, Building Regulations, Chapter 5, Flood Damage Prevention is applied to all lands situated within the areas of special flood hazard as identified on the Federal Insurance Administration's Federal Insurance Rate Maps (FIRM) for Humboldt County. These regulations are intended to protect lives and property from flood hazards and require that building permit applications be compared to the flood hazard maps published by FEMA to determine whether a proposed new residence will be located in an area with potential flood hazards. If the residence appears to be subject to flood hazards, the applicant is required to

submit a site specific engineering analysis to ensure the design of the structure meets federal requirements for flood hazard protection before approving the building permit.

Analysis of Relevant General Plan Update Policies

The flood plain management measures in the General Plan Update will serve to reduce unnecessary exposure to flood hazards from new development, and may over time reduce the overall risk to the population. The dam failure contingency plans contained in the Hazard Mitigation Plan outline an emergency response that is designed to reduce the impacts on life and property in the event of dam failure. The Safety Element contains policies and standards that are intended to identify geologic hazards, such as the potential for mudflows, and specify mitigations to reduce risk to life and property.

The following Safety Element policies and standards address the potential for flood hazards. Policy S-P10, Federal Flood Insurance Program, requires the County to participate in the Federal Flood Insurance Program and maintain Flood Damage Prevention regulations in the County Code to regulate land uses in flood hazard areas in order to minimize loss of life and property and public flood-related expense. This policy ensures that all flood prone areas within the County would continue to be identified through the establishment of flood-risk zones. Policy S-P11, Flood Plains, requires that the County plan agricultural lands that are in mapped floodplains for continued agricultural use. This policy ensures that agricultural areas can continue to provide flood relief to developed areas that are outside the flood zone.

The Safety Element contains Standard S-S1, Geologic Report Requirements, which requires reports addressing geologic hazards and geologic conditions. This standard continues to implement current building regulations that minimize risks to life and property and assure stability and structural integrity in areas subject to geologic hazard. Standard S-S2, Landslide Maps, specifies the use of California Division of Mines and Geology, North Coast Watersheds landslide mapping as information in the review of developments. Policy S-PX2, Prohibition of Residential Subdivisions within Floodplain, prohibits an increase in residential density wholly within the 100 year floodplain unless the potential for loss of life and property can be reduced to less than significant levels. Additionally, Policy S-PX3, Construction Within Special Flood Hazard Areas, requires that construction within the 100-Year Flood Boundary comply with the County's Flood Damage Prevention Regulations. Regarding tsunami hazards, Safety Element Policy S-P8, Earthquake Mitigation Planning, states that the potential for a local earthquake in excess of magnitude 9.0 shall be considered in disaster planning, risk assessment, and pre-disaster mitigation efforts.

Conclusion

The Water Resources Element comprehensively deals with water management and conservation issues, and incorporates various policies and implementation measures that would serve to prevent potential impacts to water resources. The Water Resource Element and Safety Element policies (S-P10, Federal Flood Insurance Program; S-P11, Flood Plains; S-PX2, Prohibition of Residential Subdivisions within Floodplain; and S-PX3, Construction Within Special Flood Hazard Areas.) and standards (S-S5, Flood Regulations. S- S8, Flooding and Drainage Management Activities) would serve to further flood hazard delineation, thus supporting other plan elements designed to avoid placing housing in the 100-year flood hazard area. The policies, standards and implementation measures would serve to avoid exposing people or structures to a significant risk of loss, injury or death involving flooding, including flooding because of the failure of a levee or dam, or from inundation by seiche, or mudflow. However, the County does not yet

have equivalent policies to avoid damage from tsunami hazards. Mitigation is required to prevent damage from tsunami hazards.

Mitigation

Mitigation 3.10.3.4.a. The following Safety Element implementation measure shall be added to require the County address new development in tsunami hazard areas:

S-S7. Tsunamis. New development below the level of the 100-year tsunami run-up elevation shall be limited to public access, boating, public recreation facilities, agriculture, wildlife management, habitat restoration, and ocean intakes, outfalls, pipelines, and dredge spoils disposal.

Level of Significance after Mitigation

Adoption of the policies, standards, and implementation measures identified above as well as Mitigation Measure 3.4.3.4.a, in concert with current and updated policies contained in the Hazards section of the certified Local Coastal Program and the Coastal Act, would reduce to a **less than significant level** adverse impacts relating to development within the 100-year flood hazard area as well as exposure to damage from the failure of a levee or dam, or inundation by tsunami, or mudflow.

3.11 Biological Resources

This section provides background information regarding biological resources within the County, the regulations and programs that provide for their protection, and an assessment of the potential impacts of implementing the proposed General Plan Update. Additional background on biological resources is described in Chapter 2, Biological Resources, of the *Natural Resources and Hazards Report*, September 2002 (Appendix D), which includes a more complete discussion of biological resources in Humboldt County including habitats, fisheries, special status species, and the existing policies concerning these resources. This report was developed utilizing the California Department of Fish and Wildlife (CDFW) and the California Natural Diversity Database (CNDDDB), which includes federally listed or protected species. This report, which is available for review at the Planning Division public counter at 3015 H Street in Eureka during normal business hours or for download at <http://co.humboldt.ca.us/gpu/documentsbackground.aspx>, is incorporated herein by reference and summarized below. Where any discrepancies may exist between the referenced material and the material presented here, the material presented here should be considered as the most up to date and is to be relied upon for the environmental setting and analyses.

3.11.1 Biological Resources - Environmental and Regulatory Setting

Overview

Humboldt County is part of the Klamath/North Coast bioregion. In general, this bioregion is characterized by its rocky coastline, forested montane areas, and sparse human settlement. Much of the bioregion is covered by forest, including many important forest resources in Humboldt County. This mountainous region is also the wettest area in the State of California. The coastal climate is cool, moist, and tends to be foggy, while inland the climate is drier.

The Humboldt coastal area is rich in natural resources. Bays and estuaries and other tidal inlets provide a variety of habitats supporting many species of resident and migratory wildlife. Humboldt Bay, one of California's largest coastal estuaries, is second only to San Francisco Bay in size. The bay is an important habitat for many invertebrates, fish, birds, and mammals. Bay resources include Humboldt Bay National Wildlife Refuge, which was established in 1971 in recognition of the area's unique fish and wildlife values.

The inland area of Humboldt County is home to a wealth of fish and wildlife due to the region's ample rainfall and the mild, consistent climate. Additionally, relatively sparse development and high open space land potential has resulted in nearly 400,000 acres of the County's undeveloped forest and coastline habitats designated as parkland in the State and National Park systems, leaving large tracts of existing habitat untouched. The County is composed mainly of coastline and mountainous areas with dense coniferous forests interspersed with grass or chaparral covered slopes. Six wild rivers run through the County, providing habitats for fish and wildlife as well as important water resources.

Wildlife habitat can be broadly defined as any area that supports wildlife species. The relative lack of development and human disturbance in the area enhances the opportunity for wildlife species to live and reproduce without disturbance. It is often difficult to determine what elements in the landscape actually increase the value of a given habitat. The type of vegetation and the structure of the vegetative community are important characteristics of

habitat since wildlife species rely upon vegetation for food and cover. Slope, elevation, exposure, and accessibility by predators or humans can also have an impact on habitat suitability. Habitat requirements vary according to species, season, and climatic conditions. The varied wildlife habitat types present in Humboldt County provide opportunities for a diverse wildlife population. Habitat in Humboldt County supports fox, deer, elk, waterfowl, marine mammals, salmon, mountain lions, bears, and other fish and wildlife.

A number of biological communities characterize the unincorporated area of Humboldt County. These communities include coniferous forest comprised of Douglas fir, redwood and pine forest (61%), oak woodlands (23%), grassland (10%), and other (6%) which includes coastal beach-dune vegetation, northern coastal scrub, chaparral, salt marsh, riparian, and freshwater marsh. The predominant vegetation type or community found in a certain region can generally be used to characterize habitats. The generalized vegetation types in Humboldt County are listed in Table 3.11-1, below. Chapter 2 of the Natural Resources and Hazards Report, Figures 2-5 through 2-16 in particular, show the detailed distribution of vegetation types throughout Humboldt County.

Table 3.11-1. Vegetation Types in Unincorporated Humboldt County.

Vegetation Type	Total Acres	% of Total
Agriculture-Crops	41,166	2%
Annual Grass	222,109	10%
Chaparral	30,452	1%
Coastal Scrub	13,699	1%
Fir Forest	760,611	34%
Oak Woodlands	502,066	23%
Pine Forest	170,492	8%
Redwood	425,670	19%
Riparian	49,968	2%
Wetlands	8,867	0%
Total	2,225,100	100%
Source: California Department of Forestry and Fire Protection, 2002.		

For additional information, see Section 3.10, Hydrology and Water Resources, for a general discussion of the habitats and geography of each planning watershed within the County. A summary of the habitat types and anadromous species can be found in Section 3.10 Hydrology and Water Resources, of this EIR.

Fish and Wildlife

The anadromous salmonids are species that help define California's north coast and form an integral part of the County's natural ecosystems, cultural heritage, and local economies. California's commercial salmon fishery is an estimated \$100 million-a-year industry. Yet despite their importance, salmonids are also some of the County's most imperiled species. Most of the County's anadromous salmonid stocks have, for multiple reasons, precipitously declined over the past 100 years. Coho salmon, for example, has undergone a 70% decline in abundance since the 1960s, and is currently at 6% to 15% of its abundance during the 1940s (DFG 2004). The region's commercial and recreational fishing industry has been severely impacted by this decline. In 2006, the US Commerce Department declared a commercial fishery failure for coastal Oregon and California. As a result, a \$60 million emergency disaster relief package for the Pacific salmon industry was approved.

As noted in the Natural Resources and Hazards Report, Humboldt County has numerous ecologically and economically important aquatic resources, including wetlands, lagoons, streams, rivers, estuaries and the Pacific Ocean. These resources have both regional and statewide significance. Humboldt Bay, for instance, is California's second largest estuary, and combined with surrounding agricultural lands and the Eel River estuary, is one of the most important migratory waterfowl stopovers along the Pacific Flyway. Humboldt County also has some of the largest and most ecologically important coastal lagoons in the state, and two of California's three largest river systems flow through the County. These streams, rivers and estuaries are habitat for more than 20 state and federal listed threatened and endangered species. Even smaller streams adjacent to urban areas can have significant fisheries values. For instance, CDFW 2005 stream survey data for Freshwater Slough records the presence of 28 fish species, many with important commercial and recreational fisheries value.

Many of the County's larger bodies of water, such as Humboldt Bay; Freshwater, Jacoby, and Redwood Creeks; and the Eel, Elk, Klamath, Mad, Mattole, Trinity and Van Duzen Rivers, are designated by the US Environmental Protection Agency as sediment-impaired pursuant to the Clean Water Act §303(d) or are otherwise impaired by high water temperatures, water diversions, loss of riparian habitat, or barriers to fish passage. A number of these waters, such as Humboldt Bay and its principal tributaries and the lower Eel, Mad, and Van Duzen Rivers, maintain important coho salmon populations that have been designated by CDFW as key populations to maintain or improve (CDFW 2004). Humboldt Bay and many of these important fish-bearing rivers and streams are situated in, or adjacent to, areas serviced by existing water and sewer services, and are therefore in the areas most likely to be impacted by future development.

Special Status Species

The California Department of Fish and Wildlife (CDFW) has developed a list of "special status species." Plant or animal species may be identified as "special status species" even if they are not officially listed as threatened or endangered. "Special Status" species fall under one or more of the following categories:

1. Officially listed or proposed for listing under the State of California and/or the Federal Endangered Species Acts;
2. State of California or federal candidate species for possible listing;
3. A California Department of Fish and Wildlife Species of Special Concern;
4. Species that may be considered endangered or rare under Section 15380(d) of CEQA guidelines;
5. A Bureau of Land Management, U.S. Fish and Wildlife Service or U.S. Forest Service Sensitive Species;
6. Species listed in the California Native Plants Society's Inventory of Rare and Endangered Vascular Plants of California;
7. Species that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extinction;
8. Population(s) of species in California that may be peripheral to the major portion of a species' range but are threatened with extinction in Humboldt or California;
9. Species closely associated with a habitat that is declining in California at an alarming rate (e.g. wetlands, riparian, old growth forests, desert aquatic systems, native grasslands, valley shrub land habitats, vernal pools, etc.).

The following table shows a list of state and federal (CDFW, NMFS, USFWS) listed threatened or endangered animal and plant species in Humboldt County.

Table 3.11-2. Listed Threatened or Endangered Species in Humboldt County.

Scientific Name	Common Name	Status
<i>AMPHIBIANS</i>		
<i>Rana Aurora</i>	California red-legged frog	FT
<i>BIRDS</i>		
<i>Brachyramphus marmoratus</i>	marbled murrelet	SE, FT
<i>Charadrius nivosus nivosus</i>	western snowy plover	FT
<i>Coccyzus americanus occidentalis</i>	western yellow-billed cuckoos	SE, FT
<i>Empidonax traillii</i>	willow flycatcher	SE
<i>Haliaeetus leucocephalus</i>	bald eagle	SE
<i>Passerculus sandwichensis beldingi</i>	Belding's savannah sparrow	SE
<i>Riparia riparia</i>	bank swallow	ST
<i>Rallus longirostris obsoletus</i>	California clapper rail	SE, FE
<i>Strix nebulosi</i>	great gray owl	SE
<i>Strix occidentalis caurina</i>	northern spotted owl	ST, FT
<i>FISH</i>		
<i>Acipenser medirostris</i>	green sturgeon	FT
<i>Eucyclogobius newberryi</i>	tidewater goby	FE
<i>Oncorhynchus kisutch</i>	coho Salmon	ST, FT
<i>Oncorhynchus mykiss</i>	steelhead	FT
<i>Oncorhynchus tshawytscha</i>	Chinook salmon	FT
<i>Spirinchus thaleichthys</i>	longfin smelt	ST
<i>Thaleichthys pacificus</i>	Pacific eulachon	FT
<i>INSECTS</i>		
<i>Speyeria zerene behrensii</i>	Behren's silverspot butterfly	FE
<i>Gastropods</i>		
<i>Monadenia infumata setosa</i>	Trinity bristle snail	ST
<i>PLANTS</i>		
<i>Astragalus agnicidus</i>	Humboldt milk-vetch	SE
<i>Erysimum mensiesii</i>	Menzies' wallflower	SE, FE
<i>Howellia aquatilis</i>	water howellia	FT
<i>Layia carnosa</i>	beach layia	SE, FE
<i>Lilium occidentale</i>	western lily	SE, FE
<i>Noccaea fendleri</i> ssp. <i>Californica</i>	Kneeland Prairie pennycress	FE

Source: CDFW, California Natural Diversity Database; January 2017 memo

ST – State threatened; SE – State Endangered; FT – Federally threatened; FE – Federally endangered.

There are other plant and animal species that have not been listed as threatened or endangered at the federal or state level, but which are still rare enough to be listed in the California Natural Diversity Database (CNDDB). These species, such as the golden eagle, great blue heron, osprey, and the pacific fisher, would meet the criteria for listing but have not yet been formally listed or selected as candidates. See Natural Resources and Hazards Report, Section 2, Biological Resources, Table 2-16 for a complete listing and mapping of these species in Humboldt County.

CDFW has also identified a number of Significant Natural Areas (SNAs). SNAs are designated sites that support extremely rare communities or species, populations of several special-status species, high-quality examples of special biological communities, or high species diversity. In addition to the specific sites identified as SNAs, other biological communities in the County require special protection. See the General Plan Biological Resources Maps at <http://www.co.humboldt.ca.us/gpu/documents/maps.aspx> for a mapping of these areas.

The *Natural Resources and Hazards Report* provides a summary of each planning watershed within the County. See The *Natural Resources and Hazards Report*, Section 2, Biological Resources, pages 2-22 through 2-34. Figures 2-5 to 2-16 of that report illustrate the distribution of vegetation types within each watershed. Tables 2-4 through 2-15 list the federal and state listed special status species in Humboldt County's planning watersheds. The Eureka Plain, Mad River, and Trinidad watersheds have the greatest number of federal and state listed species. The only species found consistently in every watershed is the state and federally threatened northern spotted owl.

Habitat Conservation Planning

In the 1982 amendments to the federal Endangered Species Act, Congress established a mechanism authorizing the U.S. Fish and Wildlife Service and the National Oceanographic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries, also referred to as NMFS) to issue to non-federal entities planning activities that have no federal nexus, a permit for the "incidental take" of endangered and threatened wildlife species. This permit allows these activities that are otherwise legal but would result in the "incidental" taking of a listed species, to proceed. The ESA defines incidental take as "incidental to, and not the purpose of, the carrying out of an otherwise lawful activity."

A Habitat Conservation Plan, or HCP, must accompany an application for an incidental take permit. The purpose of the HCP is to ensure that the effects of the permitted action on listed species are adequately minimized and mitigated. The permit authorizes the incidental take, not the activity that results in take. The activity itself must comply with other applicable laws and regulations.

The USFWS and/or West Coast Region NOAA Fisheries websites list the following HCPs in Humboldt County and the following information describing the HCPs:

- Green Diamond Resource Company California Timberlands (formerly Simpson Timber Company) Northern Spotted Owl HCP: HCP Permit #767798 was issued on September 17, 1992, covering 380,000 acres in Humboldt, Del Norte and Trinity Counties, California, to be used for forest management activities. The threatened northern spotted owl (*Strix occidentalis caurina*) is covered under the incidental take permit for a period of 30 years.
- Regli Estates HCP: HCP Permit #803749 was issued on August 30, 1995, covering 500 acres in Humboldt County, California, to be used for forest management activities. Two threatened species, the marbled murrelet (*Brachyramphus marmoratus*) and northern spotted owl, as well as two non-listed species, the bald eagle (*Haliaeetus leucocephalus*) and American peregrine falcon (*Falco peregrinus anatum*), are covered under the incidental take permit for a period of 20 years.
- Pacific Lumber Company (now Humboldt Redwoods Company) HCP: Permit #TE828950-0 was issued on March 1, 1999, covering 211,700 acres in Humboldt County, California, to be used for forest management activities, mining or other extraction. The following three threatened and nine non-listed species are covered under the incidental take permit for a period of 50 years.
 - Threatened species:
 - Marbled murrelet
 - Northern spotted owl

Western snowy plover (*Charadrius alexandrinus nivosus*)

Candidate species:

Pacific fisher (*Martes pennant pacifica*)

Non-listed species:

Bald eagle

American peregrine falcon

Foothill yellow-legged frog (*Rana boylei*)

Northern red-legged frog (*Rana aurora aurora*)

Tailed frog (*Ascaphustruei*)

Southern torrent salamander (*Rhyacotriton variegatus*)

Northwestern pond turtle (*Clemmys marmorata marmorata*)

California red tree vole (*Phenacomys longicaudus*)

- Green Diamond Resource Company, 2007 Aquatic Habitat Conservation Plan/Candidate Conservation Agreement with Assurances (AHCP/CCAA) covering its timberland ownership in Del Norte and Humboldt counties in Northern California. The plan seeks to conserve habitat for, and mitigate impacts on, seven aquatic species: Coho salmon; steelhead; Chinook salmon; coastal cutthroat trout; rainbow trout; the southern torrent salamander and the tailed frog. The plan was negotiated between Green Diamond Resource Company, The National Oceanic and Atmospheric Association's National Marine Fisheries Service (NOAA Fisheries Service), and the U.S. Fish & Wildlife Service.
- Humboldt Bay Municipal Water District HCP, 2004, covering the width of the Mad River bank full channel from the river mouth to Mathews Dam in Trinity County, to be used for flow release and management activities; diversion activities in the Essex reach; maintenance; and periodic excavation. Chinook and coho salmon and steelhead and coastal cutthroat trout are covered under the incidental take permit for a period of 50 years.

3.11.2 Biological Resources - Standards of Significance

This analysis uses the significance criteria from the CEQA Guidelines Appendix G. The proposed General Plan Update would result in a significant impact on biological resources if it would do any of the following:

- a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.
- b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service.
- c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

- f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Items "a" and "b" are discussed together in Impact 3.11.3.1, Sensitive Species and Sensitive Habitat Areas, Item "c" is discussed in Impact 3.11.3.2, Wetlands, Item "d" is discussed in Impact 3.11.3.3, Wildlife Corridors and Nursery Sites, Item "e" is discussed in Impact 3.11.3.4, Local Policies and Ordinances, and Item "f" is discussed in Impact 3.11.3.5, Habitat Conservation Plans.

3.11.3 Biological Resources - Impacts and Mitigation Measures

Impact 3.11.3.1 Sensitive Species and Sensitive Habitat Areas

Implementation of the General Plan Update would result in additional development that could adversely impact special status species or habitat.

This impact analysis addresses items "a" and "b" of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.11.2 above. Pursuant to these standards, the proposed County General Plan Update would have a significant impact if it would:

- a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.
- b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service.

Future development consistent with the General Plan Update could result in substantial loss or degradation of special status plant or animal species, depending on the manner in which future development is implemented and how much of the General Plan Update's development capacity is utilized. Alteration of natural habitat could occur when undeveloped land is converted to residential, commercial, industrial, or certain recreational uses. Changes in the diversity of plant and animal species could occur during development due to removal of vegetation and/or other habitat. Impacts to special status species could include direct loss of individuals or localized populations, elimination or degradation of critical habitat, and isolation of subpopulations due to habitat fragmentation. Conversion of existing natural habitat to urban development, roadways, and other infrastructure improvements could result in the elimination of populations of special status species where present within the limits of proposed grading and development. While project-level review and mitigation may address many direct impacts, indirect and cumulative impacts could still result.

The analysis of potential biological resources impacts is qualitative in nature as development projections are regional rather than project-specific. The evaluation of impacts is based on an assessment of the habitat types that have the potential to support the plant and animal species identified within the General Plan Update's Background Report (*Natural Resources and Hazards Vol. 1*). This report identified special-status plant and wildlife species that have the potential to occur in Humboldt County.

The County has mapped sensitive habitat areas, riparian areas and wetlands, and has developed Geographic Information System (GIS) tools for easy access to this information. The

County will continue to use these tools during the building permit review process for new construction, and will continue to refer to these maps to identify areas where additional evaluation would be necessary and ensure that new construction does not conflict with policies or ordinances protecting biological resources in order to avoid significant impacts to those resources.

Policies, programs and standards in the General Plan Update, community plans and coastal plans address biological resources and are intended to protect species diversity in sensitive biological communities. In addition to the general biological resources policies established in these plans, the County maintains Streamside Management Areas (SMAs), which are generally coincident with the riparian corridors along watercourses, to protect sensitive fish and wildlife habitats and to minimize erosion, runoff, and other conditions detrimental to water quality. .

The existing Framework Plan defines the SMA's as an area extending 100 feet in a horizontal line from the "Stream Transition Zone" of perennial (year round) streams, which is the area where woody vegetation is permanently established on the bank of the stream. For intermittent streams, the SMA is only 50 feet in width. While SMA's may be extended to account for important habitat outside the SMA area, the maximum width of an SMA is 200 feet.

The County's existing SMAs are shown in a general manner on Figure 2-17 in Chapter 2, Biological Resources, of the *Natural Resources and Hazards Report*. Also, the McKinleyville Community Plan mapped the WR - Wetlands and Riparian Areas Combining Zone in 2002 using these same criteria.

Development within the SMAs is very restricted and is subject to numerous development standards designed to protect the habitat quality of the SMA. For example, existing policies protect valuable riparian and inland wetland habitat, while coastal zoning designations serve to protect sensitive habitat areas near the coast, bays, sloughs and lagoons. The General Plan Update will continue to implement these measures, which will reduce the potential biological impacts of the General Plan Update.

Impacts to sensitive species and habitats may occur directly or indirectly through alteration of the natural habitat when undeveloped land is converted from open space to developed uses. Changes in the habitat and quantity of plant and animal species on a property will occur during development due to grading, removal of vegetation, and the encroachment of development into open space areas. New development may displace riparian habitat or other sensitive natural communities, or federally protected wetlands. In addition, new development also can impact sensitive species and habitats through the effects of noise and light. New construction, water diversions for domestic water use and grading of new access roads may also interfere with the movement of native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. Since the General Plan Update encourages new development, the project may indirectly cause such impacts, and conflict with policies in the Framework Plan and the Zoning Ordinance protecting biological resources.

The development of currently undeveloped land, especially outside of infill areas, would likely be the principal cause of adverse impacts to candidate, sensitive, or special status species. The principal General Plan tools for the protection of such land are the land use maps and biological resource protection policies. The land use maps identify land appropriate for residential, commercial and industrial development within community planning areas, and those areas that are served, or are expected to be served, with urban level services. Open space lands are currently those lands planned for continued resource production at very low densities or public

lands that have little to no planned development allowed. Biological resource protection measures include performance standards for new development, which helps reduce impacts on sensitive species and habitats.

Analysis of Relevant General Plan Update Policies

The General Plan Update goals and policies are protective of land planned for open space and resource production and direct new commercial, industrial and residential development to infill areas. The land use map identifies land appropriate for residential, commercial and industrial development within community planning areas. Open space lands are planned for continued open space uses by applying appropriate land use designations listed in the General Plan Update Section 4.8, Land Use Classifications (which includes Natural Resources (NR) and Open Space (OS)). Resource production lands are planned for continued resource uses through the application of appropriate land use designations listed in the General Plan Update Section 4.8, such as Agriculture Exclusive, Agriculture Grazing, and Timberland. Within lands planned for Open Space and Resource Production, residential uses are allowed only in cases where they are found to be incidental or subordinate to the principal use. Commercial and industrial uses would be similarly limited. Therefore, development or subdivision of open space and resource production lands for purposes other than those planned for in the land use map would not be allowed.

The following policies of the General Plan Update specifically address potential impacts to sensitive species and habitats, Conservation and Open Space Chapter Policy BR-P1, Compatible Land Uses, required that area containing sensitive habitats shall be planned and zoned for uses compatible with the long-term sustainability of the habitat, and requires that discretionary land uses and building activity in proximity to sensitive habitats shall be conditioned or otherwise permitted to prevent significant degradation of sensitive habitat to the extent feasible consistent with CDFW guidelines or recovery strategies. BR-P2, Critical Habitat, requires that discretionary projects which use federal permits or federal funds on private lands that have the potential to impact critical habitat shall be conditioned to avoid significant habitat modification or destruction consistent with CDFW guidelines or recovery strategies.

Planned development within, and adjacent to, stream channels, SMAs, and other wet areas would be subject to protections contained in several policies in the Conservation and Open Space Element. Policy BR-P4, Development within Stream Channels, requires that development within stream channels shall be permitted when there is no lesser environmentally damaging feasible alternative, where the best feasible mitigation measures have been provided to minimize adverse environmental effects, and is limited to essential, non-disruptive projects as listed in Standard BR-S6 -Development within Stream Channels. Policy BR-P5, Streamside Management Areas, requires the County to protect sensitive fish and wildlife habitats and to minimize erosion, runoff, and interference with surface water flows by maintaining SMAs along streams, including intermittent streams that exhibit in-channel wetland characteristics and off-channel riparian vegetation.

As proposed by the Board of Supervisors, the width of the SMA's as prescribed in the Framework Plan is modified in the General Plan Update (Conservation and Open Space Element, Standard BR-S5) to begin at the top of the bank or the edge of the riparian dripline rather than the "stream transition line", which is lower on the bank where permanent woody vegetation is first established. The General Plan Update provides widths for SMAs as follows:

- 1) 100 feet, measured as the horizontal distance from the top of bank or edge of riparian drip-line whichever is greater on either side of perennial streams.
- 2) 50 feet, measured as the horizontal distance from the top of bank or edge of riparian drip-line whichever is greater on either side of intermittent streams.
- 3) The width of Streamside Management Areas shall not exceed 200 feet measured as a horizontal distance from the top of bank.

The width of Streamside Management Areas shall be expanded to up to 200 feet measured as a horizontal distance from the top of bank as necessary to include slides, or areas with visible evidence of slope instability.

The Streamside Management Area may be reduced or eliminated where the County determines, based on specific factual findings, that the mapping of the SMA is not accurate, ~~and~~ there are no in-channel wetland characteristics or off-channel riparian vegetation, and [?] or [?] the reduction will not significantly affect the biological resources of the SMA on the property. When the prescribed buffer would prohibit development of the site for the principal use for which it is designated, measures shall be applied that result in the least environmentally damaging feasible project.

SMA's do not include watercourses consisting entirely of a man-made drainage ditch, or other man-made drainage device, construction, or system.

The above modifications to the SMA areas have been mapped, and will replace the current GIS SMA layer upon adoption of the GPU by the Board of Supervisors.

To address California Department of Fish and Wildlife concerns regarding riparian and wetland buffer areas, the Planning Commission revised Standard BR-S5, Streamside Management Areas Defined, to eliminate the reference to "blue line streams" as identified on US Geological Survey (USGS). The revised standard now calls for use of specific mapped areas where available, to define the SMA and, for areas along streams not specifically mapped as SMA and Wetland Combining Zones, the outer boundaries of the SMA shall be defined as 100 feet for perennial streams and 50 feet for intermittent streams, measured as the horizontal distance from the top of bank or edge of riparian drip line, whichever is greater on either side of the stream. The standard also requires that the SMA be expanded to up to 200 feet as necessary to include slides, or areas with visible evidence of slope instability.

Policy BR-P6, Development within Streamside Management Areas, requires that development within Streamside Management Areas shall only be permitted where mitigation measures (Standards BR-S8 – Required Mitigation Measures, BR-S9 – Erosion Control, and BR-S10 – Development Standards for Wetlands) have been provided to minimize any adverse environmental effects, and shall be limited to uses as described in Standard BR-S7 - Development within Streamside Management Areas. Standard BR-S8 - Required Mitigation Measures, provides mitigation measures for development within an SMA, which at a minimum include retention of standing and felled snags in most instances, retention of live nesting trees, erosion control measures per BR-S9, and maximum feasible retention of overstory canopy in riparian corridors. BR- S9 - Erosion Control, provides erosion control measures for SMA development to minimize sedimentation impacts. Standard BR-S10 - Development Standards for Wetlands, states that development standards for wetlands are consistent with SMA standards, except that the setback from seasonal wetlands is 50 feet and from perennial wetlands is 150, and the setback is from the edge of the delineated wetland. Policy BR-P7, Wetland Identification, requires that the presence of wetlands in the vicinity of a proposed project shall be determined during the review process for discretionary projects and for ministerial building and grading permit applications, when the proposed building development activity involves

new construction or expansion of existing structures or grading activities. Standard BR-S11, Wetlands Defined, defines wetlands for the purpose of protecting them. Policy BR-P11, Agency Review, requires that the County request Department of Fish and Wildlife, as well as other appropriate trustee agencies and organizations, to review development plans within sensitive habitat areas, including SMAs. National Marine Fisheries Service or U.S. Fish and Wildlife development plan review is required within critical habitat if the project includes federal permits or funding. Recommended mitigation measures to reduce potential impacts below levels of significance will be considered during project approval, consistent with CEQA.

Other policies that contribute to the protection of sensitive species and sensitive habitat areas include BR-P10, Biological Resource Maps, which requires that biological resource maps be consulted during ministerial and discretionary project review in order to identify habitat concerns and guide mitigation for discretionary projects that will reduce biological resource impacts to below levels of significance. For ministerial projects, if proposed development is within sensitive areas and cannot meet certain performance criteria, a discretionary special permit process is invoked. Through Policy BR-P8, Oak Woodlands, the County will further protect important habitats by specifying that oak woodlands be conserved through the review and conditioning of discretionary projects to minimize avoidable impacts to functional capacity and aesthetics.

The Water Resources Element contains policies that provide protection for sensitive species and habitats. Pursuant to Policy WR-P5, Critical Watershed Areas, the County shall designate all or portions of watersheds as "Critical Watersheds" if cumulative impacts from land or water resource uses within the area have the potential to create significant environmental impacts to threatened or endangered species. This policy also requires that land and water resources within Critical Watersheds shall be protected by the application of specific standards for such areas to avoid the take of threatened or endangered species. The Water Resources Element Policies WR-P8, Erosion and Sediment Discharge, and WR-P36, Erosion and Sediment Control Measures, require that grading performance standards and best management practices be used to limit erosion and sediment discharge from ministerial and discretionary projects requiring grading permits, and direct incorporation of erosion and sediment control measures into development design and improvements. Water quality and habitat area degradation will be further limited through Policies WR-P15, Nutrient Discharge from Agricultural Operations, which supports programs that reduce nutrient discharge from agricultural operations; WR-P34, Commercial and Industrial Activities, which requires that commercial and industrial operations minimize facility-related discharges to the stormwater system; and WR-P35, Oil/Water Separation, which requires that parking lots incorporate facilities to separate oils from stormwater.

Policy WR-Px1, Requirements for Water Storage in Flow Impaired Watersheds, requires new development proposed within flow impaired watersheds that is not served by public water to install water storage tanks capable of providing 100 percent of the necessary water storage volume for the summer low-flow season, and requires a forbearance agreement prohibiting water withdrawals during low-flow conditions to be included as a performance standard for the project.

Policy WR-Px2, Mitigate Controllable Sediment Discharge Sites, requires that discretionary development involving a site identified as part of the TMDL Controllable Sediment Discharge Inventory shall be conditioned to mitigate sediment. Implementation Measure WR-IMx1, Update Water Quality Regulations, directs the County to amend the Grading, Excavation, Erosion, and Sedimentation Control Regulations and Division 1, Planning Zoning Regulations Chapter 6 - General Provisions and Exceptions Section 314-61.1 Streamside Management Area Ordinance to reflect the new erosion, sediment control, vegetation, restoration, and stormwater drainage policies and standards contained in the Water Resources Element, and the Biological Resources

Chapter of the Conservation and Open Space Elements and evaluate as part of the five-year Housing Element Update to determine if additional measures are needed to protect water quality. Implementation Measure WR-IMx2, Unpermitted Development Ordinance for Critical Watersheds, directs the County to prepare an ordinance to provide enforcement capabilities for un-permitted development within critical watershed areas if the development impacts water resources, and to work with the State Departments of Water Resources and Fish and Wildlife to address illegal water diversions and over-subscribed water right allocations.

Federal and state laws that govern sensitive species and habitats (e.g., the Federal Endangered Species Act and the California Endangered Species Act) would apply to new development under the General Plan Update, and new discretionary development proposals would be required to comply with the provisions of these statutes. Routine and ongoing timber and agricultural activities are also subject to these requirements and would be required to comply with all applicable federal and state sensitive species requirements. In addition, future discretionary development activities contemplated by the General Plan Update would be required to undergo environmental review pursuant to CEQA. This review would include assessment of potential impacts on sensitive species and sensitive habitats.

Conclusion

The General Plan Update Land Use Element emphasizes infill development and discourages the encroachment of urban uses into undeveloped areas. That said, existing parcelization of outlying areas and the potential creation of new parcels with residential or other development at buildout could result in significant adverse effects on the County's sensitive species and sensitive habitats. Activities requiring discretionary approvals by the County, state, and federal agencies provide for the greatest protection of biological resources because proposed activities must be evaluated for their potential impact on special status species and other sensitive habitats. These include development applications which are reviewed under CEQA and NEPA when applicable.

Through implementation of General Plan Update policies, standards, and implementation measures, the County will assess development impacts on species diversity in coastal areas, wetlands, mapped sensitive habitats, threatened/endangered species ranges and in SMA's as part of the review process for discretionary permits, as well as to protect water quality. With continued implementation of existing federal and state regulations and proposed new policies and implementation measures of the General Plan Update, impacts to species identified as candidate, sensitive, or special status species would be **less than significant**.

Mitigation

None required.

Impact 3.11.3.2. Wetlands

Implementation of the General Plan Update would result in additional development that could adversely impact wetlands.

This impact analysis addresses item "c" of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.11.2 above. Pursuant to these standards, the proposed County General Plan Update would have a significant impact if it would:

- c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Federally protected wetlands are defined in Section 404 of the Clean Water Act as areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Land uses and development consistent with the General Plan Update could result in the direct loss of or modification to, existing wetlands. Affected wetlands could include both the wetland-related sensitive natural community types described above, as well as areas of open water, degraded and modified streams and channels, unvegetated waters, and isolated seasonal wetlands now dominated by non-native species.

Potential direct and indirect effects from development adjacent to wetlands include, but are not limited to: altered hydrology; diminished water quality from the discharge of pollutants such as sediment, pesticides, petroleum products, pathogens and other toxic substances; vegetation removal; disturbance to wildlife from noise, night lighting, and domestic animals; introduced invasive plant and animal species; altered microclimate; and human intrusion such as off-road vehicle use, homeless encampments, trash dumping, and illegal filling.

Analysis of Relevant General Plan Update Policies

Under Policy BR-P7, Wetland Identification, the presence of wetlands in the vicinity of a proposed project must be determined during the review process for discretionary projects and for ministerial building and grading permit applications when the proposed building development activity involves new construction or expansion of existing structures or grading activities. Wetland delineation by a professional when wetland characterization and limits cannot be easily inventoried and identified by site inspection. Also, under Policy BR-Pxxx, Wetlands Banking, the County supports the development of a wetlands banking system to mitigate for otherwise permitted wetland impacts.

To address the Department of Fish and Wildlife's concern regarding wetland buffer areas, the Planning Commission revised BR-S10, Development Standards for Wetland and Other Wet Areas, to provide expanded buffers of 50 feet for seasonal wetlands and 150 feet for perennial wetlands (and other wet areas). This standard does allow for the reduction of these distances with CDFW consultation.

Additionally, under Implementation Measure BR-IM3, Biological Review and Referral, Building and Planning Division staff must receive periodic training related to the field identification of biological resources and mitigation of impacts.

The discussion of General Plan Update policies, standards, and implementation measures in Impact 3.11.3.1 above addresses other impacts to wetland areas. Potential impacts are addressed most directly by Biological Resources policies BR-P1 through BR-P7, which plan compatible uses for land containing sensitive and critical habitats, require that discretionary projects be conditioned to avoid impacts to sensitive and critical habitats, require that wetlands be identified during project review, and regulate development within SMAs.

In working with County Planning and Building Department staff, builders, developers, and environmental consultants to prevent the loss of wetlands and wetland habitat values, CDFW determined there is a strong interest and need for a wetland mitigation bank in the Humboldt Bay-Eel River Delta area. While it is CDFW's policy to provide for the protection, preservation, restoration, enhancement and expansion of natural wetland habitat, CDFW finds that in certain limited instances, utilization of a local wetland bank may be the most environmentally sound, feasible, and cost-effective approach to mitigate for impacts to wetlands. CDFW therefore recommended the County consider working with local, state, and federal agencies and private stakeholders to promote or facilitate developing a wetland bank for the Humboldt Bay-Eel River Delta area. CDFW is willing to provide technical support for the creation of a local wetland bank. The Board of Supervisors incorporated this recommendation into the GPU with Implementation Measure BR-IMx2 - Wetlands Bank.

Under Standard BR-S11, Wetlands Defined, the County must follow the identification and classification policies of the California Department of Fish and Wildlife which considers wetlands as lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. In Standard BR-S11, wetlands must have the following three attributes: (1) at least periodically, the land supports hydrophytes, (2) the substrate is predominantly undrained hydric soil, and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year. This definition does not work well because areas cannot logically have both hydric soil substrate and non-soil substrate at the same time.

Conclusion

Through implementation of General Plan Update policies, standards, and implementation measures the County will assess development impacts on wetlands and associated sensitive habitats, as part of the review process for discretionary permits, as well as to protect water quality. As discussed above, the definition of wetland contains a logical flaw, and needs to be revised.

Mitigation

The following implementation measure below shall be fulfilled to help address the potential impacts related to the definition of wetlands in the General Plan Update. Alternative language is presented below that would correct the existing logical flaw in Standard BR-S11.

Mitigation Measure 3.11.3.2. Replace BR-S11 with the below definition of wetlands:

"BR-S11. Wetlands Defined. The County considers wetlands as lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. ~~Wetlands must have all of the following three attributes: (1) at least periodically, the land supports hydrophytes, (2) the substrate is predominantly undrained hydric soil, and (3) the substrate is non soil and is saturated with water or covered by shallow water at some time during the growing season of each year.~~ An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation."

Level of Significance After Mitigation

With the above revision to Standard BR-S11 and continued implementation of existing federal and state regulations, and proposed new policies and implementation measures of the General Plan Update regarding protection of wetlands, impacts to federally protected wetlands would be **less than significant**.

Impact 3.11.3.3. Wildlife Corridors and Nursery Sites

Implementation of the General Plan Update would result in additional development that could interfere with the movement of native resident or migratory fish or wildlife species or with their migratory wildlife corridors, or impede the use of native wildlife nursery sites.

This impact analysis addresses item "d" of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.11.2 above. Pursuant to these standards, the proposed County General Plan Update would have a significant impact if it would:

- a) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Development and land use activities consistent with the General Plan Update could result in a reduction in existing habitat, could contribute to further fragmentation of remaining natural areas, and could substantially interfere with the movement of native fish and wildlife species. These include potential impacts to special-status species, sensitive natural communities, and streams and wetlands, as well as more general wildlife habitat resources.

Roosevelt Elk habitat and deer winter range are mapped on the Biological Resources maps that identify important wildlife corridors. Within the coastal zone, a Roosevelt Elk Habitat combining zone is applied to lands which contain elk corridors, and calls for their protection.

Streams tend to serve as important movement corridors for terrestrial and aquatic wildlife, and protection of areas that qualify as SMAs is essential to protecting existing habitat functions and values. Forested areas and native woodlands also tend to provide important habitat resources to wildlife.

A substantial amount of development could occur in the unincorporated areas as a result of buildout of the General Plan Update land use designations at specified minimum parcel sizes, despite many site specific constraints that may exist. A portion of this development would occur on parcels containing SMAs.

Discretionary development that would occur under the General Plan Update would be sited and designed to avoid impacts to the movement of native resident migratory fish or wildlife species and to avoid established native resident or migratory corridors and wildlife nursery sites. Such areas are identified in biological resource maps, Humboldt County GIS layers, and the California Natural Diversity Database. The County uses these tools to assess whether or not new development would potentially impact the movement of wildlife, and to ensure that such impacts would be avoided through project design, siting, and conditions of approval.

Analysis of Relevant General Plan Update Policies

To address wildlife movement in SMAs, Standard BR-S6, Development within Stream Channels, was revised to ensure new fencing would not impede wildlife movement. The discussion of General Plan Update policies, standards, and implementation measures in Impact 3.11.3.1 above addresses other impacts to riparian areas. These protections in the General Plan Update, in addition to existing state and federal regulatory requirements (e.g., Natural Communities Conservation Planning Act, Fish and Game Code §2800 et seq, California Endangered Species Act, and CDFW's incidental take permit program), and CEQA, provide a wide net of measures that protect wildlife corridors and nursery sites.

Conclusion

Buildout of the General Plan Update could potentially result in adverse impacts to wildlife movement and nursery sites. In response, the General Plan Update contains comprehensive policies that protect critical and sensitive habitats and stream corridors. Policies in the Land Use and Housing Element promote infill and urban development over development on resource lands and rural development. Collectively, these policies promote compact urban growth in existing developed areas and discourage growth in significant natural areas that serve as wildlife movement corridors and nursery sites where development would have the most significant impacts on wildlife movement and reproduction, and requires the avoidance and conservation of significant natural areas that contain wildlife movement corridors. Furthermore, any activities consistent with the General Plan Update that would impact wildlife movement or nursery sites would be required to comply with applicable federal and state statutes and regulations. Implementation of these policies, as well as compliance with federal and state statutes, would ensure that wildlife movement and nursery sites are not adversely impacted by General Plan Update.

To avoid the loss of wildlife corridors and nursery sites through impacts to riparian habitats, implementation of general plan policies specified in Section 3.11.3.1 above that protect riparian habitats, wetland areas and critical and essential habitats through development restrictions and buffer requirements would reduce potential impacts to wildlife corridors and nursery sites to a **less than significant level**.

Mitigation

None required.

Impact 3.11.3.4. Local Policies and Ordinances

Implementation of the General Plan Update proposes revisions to policies and ordinances that could conflict with existing policies and ordinances that protect biological resources.

This impact analysis addresses item "e" of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.11.2 above. Pursuant to these standards, the proposed County General Plan Update would have a significant impact if it would:

- e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

The General Plan Update proposes revisions to policies and ordinances that protect biological resources, so for this particular impact category a comparative discussion of the existing and proposed policies is appropriate.

Analysis of Relevant General Plan Update Policies

The proposed General Plan Update policies, standards, and implementation measures of the Biological Resources section (10.3) are more protective of biological resources than current local policies and ordinances. The SMA, wetland, and other sensitive area policies, standards and implementation measures increase the buffers for these habitats. Additionally, Implementation Measure WR-IMx1, Update Water Quality Regulations, requires the County to amend the Grading, Excavation, Erosion, and Sedimentation Control Regulations and Division 1, Planning Zoning Regulations Chapter 6 - General Provisions and Exceptions Section 314-61.1 Streamside Management Area Ordinance to reflect the new erosion, sediment control, vegetation, restoration, and stormwater drainage policies and standards contained in the Water Resources Element, and the Biological Resources Chapter of the Conservation and Open Space Elements and evaluate as part of the five-year Housing Element Update to determine if additional measures are needed to protect water quality. Therefore the proposed measures do not conflict with existing policies and ordinances in a manner that would be detrimental to the protection of biological resources.

Conclusion

The General Plan Update contains comprehensive policies, standards, and implementation measures that maintain and enhance protections for streams, SMAs, wetlands, and other sensitive areas. The revisions proposed are intended to improve the efficacy of the current General Plan in protecting these biological resources. The SMA, wetland, and other sensitive area policies, standards and implementation measures increase the buffers for these habitats. Therefore the General Plan Update measures do not conflict with existing policies and ordinances in a manner that would be detrimental to the protection of biological resources. Impacts of revisions to local policies or ordinances protecting biological resources would be **less than significant**.

Mitigation

None required.

Impact 3.11.3.5. Habitat Conservation Plans

Implementation of the General Plan Update would result in additional development that conflicts with adopted habitat conservation plans.

This impact analysis addresses item "f" of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.11.2 above. Pursuant to these standards, the proposed County General Plan Update would have a significant impact if it would:

- f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

See Section 3.11.1, Habitat Conservation Planning (Page 3.11-5) for a discussion and list of HCPs in Humboldt County.

Analysis of Relevant General Plan Update Policies

The first four Habitat Conservation Plans (HCPs) listed in Section 3.11.1 above apply to lands planned for continued timber production under the existing and proposed general plan land use designations. While most timber harvesting and management activities are under the permit jurisdiction of the California Department of Forestry and Fire Protection (CAL FIRE), the County has the jurisdiction to permit a list of compatible uses on these lands. One of the more controversial and significant uses is residential. Under the proposed General Plan Update, residential uses are planned at densities of 40 to 160 acres per dwelling unit. At maximum buildout, this could theoretically result in the construction of as many as 20,000 housing units on the 900,000 acres of planned timberlands, although historical growth trends and Department of Finance projections would indicate that only limited demand for possible development is likely to exist. Housing construction was not an issue that was considered or addressed by the HCPs indicated above.

The proposed General Plan Update does not contain policies that specifically relate to HCPs. Conservation and Open Space Element Biological Resources Chapter Goal BR-G2, Sensitive, Critical, and Essential Habitat, calls for a mapped inventory of sensitive, critical, and essential habitat where biological resource protection policies apply. In addition, Policy BR-P2, Critical Habitat, requires that discretionary projects require federal permits or use federal funds that have the potential to impact critical habitat shall be conditioned to avoid significant habitat modification or destruction consistent with federally adopted HCPs or interim recovery strategies.

Conclusion

Future projects proposed under the General Plan Update would be required to comply with applicable Habitat Conservation Plans and other federal and state conservation and recovery plans. Regulatory processes to ensure compliance are available by including a mitigating policy.

Mitigation

Mitigation Measure 3.11.3.5.a. To avoid impacts to established Habitat Conservation Plan areas through direct conversion to other uses, the following policy shall be added to the Conservation and Open Space Element, Biological Resources section that states the following:

***BR-IM1. Biological Resource Maps.** The County shall maintain the best available data in the form of GIS maps for the location and extent of wetlands, critical habitats, streamside management areas, Habitat Conservation Plan Areas, rookeries, and ranges of species identified in the California Natural Diversity Database.*

Level of Significance after Mitigation

With the proposed mitigation, potentially significant impacts associated with conflicts with such plans would not occur and would therefore be **less than significant**.

3.12 Air Quality

This section provides background information regarding air quality within the County, the regulations and programs that relate to air quality, and an assessment of the potential impacts of implementing the proposed General Plan Update. Air quality issues have been identified through the General Plan Update process. The key issues will be discussed in the evaluation of impacts below. The project site is located within North Coast Air Basin (NCAB) which includes all of Humboldt, Del Norte, Trinity, and Mendocino Counties, as well as a portion of Sonoma County (Humboldt County 2007). The North Coast Unified Air Quality Management District (NCUAQMD) regulates air quality in the Humboldt, Del Norte and Trinity County portions of the NCAB, while Mendocino and Sonoma counties have separate air management districts (COE 2008).

Air quality is affected by both the rate and location of pollutant emissions and by meteorological conditions that influence movement and dispersal of pollutants. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients, along with local topography, provide the link between air pollutant emissions and air quality (Humboldt County 2007). In the NCAB, air quality is predominantly influenced by the climatic regimes of the Pacific. In summer, warm ground surfaces draw cool air in from the coast, creating frequent thick fogs along the coast and making northwesterly winds common. In winter, precipitation is high, surface wind directions are highly variable, and weather is more affected by oceanic storm patterns (Humboldt County, 2002). In the City of Eureka, average temperatures range from 46° degrees Fahrenheit in winter to 60° in summer, and average monthly precipitation ranges from 1.0" in summer to 8.0" in winter for total annual precipitation of 40" (U.S. Climate Data, 2016).

As a result of the region's topography and coastal air movements, inversion conditions are common in the NCAB (Humboldt County 2007). Inversions are created when warm air traps cool air near the ground surface and prevents vertical dispersion of air. Valleys, geographic basins, and coastal areas surrounded by higher elevations are the most common locations for inversions to occur. During the summer, inversions are less prominent, and vertical dispersion of the air is good. However, during the cooler months between late fall and early spring, inversions last longer and are more geographically extensive; vertical dispersion is poor, and pollution may be trapped near the ground for several concurrent days (Humboldt County 2007). Existing air quality conditions are described below and in the *Humboldt County Community Analysis Baseline Preparation, 2009*, (available at <http://co.humboldt.ca.us/gpu/documentsPlan.aspx>, incorporated by reference, and summarized below).

3.12.1 Air Quality – Environmental Setting

Humboldt County Climate

In general, the climate of northern coastal California is characterized by cool summers and mild winters with frequent fog and significant amounts of rain. In coastal areas, the ocean helps to moderate temperatures year-round. Further inland, the summers are hotter and drier and the winters colder and more snowy. At higher elevations in inland areas, it is cooler in the summers and snowier in the winter. The average annual rainfall in the county ranges from 38 inches in Eureka to 141 inches in Honeydew. Approximately 90 percent of the annual precipitation falls between October and April. Higher rainfall in winter often influences high river levels. Winter snowfall is common at higher elevations. The dry season is between May and September (NCUAQMD1995).

Average temperatures on the coast in Eureka range from the low 60s in the summer to the low 40s during the winter. Inland average temperatures, such as in Willow Creek or Hoopa, range from the 90s to the 30s. On the coast, summer fog is common when inland temperatures rise.

Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to drive the movement and dispersal of air pollutants. Winds control the rate and dispersion of local pollutant emissions. In the NCAB, dominant winds exhibit a seasonal pattern, especially in coastal areas. In the summer months, strong north to northwesterly winds are common. During the winter, storms from the South Pacific increase the percentage of days with winds from southerly quadrants. Wind direction often assumes a daily pattern in the river canyons that empty into the Pacific. In the morning hours, cool air from higher elevations flows down the valleys while later in the day at lower elevations air heats up and this pattern is reversed as airflow heads up the canyon. These airflows are often quite strong. Offshore and onshore flows are also common along the coast and are associated with pressure systems in the area. Onshore flows frequently bring foggy cool weather to the coast, while offshore flows often blow fog away from the coast and bring sunny, warm days.

Humboldt County commonly experiences two types of inversions, vertical and horizontal, that affect the vertical depth of the atmosphere through which pollutants can be mixed. Vertical air movement is important in spreading pollutants through a thicker layer of air. Horizontal movement is important in spreading pollutants over a wider area. Upward dispersion of pollutants is hindered wherever the atmosphere is stable; that is, where warm air overlies cooler air below.

Radiation inversion occurs when the air layer near the surface of the ground cools and may extend upward several hundred feet. Radiation inversion in Humboldt County is found in the night and early mornings almost daily, but is more prominent from late fall to early spring when there is less sunlight and it is cooler. Radiation inversion tends to last longer into the morning during the winter months than in the summer.

Subsidence inversion is caused by downward moving air aloft, which is common in the area of high pressure along and off the coast. The air warms at a rate of 5.5 degrees Fahrenheit per 1,000 feet as it descends. Thus, it arrives at a lower height warmer than the air just below and limits the vertical mixing of air. Subsidence inversions often affect a large area and are more common during the summer months. These inversions, which usually occur from late spring through the early fall, can be very strong and shallow due to cooling of the lower layers from the cool ocean water.

3.12.2 Air Quality - Regulatory Setting

The State of California and the federal government have established ambient air quality standards for a number of pollutants, which are referred to as criteria pollutants. These standards are categorized as primary standards when designed to safeguard public health, or as secondary standards when they primarily intend to protect crops and to mitigate such effects as reduced visibility, soiling by air particulates, nuisance odors, and other forms of damage. Air quality is also regulated through emissions limits for individual sources of criteria air pollutants.

The Federal Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to identify National Ambient Air Quality Standards. Currently, U.S. EPA has established national standards for the following pollutants, which are criteria air pollutants:

- Suspended particulate matter (PM₁₀ and PM_{2.5}).
- Carbon monoxide (CO).
- Ozone (O₃).
- Nitrogen dioxide (NO₂).
- Sulfur dioxide (SO₂).
- Lead (Pb).

The EPA is also involved with improving air quality and management responsibilities, including establishing national ambient air quality standards, requiring that air districts develop air quality plans to meet standards, imposing sanctions when plans are not met, establishing mobile source controls, and developing guideline documents for controlling air emissions.

The California Air Resources Board also has responsibilities that include establishing State air quality standards, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and approving State implementation plans.

Pursuant to the California Clean Air Act of 1988, California has adopted stricter ambient air quality standards (relative to federal standards) for the criteria air pollutants, particularly ozone and PM₁₀ (particulate matter, less than 10 microns in diameter). In addition, California has adopted ambient air quality standards for some pollutants for which there are no corresponding national standards. Table 3.12-1 presents these standards.

The NCUAQMD is responsible for developing air quality plans, monitoring air quality, and reporting air quality data for the North Coast Air Basin. In addition, the NCUAQMD has the following responsibilities: overseeing stationary source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, incentive grants, and reviewing air quality related sections of environmental documents required by the California Environmental Quality Act (CEQA).

Table 3.12-1. Federal/State Ambient Air Quality Standards

Pollutant	Federal	State
Ozone	Unclassified/Attainment	Attainment
Sulfur Dioxide	Unclassified	Attainment
Nitrogen Dioxide	Unclassified/Attainment	Attainment
Particulate Matter 2.5 Microns or Smaller (PM _{2.5})	Unclassified/Attainment	Attainment
Particulate Matter 10 Microns or Smaller (PM ₁₀)	Unclassified	Non-attainment
Sulfates	No Standard	Attainment
Lead	Unclassified/Attainment	Attainment
Hydrogen Sulfide	No Standard	Attainment
Vinyl Chloride	No Standard	Attainment
Carbon Monoxide	Unclassified/Attainment	Attainment

Source: ARB, 2016a

Criteria Air Pollutants

Air quality monitoring has been conducted in the North Coast Air Basin since 1982 when the NCUAQMD was formed. Monitoring results have shown that the principal pollutant of the North Coast, including Humboldt County, is particulate matter 10 microns or less in diameter, designated as PM₁₀. The NCUAQMD is classified as "attainment" for the criteria pollutants of ozone and PM_{2.5}, attainment for the federal PM₁₀ standard, and in "nonattainment" for the State 24-hour particulate (PM₁₀) standard.

Health concerns associated with suspended particles focus on those particles small enough to reach the lungs when inhaled. Few particles larger than 10 microns in diameter reach the lungs. Consequently, both federal and State air quality standards for particulate matter have been revised to apply only to these small particles.

As shown in Table 3.12-2, State and federal PM₁₀ standards have been set for 24-hour and annual averaging times. The State 24-hour PM₁₀ standard equals 50 micrograms per cubic

Table 3.12-2. Criteria Pollutant Concentrations in Humboldt County, 2011-2015.

Pollutant	State Std. ^a	National Std. ^a	Pollutant Concentration by Year ^b				
			2011	2012	2013	2014	2015
Ozone (ROG, NOx, CO)							
Highest 1-hour average (State), ppm	0.09	--	0.047	0.053	0.055	0.049	0.060
Days over State Std. ^f			0	0	0	0	0
Highest 8-hour average (State/national), ppm	0.07 ^c	0.075	0.043/ 0.043	0.049/ 0.048	0.049/ 0.049	0.043/ 0.043	0.053/ 0.052
Days over State Std.			0	0	0	0	0
Days over National Std.			0	0	0	0	0
Respirable Particulate Matter (PM₁₀)							
Highest 24-hour average (state national), µg/m ³	50	150	53.9/ 49.6	46.3/ 44.5	66.7/ 64.3	ND ^d / 104.7	ND ^d / 54.9
Days over State Std.			6.1	0	11.8	ND ^d	ND ^d
Annual average (State), µg/m ³	20 ^e	--	19.1	16.8	19.3	ND ^d	ND ^d
Fine Particulate Matter (PM_{2.5})							
Highest 24-hour average, µg/m ³	--	35	24.8	22.3	28.1	21.2	18.6
Days over National Std.			ND ^d	0	0	0	0
Annual average (National), µg/m ³	12	15	6.6	6.7	7.1	3.0	4.6

Notes:

Bold = in excess of standards

ppm = parts per million; µg/m³ = micrograms per cubic meter

^a COE, 2008.

^b ARB, 2016b (ozone data are from the Eureka-Humboldt Hill monitoring station while PM₁₀ and PM_{2.5} data are from the Eureka-Jacobs and monitoring station).

^c In 2006, the State approved amendments to the regulations for the State Ambient Air Quality Standard for ozone establishing a new 8-hour average ozone standard of 0.070 parts per million (ppm).

^d No data available.

^e The national annual PM₁₀ standard was revoked in December 2006 (ARB, 2008a).

^f The national 1-hour ozone standard was revoked in June 2005 (ARB, 2008a).

Source: ARB, 2016b; compiled by ESA.

meter ($\mu\text{g}/\text{m}^3$) and the federal 24-hour standard is $150 \mu\text{g}/\text{m}^3$. The State's annual PM_{10} standard is $20 \mu\text{g}/\text{m}^3$, calculated as an annual geometric mean; in 2006 the national PM_{10} annual standard was revoked. State 24-hour PM_{10} standards may not be exceeded more than one day per year whereas both annual standards may not be exceeded.

According to the PM_{10} Attainment Plan adopted by NCUAQMD (May 11, 1995), Humboldt County's air quality has violated the California PM_{10} ambient standard; as a result the district has been classified as a PM_{10} non-attainment area. In reporting year 2014, the estimated annual geometric mean PM_{10} concentration was $19.3 \mu\text{g}/\text{m}^3$, below the $20.0 \mu\text{g}/\text{m}^3$ standard (ARB, 2016b). The ARB projects Humboldt County to have more PM_{10} violations in the future. Humboldt County PM_{10} emissions are generated by a variety of sources. The following table shows the estimated percent contribution by source in 2016.

Table 3.12-3. Annual PM_{10} emissions estimated percent contribution by source.

Source	PM_{10} Percent of Total
Service and Commercial	<0.1
Other Mobile Sources	0.6
Cooking	0.4
Farming Operations	0.5
Electric Utilities	0.5
Off-Road Equipment	0.5
Mineral Processes	1.1
Fugitive Windblown Dust	1.4
On-Road Vehicles	2.1
Construction And Demolition	3.8
Manufacturing And Industrial	2.0
Ocean Going Vessels	1.3
Wood And Paper	4.5
Paved Road Dust	5.0
Residential Fuel Combustion	7.8
Managed Burning And Disposal	8.6
Unpaved Road Dust	58.2
Service And Commercial	0.1
Other Mobile Sources	1.5
Electric Utilities	0.8
Cogeneration	0.4
Food And Agriculture	0.1
Farming Operations	0.6
Cooking	0.7
Total	100

Source: ARB, 2016c.

Table 3.12-3 shows that unpaved road dust accounts for 58.2 percent of the County's PM_{10} emissions), and paved road dust accounts for another 5 percent. Managed burning and disposal is the second highest source of PM_{10} emissions in the County at 8.6 percent. Road

dust and managed burning are the two sources that are likely the primary reason for PM₁₀ violations in the County.

Daily activity on unpaved roads occurs primarily during daylight hours. Activity is assumed to be the same each day of the week. The monthly activity profile is increased during the spring and summer months to account for additional recreational travel and drier, dustier roads. Travel to and from remote cannabis cultivation sites is likely to be another factor. On-road vehicle miles traveled (VMT) is used for the growth parameter to project PM₁₀ emissions in future years.

The PM₁₀ Attainment Plan includes control strategies that are intended to achieve the attainment goals that are identified in the Plan. Control strategies include transportation control measures such as encouraging the use of public transit and promoting alternatively powered bus fleets, encouraging car-pooling and bicycle commuting, removal or repair of vehicles with inefficient emission control systems, and traffic flow improvements that reduce idling and VMT. Land use control measures encourage mixed use or more dense development. The PM₁₀ Attainment Plan also includes restrictions on open burning (residential and non-standard permits), as well as various measures to encourage the installation of EPA certified woodstoves.

Toxic Air Contaminants

Regulation of toxic air contaminants is achieved through federal and State controls on individual sources. Toxic air contaminants are air pollutants with short-term (acute) and/or long-term (chronic or carcinogenic) adverse human health effects, for which no ambient air quality standards have been established. Amendments to the Federal Clean Air Act 1990 offer a comprehensive plan for achieving significant reductions in both mobile and stationary source emissions of certain designated toxic air contaminants.

Additionally, the NCUAQMD administers the Air Toxics Hot Spot program. This program requires preparation of an emissions inventory that identifies the types and kinds of chemicals that can cause human health effects. Next, the inventories are evaluated and ranked according to health risk potential. Those facilities with the highest risk potential must prepare formal health risk assessments.

In 1987, the California State legislature enacted through Assembly Bill 2588 the Air Toxics Hot Spots Information and Assessment Act, which requires companies in California to provide information to the public about emissions of Toxic Air Contaminants (TACs) and their possible impact on public health. Impact is measured as “maximum individual cancer risk” which is the likelihood that a person exposed to concentrations of TACs over a lifetime will develop cancer. The ARB maintains an inventory of stationary sources of TACs. There are several facilities in Humboldt County associated with an increased cancer risk. In unincorporated Humboldt County, the main sources of toxic air contaminants are primarily those who have Title V (CAA) permits with the Air District: (1) Pacific Gas and Electric; (2) DG Fairhaven Power Company (Fairhaven); (3) Eel River Power in Scotia; (4) Blue Lake Power; (5) Freshwater Pulp (formerly Evergreen Pulp, Inc. Samoa-not currently operating), and (4 6) Humboldt Flakeboard Panels.

The ARB regulates toxic air contaminants from stationary sources through a series of regulatory measures called Airborne Toxic Control Measures. Mobile sources of TACs are addressed by the ARB primarily via the Diesel Risk Reduction Program. Local governments, such as cities and counties, play a role in reducing public exposure to TACs by enforcing

zoning ordinances and ensuring proper buffer zones between stationary sources that emit TACs and sensitive receptors located downwind.

Regulation of toxic air contaminants from mobile sources was historically implemented through emissions standards for on-road motor vehicles and through specifications for gasoline and diesel fuel sold in California, rather than through land use decisions, air quality permits, or regulations addressing how the public uses motor vehicles. In 1998, ARB designated diesel exhaust particulate matter from internal combustion engines as a toxic air contaminant (TAC) for cancer. Now land use decisions must include mitigation efforts for heavy-duty diesel equipment operated during construction phases.

NCUAQMD measures PM₁₀ at sites in Crescent City, Eureka, and Weaverville. There are three locations in Humboldt County where monitoring is conducted, all located in the City of Eureka: Jacobs Street, I Street, and Humboldt Hill. The Jacobs Street and Humboldt Hill air quality stations also monitor for the federal Particulate Matter Standard (PM_{2.5}). Data from these monitoring stations indicate that the air quality in Eureka City is improving; PM levels have been reduced to nearly below State standards.

Odors

Odors are generally regarded as a nuisance or annoyance rather than a health hazard, although individuals can have a strong physical response to specific odors. Odor intensity depends on the concentration of the substance in the air. The ability to detect odors varies considerably among the population. The detection of odors is subjective, where some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. Reactions to odors vary significantly as well.

Land uses in Humboldt County that could represent odor sources include, but are not limited to, agricultural land uses (e.g., manure spreading, fertilizers, and tilling), releases of anaerobic gases from wastewater treatment facilities (i.e., hydrogen sulfide), smoke-borne odors from open-burning (logging slash, construction wastes, and private "burn barrels"), commercial process-related odors (e.g., food and meat processing and beer brewing), and the pulp mill (currently not operating). The NCUAQMD has authority to mitigate odor impacts under California Health and Safety Code Section 41700. Common complaints the air district receives relate to coffee roasters, fish and shellfish drying, and autobody/paint facilities.

Sensitive Receptors

Sensitive land uses, or sensitive receptors, are people or facilities that generally house people (e.g., residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks) that may experience adverse effects from unhealthful concentrations of air pollutants or odors. People who are most likely to be affected by air pollution include children under 14, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. Local agencies often plan land uses in a manner to separate sensitive receptors from sources of TACs and odors. In April 2005, ARB released the final version of the Air Quality and Land Use Handbook, which encourages local land use agencies to consider the risks from air pollution prior to making decisions that approve the siting of new sensitive receptors (e.g., schools, homes, and daycare centers) near sources of air pollution.

3.12.3 Air Quality - Standards of Significance

This analysis uses the significance criteria from the CEQA Guidelines Appendix G. The proposed General Plan Update would result in a significant impact on air quality if it would:

- a) Conflict with or obstruct implementation of the applicable air quality plan.
- b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
- d) Expose sensitive receptors to substantial pollutant concentrations.
- e) Create objectionable odors affecting a substantial number of people.

Items a, b and c are discussed in Impact 3.12.4.1; Item "d" is discussed in Impact 3.12.4.2; Item "e" is discussed in Section 3.12.4.3.

3.12.4 Air Quality – Impacts and Mitigation Measures

Impact 3.12.4.1. Conflict with Air Quality Plan, Violate Air Quality Standard, Increase Criteria Pollutant in Non-Attainment Status

Implementation of the General Plan Update would result in additional development that could adversely impact air quality by generating air pollution.

This section of impact analysis addresses items a, b, and c of the significance criteria described in Section 3.12.3 above. Based on Appendix G of the CEQA Guidelines the proposed County General Plan Update would have a significant impact if it would:

- a) Conflict with or obstruct implementation of the applicable air quality plan,
- b) Violate an air quality standard, or
- c) Result in the net increase of a criteria pollutant in non-attainment status.

Implementation of the General Plan Update would result in a significant impact if it would include policies that are inconsistent with the PM₁₀ Attainment Plan adopted by NCUAQMD (May 11, 1995) or produce PM₁₀ emission levels that would contribute to exceedances of the state PM₁₀ standard.

Humboldt County is in attainment of all federal and state criteria air pollutant standards, except for State PM₁₀ levels, for which the entire North Coast Air Basin, including Humboldt County, is currently designated as a non-attainment area.

Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles are those that are larger than 2.5 microns but smaller than 10 microns, or PM₁₀. PM_{2.5} refers to fine suspended particulate matter with an aerodynamic diameter of 2.5 microns or less that is not readily filtered out by the lungs. Nitrates, sulfates, dust, and combustion particulates are major components of PM₁₀ and PM_{2.5}. These small particles can be directly emitted into the atmosphere as by-products of fuel combustion, through abrasion, such as tire or brake lining wear, or through fugitive dust (wind or mechanical erosion of soil). They can also be

formed in the atmosphere through chemical reactions. Particulates may transport carcinogens and other toxic compounds that adhere to the particle surfaces, and can enter the human body through the lungs.

Impacts due to Construction Emissions. Fugitive dust emissions are generally associated with demolition, land clearing, exposure of soils to the air, and cut-and-fill operations. Dust generated during construction varies substantially on a project-by-project basis depending on the level of activity, the specific operations, and weather conditions. The U.S. EPA has developed an approximate emission factor of 1.2 tons per acre per month of activity for construction-related emissions of total suspended particulates. This factor assumes a moderate activity level, moderate silt content in soils being disturbed, and a semi-arid climate. ARB estimates that 64 percent of construction-related total suspended particulate emissions occur in the form of PM₁₀. However, construction emissions can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors.

There are a number of feasible control measures that can be reasonably implemented to significantly reduce PM₁₀ and PM_{2.5} emissions from construction activities.

Construction activities also generate combustion emissions from utility engines, heavy-duty construction vehicles, equipment hauling materials to and from construction sites, and motor vehicles transporting construction crews. Exhaust emissions from construction activities vary daily as construction activity levels change. The use of construction equipment results in localized exhaust emissions.

Impacts due to Operational Emissions. Implementation of the proposed General Plan Update would help facilitate the 11 percent increase in population projected by the California Department of Finance to occur between the years 2007 and 2030 (an average annual rate of approximately 0.56 percent). During the planning period of the General Plan, new roads, homes, and businesses will be constructed; new County residents will drive on unpaved and paved roads during their regular daily activities; some new residents will participate in the local economy in manufacturing and industrial jobs, and new woodstoves will be installed to heat homes, all of which will add additional fine particulate emissions (PM₁₀) into the atmosphere. In addition, natural emissions of PM₁₀ will continue to occur and contribute to exceedances of the standard.

Development allowed under the proposed General Plan Update is projected to lead to increases in the number of vehicle trips and VMT by Humboldt County residents, which in turn will result in increased PM₁₀ emissions, for which the North Coast Air Basin is in non-attainment for State standards. Base year 2010 daily VMT for the unincorporated county is estimated at 1,940,309 using the origin-destination method¹ of traffic modeling. Peak VMT coincides with projected peak population in 2028, when daily VMT is expected to be 2,078,296. The daily VMT estimate at the end of the project planning period (2040) is 2,051,668, an increase of approximately six percent over 2010 levels.

Vehicle travel on paved and unpaved roads represents approximately 63 percent of PM₁₀ emissions in the County. The extent to which this may be attributable to travel to and from remote unpermitted illegal cannabis cultivation sites is not addressed by the NCUAQMD

¹ The origin-destination method counts all VMT from trips occurring entirely within unincorporated county boundaries and one-half of VMT from trips that either begin or end within unincorporated county boundaries. It does not count VMT from trips that pass through the unincorporated county.

Attainment Plan or the General Plan Update policies, standards, or implementation measures. The potential impact of permitting cannabis cultivation sites in remote areas accessed by unpaved roads will be examined in a separate EIR to be prepared prior to the adoption of future land use ordinances for permitting cannabis activities authorized by the Medical Cannabis Regulation and Safety Act (Bus. & Prof. Code § 19300, *et. seq.*, etc.) or the Adult Use of Marijuana Act (Prop. 64 (2016); Bus. & Prof. Code § 26000, *et. seq.*, etc.).

Analysis of Relevant General Plan Update Policies

The General Plan Update contains policies, standards and implementation measures to support the implementation of the PM₁₀ Attainment Plan and other NCUAQMD regulations. The NCUAQMD PM₁₀ Attainment Plan (1995) includes the following control strategies:

- Transportation Control Measures:
 - public transit service and alternative-fueled transit vehicles
 - rideshare programs
 - park and ride lots
 - vehicle buy-back program
 - smoking vehicle program
 - traffic flow improvements
 - bicycling program
- Land Use Measures (not specified; addressed through air quality element)
- Open Burning Measures
 - Residential burning / property development:
 - Woodstove PM₁₀ control strategies
 - Residential wood burning control measures:
 - enhanced woodstove operation
 - replacement of conventional woodstoves
 - prohibit woodstoves or require EPA certified woodstoves for new development
 - smoke day woodstove curtailments
 - public education
 - home weatherization

The General Plan Update Air Quality Chapter includes the following policies and standards that are consistent with the PM₁₀ Attainment Plan:

AQ-P1. Reduce Length and Frequency of Vehicle Trips. Reduce the length and frequency of vehicle trips through land use and transportation policies by encouraging mixed-use development, compact development patterns in areas served by public transit, and active modes of travel.

AQ-P2. Reduce Localized Concentrated Air Pollution. Reduce or minimize the creation of "hot spots" or localized places of concentrated automobile emissions.

AQ-P3. Fireplace and Woodstove PM₁₀ Emissions. Support incentives to minimize emissions from fireplaces and woodstoves.

AQ-P4. Construction and Grading Dust Control. Dust control practices on construction and grading sites shall achieve compliance with NCUAQMD fugitive dust emission standards.

AQ-P5. Air Quality Impacts from New Development. During environmental review of discretionary permits, reduce emissions of air pollutants from new commercial and industrial development by requiring feasible mitigation measures to achieve the standards of the NCUAQMD.

AQ-P7. Interagency Coordination. Coordinate with the NCUAQMD early in the permit review process to identify expected regulatory outcomes and minimize delays for projects involving:

A. CEQA environmental review;

B. Building demolition projects that may involve removal of asbestos containing material subject to National Emission Standards for Hazardous Air Pollutants (NESHAP); and

C. Grading and mining operations subject to State Airborne Toxic Control Measures (ATCM) for naturally occurring asbestos.

Rely on the air quality standards, permitting processes, and enforcement capacity of the NCUAQMD to define thresholds of significance and set adequate mitigations under CEQA to the maximum extent allowable.

AQ-S1. Construction and Grading Dust Control. Ground disturbing construction and grading shall employ fugitive dust control strategies to prevent visible emissions from exceeding NCUAQMD regulations and prevent public nuisance.

Policy AQ-P1, Reduce Length and Frequency of Vehicle Trips, would use encouraging mixed-use development, compact development patterns in areas served by public transit, and alternative modes of travel to reduce the length and frequency of vehicle trips and thereby reduce a substantial source of PM₁₀ emissions.

Policy AQ-P5, Air Quality Impacts from New Development, would require feasible mitigation measures be implemented as part of project approval to reduce emissions from new commercial and industrial development to achieve the standards of the NCUAQMD of air pollutants during environmental review of discretionary permits.

Policy AQ-P8, Interagency Coordination, would involve the NCUAQMD early in the permit review process to identify expected regulatory outcomes and further facilitate the reduction of project related air emissions. These policies would ensure compliance with the PM₁₀ Attainment Plan's transportation control measures listed above.

Policy AQ-P3, Fireplace and Woodstove PM₁₀ Emissions, would support incentives to minimize PM₁₀ emissions from fireplaces and woodstoves, thereby encouraging the replacement of existing woodstoves and decreasing PM₁₀ emissions. This policy would ensure compliance with the PM₁₀ Attainment Plan's Open Burning measures listed above.

Policy AQ-P4 and AQ-S1, Construction and Grading Dust Control, would require that dust control practices on construction and grading sites achieve compliance with fugitive dust emission standards, consistent with the local air quality plan.

In addition, per Policy AQ-P9 and AQ-IM3, the County has committed to prepare a County-wide Climate Action Plan to reduce GHG emissions. Many of the GHG reduction measures in the CAP will likely also reduce PM₁₀ emissions as a co-benefit of reducing GHG emissions. For example,

reducing natural gas and vehicle fuel use in the CAP would also reduce PM₁₀ combustion and exhaust emissions; likewise, reducing vehicle travel through programs like ridesharing, public transit expansion, and land use planning will reduce fugitive road dust PM₁₀ emissions. Because the CAP has not yet been developed, the amount of PM₁₀ reductions is unknown at this point.

No feasible mitigation measures have been identified that would be reasonably expected to result in reducing PM₁₀ levels below levels that would not violate applicable standards, or not be cumulatively considerable net increase in PM₁₀ emissions, to a level less than significant.

Conclusion

While adoption of the proposed General Plan Update would not conflict with or obstruct the application of the current NCUAQMD PM₁₀ Attainment Plan, there is no evidence that plan is adequate to reduce PM₁₀ to a level less than significant. Because the County is in non-attainment status for PM₁₀, increases in PM₁₀ emissions that could increase exceedances are significant. Implementation of the proposed General Plan Update would result in a cumulatively considerable net increase in PM₁₀ emissions. Although applying the General Plan Update policies and standards would reduce impacts that might otherwise be greater, the **impacts remain significant and unavoidable**.

Impact 3.12.4.2. Sensitive Receptors

Implementation of the General Plan Update would result in additional development that could adversely impact sensitive receptors by generating air pollution.

This section of impact analysis addresses item "d" of the significance criteria described in Section 3.3.3 Global Climate Change, above. Based on Appendix G of the CEQA Guidelines the proposed County General Plan Update would have a significant impact if it would:

- d) Expose sensitive receptors to substantial pollutant concentrations.

TACs can be released by the ongoing activities of certain commercial and industrial operations such as asphalt batch plants, through the emissions of on-road heavy-duty diesel trucks, off-road heavy diesel trucks such as construction vehicles, and the operation of diesel railroad train engines. The proposed General Plan Update would have a significant affect if it would allow the exposure of sensitive receptors to substantial levels of TAC.

Proposed stationary sources or TACs would be subject to NCUAQMD rules and regulations. As discussed above, NCUAQMD would analyze such sources (e.g., health risk assessment) based on their potential to emit TACs. The NCUAQMD would utilize the Air Quality and Land Use Handbook to evaluate and reduce air pollution impacts from new development.

The use of construction related off-road heavy-duty diesel equipment would be temporary. In addition, the ARB adopted emission standards whereby engine manufacturers are now required to meet exhaust standards for NO_x and PM starting in 2011 that are more than 90 percent lower than current levels, making emissions from off-road engines similar to those from on-road heavy-duty diesel engines. As a result, future construction-related TACs emissions would be less likely to expose sensitive receptors to substantial emissions of TACs as the vehicle fleet is replaced. It is also important to note that compliance with the construction dust mitigation requirements would also reduce PM exhaust emissions.

The NCUAQMD reviews the potential for TAC emissions from new and modified stationary sources through the permitting process. TAC emissions from existing stationary sources are limited by:

- District adoption and enforcement of rules aimed at specific types of sources known to emit high levels of TACs;
- Implementation of the Air Toxics "Hot Spots" (AB 2588) Program; and
- Implementation of the federal Title III Toxics program.

Many facilities, such as solvent-based dry cleaners, produce toxic emissions and existing controls often reduce impacts from these sources to less-than-significant levels. Detailed analyses should be used to determine the potential risk and feasible control measures if consideration is given to siting such a source near sensitive receptors. ARB has also developed an Air Quality and Land Use Handbook which is intended to serve as a general reference guide for evaluating and reducing air pollution impacts associated with new development. The ARB Handbook indicates that mobile sources continue to be the largest overall contributors to the State's air pollution problems, representing the greatest air pollution health risk to most Californians. The most serious pollutants on a Statewide basis include diesel exhaust particulate matter (diesel PM), benzene, and 1,3-butadiene, all of which are emitted by motor vehicles.

The ARB handbook recommends that planning agencies strongly consider proximity to these sources when finding new locations for "sensitive" land uses such as those described in Action CO-A106 (residentially designated land uses, hospitals and nursing/convalescent homes, hotels and lodging, schools and day care centers, and neighborhood parks). Key recommendations in the Handbook are listed in Table 3.12-4 below. The Handbook specifically states that these recommendations are advisory and acknowledges land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

During construction as well as mining and agricultural operations, various diesel-powered vehicles and equipment would be in use. In 1998, ARB identified particulate matter from diesel-fueled engines as a toxic air contaminant. ARB has completed a risk management process that identified potential cancer risks for a range of activities using diesel-fueled engines (ARB, 2000).

Health risks from TACs are a function of both concentration and duration of exposure. Unlike the above types of sources, construction diesel emissions are temporary, affecting an area for a period of days or perhaps weeks. Additionally, construction-related sources are mobile and transient in nature, and the bulk of the emission occurs at a substantial distance from nearby receptors. Because of its short duration, health risks from construction emissions of diesel particulate would be a less-than-significant impact.

While stationary TAC sources are regulated under NCUAQMD permitting programs, mobile sources of TAC are largely unregulated² and can contribute to elevated health risks when located near receptors, particularly concentrations of dense residential uses such as a residential subdivision. Primary mobile TAC sources include truck traffic on freeways and sources

² Although new vehicle engines must meet ARB and EPA standards, there is limited regulation for emissions from the existing vehicle fleet and no regulations which control vehicle activity.

Table 3.12-4. ARB's Recommendations on Siting New Sensitive Land Uses.

Source	Category Advisory Recommendations
Freeways and High-Traffic Roads	Avoid concentrating sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.
Distribution Centers	Avoid avoid concentrating sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week). Take into account the configuration of existing distribution centers and avoid concentrating residences and other new sensitive land uses near entry and exit points.
Rail Yards	Avoid concentrating sensitive land uses within 1,000 feet of a major service and maintenance rail yard. Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.
Ports	Avoid concentrating sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the CARB on the status of pending analyses of health risks.
Refineries	Avoid concentrating sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome Platers	Avoid concentrating sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloroethylene	Avoid concentrating sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district. Do not concentrate sensitive land uses in the same building with perc dry cleaning operations.
Gasoline Dispensing Facilities	Avoid concentrating sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.

Notes:

1. These recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.
2. Recommendations are based primarily on data showing that the air pollution exposures addressed here (i.e., localized) can be reduced as much as 80 percent with the recommended separation.
3. The relative risk for these categories varies greatly. To determine the actual risk near a particular facility, a site-specific analysis would be required. Risk from diesel PM will decrease over time as cleaner technology phases in.
4. These recommendations are designed to fill a gap where information about existing facilities may not be readily available and are not designed to substitute for more specific information if it exists. The recommended distances take into account other factors in addition to available health risk data (see individual category descriptions).
5. Site-specific project design improvements may help reduce air pollution exposures and should also be considered when siting new sensitive land uses.
6. This table does not imply that mixed residential and commercial development in general are incompatible. Rather it focuses on known problems like dry cleaners using perchloroethylene that can be addressed with reasonable preventative actions.
7. A summary of the basis for the distance recommendations can be found in Table 1-2 (ARB, 2005). Source: ARB, 2005.

that attract diesel truck traffic, such as warehousing facilities or truck stops. Timber harvesting generates truck traffic in Humboldt County, but does not pose a serious health risk due to the seasonal nature of harvesting and the open rural character of the area that allows for dispersal of emissions. Similarly, individual or small clusters of rural dwellings do not typically face elevated health risk, even when in proximity to staging areas for timber harvesting, because the concentration of exposure is sporadic and highly diluted. Elevated health risks would only occur with continuous and/or concentrated exposure over many years.

Analysis of Relevant General Plan Update Policies

The General Plan Update contains policies and implementation measures to reduce air quality impacts to sensitive receptors. Policy AQ-P6, Buffering Land Uses, would require that the use of buffers between new sources of emissions and adjacent land uses to minimize exposure to air pollution be evaluated during environmental review of discretionary commercial and industrial projects. This policy is further strengthened by the application of Standard AQ-S3, Buffering Land Uses, which requires that the ARB's Air Quality and Land Use Handbook: A Community Health Perspective and NCUAQMD recommendations be followed when considering buffers between new commercial and industrial sources of emissions and adjacent land uses.

Policy AQ-P5, Air Quality Impacts from New Development, would require feasible mitigation measures be implemented as part of project approval to reduce emissions from new commercial and industrial development to achieve the standards of the NCUAQMD of air pollutants during environmental review of discretionary permits.

Policy AQ-P8, Interagency Coordination, would involve the NCUAQMD early in the permit review process to identify expected regulatory outcomes and further facilitate the reduction of project related air emissions.

Policy AQ-P4, Construction and Grading Dust Control, would require that dust control practices on construction and grading sites achieve compliance with fugitive dust emission standards, consistent with the local air quality plan.

Policy AQ-P2, Reduce Localized Concentrated Air Pollution, would require that the creation of "hot spots" or localized places of concentrated automobile emissions be reduced or minimized.

Conclusion

New development projects that would place sensitive receptors near a TAC source at a distance that is within the ranges indicated in Table 3.12-4 would be considered to have an elevated risk. As stated previously, policies of the Draft General Plan aim to provide a balance of jobs and housing within growth areas. This strategy could allow for uses that are potential stationary TAC sources (e.g., distribution centers) in proximity to residential uses. Development in Humboldt County near high volume freeways could be a source for an elevated health risk for residents. In these cases, it is advisable to conduct a health risk assessment using a dispersion model to calculate this increased risk. TAC risk is based on several factors including the vehicle fleet mix and other traffic data and site specific meteorological data.

Draft General Plan Policy AQ-P6 promotes improving air quality through land use planning decisions, and implementation measure AQ-IM2 requires coordination with NCUAQMD on development proposals for new sources of toxic air pollutants.

Mitigation

Implementation of Mitigation Measure 3.12.6.2 would insure that any future development adjacent to potential sources of TAC's would not expose sensitive receptors to an increased health risk. The following implementation measure below shall be fulfilled to help address the potential impacts related to the exposure of sensitive receptors to TAC's

Mitigation Measure 3.12.4.2: Add Implementation Measure AQ-IM7 to the Draft General Plan as follows:

AQ-IM7. Regulate the location and operation of land uses to avoid or mitigate harmful or nuisance levels of air emissions to the following sensitive receptors: residential uses, hospitals and nursing/convalescent homes, hotels and lodging, schools and day care centers and neighborhood parks. New development shall follow the recommendations for siting new sensitive land uses consistent with the ARB's recommendation as shown in Table 3.12-4.

Level of Significance After Mitigation

Mitigation Measure 3.12.4.2 would serve to regulate the location and operation of land uses to avoid or mitigate harmful or nuisance levels of air emissions to sensitive receptors. For example, a new industrial development project with significant air emissions such as a wood-burning power plant would not be allowed in an area where there are sensitive receptors like residential uses downwind of the development. Additional siting criteria can be found in Table 3.12-4. With the additional of Mitigation Measure 3.12.4.2, General Plan Update policies and standards as well as the regulatory authority of the NCUAQMD would limit the exposure of sensitive receptors to new sources of TACs to a **less than significant level**.

Impact 3.12.4.3 Objectionable Odors

Implementation of the General Plan Update would result in additional development that could adversely impact air quality by generating objectionable odors.

This section of impact analysis addresses item "e" of the significance criteria described in Section 3.12.4 *Air Quality - Thresholds of Significance*, above. Based on Appendix G of the CEQA Guidelines the proposed County General Plan Update would have a significant impact if it would:

- e) create objectionable odors affecting a substantial number of people.

Implementation of the General Plan Update under the Preferred Plan could result in the exposure of sensitive receptors to emissions of objectionable odors. Commercial, industrial, and agricultural uses may incorporate sources of odors near existing or proposed sensitive receptors. The operation of such uses could result in the exposure of sensitive receptors to emissions of objectionable odors.

Potential odor impacts should be evaluated for both (1) sources of odor locating near existing receptors, and (2) receptors locating near existing odor sources. It is unknown at this point what types and locations of specific establishments could be developed under implementation of the Draft General Plan, and it is possible that some uses (e.g., wastewater treatment plants) could have the potential to produce odors. Some objectionable odors may also be generated from the operation of diesel-powered construction equipment and/or asphalt paving during the construction period of individual projects. However, these odors would be short term in nature and would not result in permanent impacts to surrounding land uses, including sensitive receptors within and adjacent to the project site.

The NCUAQMD is responsible for enforcing the provisions of California Health and Safety Code Section 41700 which prohibits the discharge of anything that could endanger the comfort or health of the public. Nuisance odors are regulated by this section, although

certain odors are exempted, such as odors from agricultural activities and composting facilities. The NCUAQMD enforces Section 41700 through its nuisance rule. Any actions related to odors are based on citizen complaints to local governments and the NCUAQMD.

The County receives very few complaints regarding odors emanating from permitted development. There is often not enough evidence to suggest odors are coming from any one source or that any mitigating action should be taken based on these complaints. The NCUAQMD gets considerable complaints from the public in regards to open burning of Non-Approved Combustibles, coffee roasters, fish/shellfish drying, and autobody/paint shops. These are not presently under permit. The NCUAQMD does not get very many complaints regarding agriculture or farming odors. The most effective measure available to reduce odor impacts is to establish a buffer between the odor source and the nearest sensitive receptor. A safety margin also should be considered in establishing a buffer zone to allow for future expansion of operations at the source of the odors.

Analysis of Relevant General Plan Update Policies

General Plan Update policies, programs, and standards described in Impact 4.12.5.1 above would lessen the effects of objectionable odors on sensitive receptors. In particular, Policy AQ-P6, Buffering Land Uses, and Standard AQ-S3, requires that the ARB *Air Quality and Land Use Handbook* be utilized when considering buffers between new commercial and industrial sources of emissions and sensitive receptors. The *Air Quality and Land Use Handbook* contains specific guidance relating to potential sources of odor and dust complaints. Mining also has buffer requirements through the CCAP and mining ordinances and therefore, mining odor impacts would be less than significant. With implementation of the Draft General Plan policies, the potential for creation of objectionable odors associated with build-out of the Draft General Plan would be less than significant.

Conclusion

Policies, programs, standards and other requirements described in the Air Quality Element reduce the impacts of the project related to objectionable odors to **less than significant**.

Mitigation

None required.

3.13 Climate Change and Greenhouse Gas Emissions

Global climate change refers to alterations in weather features, which occur across the Earth as a whole, such as temperature, wind patterns, precipitation, and storms. Global temperatures are modulated by naturally occurring atmospheric gases, such as water vapor, carbon dioxide, methane, and nitrous oxide. These gases allow sunlight into the Earth's atmosphere, but prevent radiative heat from escaping into outer space, thus altering the Earth's energy balance in a phenomenon called the greenhouse effect.

The global climate is continuously changing, as evidenced by repeated episodes of warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. Scientists have observed, however, an unprecedented increase in the rate of warming in the past 150 years.

This recent warming has coincided with the global Industrial Revolution, which has seen the widespread reduction of forests to accommodate urban centers and agriculture and increase in the use of fossil fuels, primarily burning of coal, oil, and natural gas for energy, which in turn has released substantial amounts of GHGs into the atmosphere. Carbon dioxide accounts for approximately 85 percent of total emissions, and methane and nitrous oxide account for almost 14 percent.

Concentrations of carbon dioxide in the atmosphere have risen approximately 30 percent since the Industrial Revolution. Because GHGs persist and mix in the atmosphere, emissions anywhere in the world impact the climate everywhere. During the past 100 years, average global temperatures have risen by more than one degree Fahrenheit (F). Meteorologists have documented that the past 10 years have been the hottest decade since 1850. Warming has not been uniform, with temperatures at the poles experiencing the greatest increase, with up to a 9-degree increase observed in large areas of the Arctic over the 20th century. In response to warming, the growing season has lengthened and trees are flowering earlier; some animal and plant species ranges have been migrating toward higher latitudes and altitudes; plant and animal species adapted to cold temperatures have declined; and species adapted to warm temperatures have increased.

Some of the potential impacts in California of climate change may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (CEC 2012). Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. On a global level, the projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects (IPCC 2007):

- Snow cover is projected to contract, with permafrost areas sustaining thawing.
- Hot extremes, heat waves, and heavy precipitation events are likely to increase in frequency.
- Future tropical cyclones (typhoons and hurricanes) will likely become more intense.
- Non-tropical storm tracks are projected to move poleward, with consequent changes in wind, precipitation, and temperature patterns. Increases in the amount of precipitation are very likely in high-latitudes, while decreases are likely in most subtropical regions.

- Warming is expected to be greatest over land and at most high northern latitudes, and least over the Southern Ocean and parts of the North Atlantic Ocean.

There are also many secondary effects that are projected to result from global warming, including global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the possible outcomes and the feedback mechanisms involved are not fully understood, and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

3.13.1 Climate Change and Greenhouse Gas Emissions - Environmental Setting

Climate Change in the County

Given the climate change predictions for California, it is reasonably foreseeable that temperatures locally in Humboldt County will increase over the course of this century by 0.5 to 8.5 degrees Fahrenheit with or without the proposed General Plan Update (IPCC, 2013). This warming could lead to other environmental effects within the unincorporated County including, but not limited to, increased flooding due to increased precipitation and runoff, a decrease in the snowpack (a major water source), habitat modification and loss, and impacts to sensitive plant and animal species. The unincorporated County could also be affected by an increase in sea level. The planning horizon of the proposed General Plan Update is to the year 2040. Studies project global sea level to rise by another 1 to 4 feet by 2100, with an uncertainty range of 0.66 to 6.6 feet (USGCRP, 2014). Interpolating this 100-year sea level rise prediction to the 25-year planning period of the project results in a potential rise of 4 to 16 inches. Predictions of sea level rise can be expected to change in the future, and local factors such as tectonic uplift or subsidence can significantly influence the net rise. Coastal structures need to be designed for the rise that might occur over their project life span, and need to utilize the best available information during siting and design.

Greenhouse Gases

"Greenhouse gases" are so called because of their role in trapping heat near the surface of the earth; they are emitted by human activity and are implicated in global climate change, commonly referred to as "global warming." These GHGs contribute to an increase in the temperature of the earth's atmosphere by preventing the escape of heat in much the same way as glass in a greenhouse. Thus, this condition is often referred to as the "greenhouse effect." In its "natural" condition, the greenhouse effect is responsible for maintaining a habitable climate on earth, but human activity has caused increased concentrations of these gases in the atmosphere, thereby contributing to an increase in global temperatures.

The principal GHGs are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. Of these gases, carbon dioxide and methane are emitted in the greatest quantities from human activities. Emissions of carbon dioxide are largely by-products of fossil fuel combustion, whereas methane predominantly results from off-gassing associated with agricultural practices and landfills. Over a 100-year period, methane has a global warming potential 25 times that of carbon dioxide, while nitrous oxide is 298 times that of the same amount of carbon dioxide (IPCC, 2007). Other GHGs – with much greater heat-absorption potential than carbon dioxide, methane and nitrous oxide – include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, and are generated in certain industrial processes.

There is international scientific consensus that human-caused increases in GHGs have and will continue to contribute to global warming, although there is much uncertainty concerning the magnitude and rate of the warming. GHGs have been identified by the EPA as a regulated pollutant, but there is no established national ambient air quality standard.

Greenhouse Gas Emissions in California

To provide context for the Humboldt County General Plan Update, it is useful to consider the state of California as a whole. California is a substantial producer of GHG emissions. According to ARB and the U.S. EPA, in 2014, total carbon dioxide emissions in California from fossil fuel combustion were 321 million tons, accounting for approximately six percent of U.S. emissions from this source (ARB, 2016d; U.S. EPA, 2016). California is the second largest emitter of greenhouse gases in the U.S. (trailing only Texas) and if considered a country it would be the 15th largest emitter in the world (ARB, 2014a). In 2014, California produced 441 million metric tons of total carbon dioxide-equivalent emissions (ARB, 2016e). California has relatively low carbon emissions intensity, however, ranking sixth lowest of the 50 states in carbon dioxide equivalent emissions per capita in 2012 (ARB, 2014a). California was also the fifth lowest of the 50 states in carbon dioxide equivalent emissions per unit of gross state product in 2012, largely as a result of the State's energy efficiency and renewable energy programs (ARB, 2014a).

The transportation sector is responsible for nearly 37 percent of GHG emissions in California. Industrial emissions and emissions from generating electricity for the commercial and residential sectors follow closely at 24 and 20 percent. In 2015, although only 34 percent of our electricity is produced out-of-state, much of this imported electricity is produced at coal-fired power plants and accounts for over 47 percent of GHG emissions in this sector (ARB, 2016d).

3.13.2 Climate Change and Greenhouse Gas Emissions - Regulatory Setting

Global climate change resulting from GHG emissions is an environmental concern being raised and discussed at the international, national, and statewide levels. At each level, agencies are considering strategies to control emissions of gases that contribute to global warming.

Federal Regulations

The federal Clean Air Act (CAA) requires the U.S. EPA to define national ambient air quality standards to protect public health and welfare in the U.S. The CAA does not specifically regulate GHG emissions. However, a significant legal decision occurred in 2009 through *Massachusetts v. Environmental Protection Agency et al.*, wherein twelve states and cities, including California, together with several environmental organizations, sued to require the U.S. EPA to regulate GHGs as pollutants under the Federal CAA (127 S. Ct. 1438 (2007)). The Supreme Court ruled that GHGs fit within the Federal CAA's definition of a pollutant and the U.S. EPA had the authority to regulate GHGs.

On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the Federal CAA:

- Endangerment Finding: The current and projected concentrations of the six key GHGs—CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆—in the atmosphere threaten the public health and welfare of current and future generations.

- Cause or Contribute Finding: The combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

On September 22, 2009, the U.S. EPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule is a response to the fiscal year (FY) 2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110-161) that required the U.S. EPA to develop "...mandatory reporting of GHGs above appropriate thresholds in all sectors of the economy...." The Reporting Rule will apply to most entities that emit 25,000 metric tons of CO₂e or more per year. Starting in 2010, facility owners are required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. The Reporting Rule also mandates recordkeeping and administrative requirements in order for the U.S. EPA to verify annual GHG emissions reports.

State Regulations

California GHG Targets and Climate Change Scoping Plan

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger established **Executive Order S-3-05**, which sets forth a series of target dates by which statewide emissions of GHG would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

In 2006, California took a leadership role in addressing the trend of increasing GHG emissions, with the passage of the **California Global Warming Solutions Act of 2006** (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq., or **AB 32**). AB 32 requires achievement by 2020 of a statewide GHG emissions limit equivalent to 1990 emissions, and the adoption of rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions. The Bill required the ARB to adopt regulations by January 1, 2008, require reporting and verification of statewide GHG emissions, and monitor and enforce compliance with that program. AB 32 also directed ARB to begin developing discrete early actions to reduce GHGs while also preparing a Scoping Plan to identify how best to reach the 2020 limit. According to AB 32, the Scoping Plan must be updated at least every five years to ensure that California is on track to meet the targets set out in the legislation.

In June 2007, ARB directed its staff to pursue 37 early actions for inclusion in the Scoping Plan. The broad spectrum of strategies includes a Low Carbon Fuel Standard, regulations for refrigerants with high global warming potentials, guidance and protocols for local governments to facilitate GHG reductions, and green ports. In addition to approving the 37 early actions, ARB directed its staff to further evaluate additional recommendations for early action and subsequently published the *Expanded List of Early Action Measures To Reduce Greenhouse Gas Emissions In California Recommended For Board Consideration* (ARB, 2007a), which includes 44 measures in the sectors of fuels, transportation, forestry, agriculture, education, energy efficiency, solid waste, cement, oil and gas, electricity, and fire suppression.

Regarding local government actions, the Scoping Plan says the following:

"California's draft Climate Change Scoping Plan (June 2008) recommends 2 MMTCO₂e reduction in GHG emissions by 2020 from local government actions. The Scoping Plan believes local government can directly influence:

- **Energy.** The energy used in local government buildings, equipment, and infrastructure as well as the amount of energy used by community businesses and residents through building codes, conservation programs and other mechanisms.
- **Waste and Recycling.** Local government's own waste and recycling activities and the carbon footprint of their jurisdiction's waste and recycling operations through collection system adjustments and promotion of waste reduction and recycling.
- **Water and Wastewater Systems.** Water use in municipal operations and through community-wide water conservation and reclamation program efforts.
- **Transportation.** Increases in the carbon efficiency of government fleets and local transportation planning processes to increase the use of transit, carpooling, biking, and walking. Population growth can be planned and distributed in a carbon-efficient way.
- **Design.** Siting and design of new developments in a way that reduces greenhouse gases associated with energy and water use, waste generation, and vehicle travel.

In addition to identifying early actions to reduce GHG, ARB also developed mandatory GHG reporting regulations pursuant to requirements of AB 32. The regulations require reporting for certain types of facilities that make up the bulk of the stationary source emissions in the state. Currently, the regulation identifies major facilities as those that generate more than 25,000 metric tons per year of CO₂e. Cement plants, oil refineries, electric-generating facilities and providers, cogeneration facilities, hydrogen plants, and other stationary combustion sources that emit more than 25,000 metric tons per year of CO₂e make up 94 percent of the point source CO₂e emissions in California (ARB, 2007b).

On December 11, 2008, ARB adopted the first *Climate Change Scoping Plan*, incorporating the early actions and outlining additional measures to meet AB 32's 2020 GHG reduction target (ARB, 2008b). The 2008 Scoping Plan demonstrated that to meet the AB 32 target, California must reduce its GHG emissions by 30 percent below projected 2020 business-as-usual emissions levels or about 15 percent from 2008 levels. According to the 2008 Scoping Plan, meeting the 2020 target requires the reduction of 169 MMT CO₂e, or approximately 28.4 percent, from the state's projected 2020 business-as-usual (BAU) emissions level of 596 MMT CO₂e. In August 2011, the Scoping Plan was re-approved by the Board and includes the *Final Supplement to the Scoping Plan Functional Equivalent Document*, with expanded analysis of project alternatives as well as update to the 2020 emission projection in light of updated economic forecasts. Considering the updated 2020 BAU estimate of 507 MMT CO₂e, a 16 percent reduction below the estimated BAU levels would be necessary to return to 1990 levels by 2020.

The *First Update to the Scoping Plan* (ARB, 2014b), approved by the ARB on May 22, 2014, includes new strategies and recommendations for reducing GHG emissions and sets the groundwork to reach California's post-2020 climate goals. The Scoping Plan Update details progress made towards meeting AB 32's 2020 reduction goal and provides a GHG reduction framework to meet the 80 percent below 1990 levels by 2050. The primary focus areas for GHG reduction identified in the Scoping Plan Update are associated with energy, transportation, agriculture, water, waste management, natural and working lands, short-lived climate pollutants, green buildings, and cap-and-trade. The Scoping Plan contains the main strategies the State intends to use to reduce GHGs.

In April 2015, Governor Edmund G. Brown, Jr. signed **Executive Order B-30-15** that established an interim GHG reduction goal for California of 40 percent below 1990 levels by 2030, to ensure progress toward California's goal of reducing GHG emissions by 80 percent below 1990 levels by 2050.

On September 8, 2016, Governor Jerry Brown signed **Senate Bill 32** (Pavley - Chapter 249, Stats. of 2016), requiring California to reduce GHG emissions to 40 percent below 1990 levels by 2030. SB 32 states that: "In adopting rules and regulations to achieve the maximum technologically feasible and cost effective greenhouse gas emissions reductions authorized by this division, the state [air resources] board shall ensure that statewide greenhouse gas emissions are reduced to at least 40 percent below the statewide greenhouse gas emissions limit no later than December 31, 2030." SB 32 codifies the interim target created by EO B-30-15 for 2030.

A draft *2017 Climate Change Scoping Plan Update -The Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target* (ARB, January 20, 2017) was released for public comments, due March 6, 2017.

GHG Emissions and CEQA

CEQA requires public agencies to evaluate whether a project that requires discretionary approval may have significant environmental effects and, if so, to impose feasible mitigation measures. In general, when a public agency determines that a project may have a significant effect on the environment it must prepare an Environmental Impact Report (EIR).

In August 2007, then Attorney General Brown announced his office had reached a settlement over a pending lawsuit with San Bernardino County that required the County to amend its General Plan to add a policy that describes its goal to reduce GHG emissions "reasonably attributable to [San Bernardino's] discretionary land use decisions" and internal operations, and that calls for adoption of a "Greenhouse Gas Emissions Reductions Plan" to include the following: (a) a current inventory of sources of GHGs within San Bernardino, and a current baseline inventory of GHG emissions from those sources; (b) an inventory of GHG emissions from the same sources in San Bernardino in 1990; (c) a projection of new GHG emissions in San Bernardino in 2020 from its discretionary land use decisions and governmental operations; and (d) a target for the reduction of those emissions.

The settlement with San Bernardino is significant because it established a precedent for how public agencies that prepare long-term planning documents should address GHG emissions and climate change. The settlement did not, however, resolve or even materially advance the debate over how to judge the significance of a project's GHG emissions.

The Attorney General's press release announcing the settlement with San Bernardino County identifies a number of measures that can be used to minimize GHG emissions. Feasible measures include high-density development to reduce vehicle trips; promotion of carpooling, alternative fuel vehicles, public transportation, and transportation impact fees; energy efficient design for buildings, appliances and lighting; and solar panels, water reuse systems, and on-site renewable energy production. In addition, the California Air Pollution Control Officers Association (CAPCOA) has issued model GHG policies for general plans, which contain similar measures.

Following the San Bernardino County settlement, **Senate Bill (SB) 97** (Chapter 185, 2007) was passed, requiring OPR to prepare, develop, and transmit to the California Natural Resources Agency, guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, no later than July 1, 2009. On December 30, 2009, the Natural Resources Agency adopted amendments to the CEQA *Guidelines*, as required by SB 97, providing guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The amendments became effective March 18, 2010.

The CEQA Guidelines revisions include a new section (Sec. 15064.4) that specifically addresses the potential significance of GHG emissions. Section 15064.4 calls for a “good-faith effort” to “describe, calculate or estimate” GHG emissions; Section 15064.4 further states that the analysis of the significance of any GHG impacts should include consideration of the extent to which the project would increase or reduce GHG emissions; exceed a locally applicable threshold of significance; and comply with “regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions.” The new Guidelines also state that a project may be found to have a less-than-significant impact on GHG emissions if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions (Sec. 15064(h)(3)). Importantly, however, the Guidelines do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions.

No quantitative significance threshold is included in the Amendments. The CEQA Guidelines afford the customary deference provided to lead agencies in their analysis and methodologies. OPR emphasizes the necessity of having a consistent threshold available to analyze projects, and the analyses should be performed based on the best available information. For example, if a lead agency determines that GHGs may be generated by a proposed project, the agency is responsible for assessing GHG emissions by type and source. The CEQA Guidelines Amendments provide the following recommendations for determining the significance of GHG emissions under Section 15064.4:

- (a) The determination of the significance of GHG emissions calls for a careful judgment by the lead agency consistent with the provisions in Section 15064. A lead agency should make a good-faith effort, based on available information, to describe, calculate or estimate the amount of GHG emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:
 - (1) Use a model or methodology to quantify GHG emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; and/or
 - (2) Rely on a qualitative analysis or performance based standards.
- (b) A lead agency may consider the following when assessing the significance of impacts from GHG emissions on the environment:
 - (1) The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting;
 - (2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and
 - (3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of GHG emissions. If there is substantial evidence that the possible effects of a particular project are still

cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

The Amendments also include a new Subdivision 15064.7(c) which clarifies that in developing thresholds of significance, a lead agency may appropriately review thresholds developed by other public agencies, or recommended by other experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence.

In addition, the Amendments include a new Section 15183.5 that provides for tiering and streamlining the analysis of GHG emissions. Project-specific environmental documents may rely on an EIR containing a programmatic analysis of GHG emissions in the region over a specified time period.

Finally, the Amendments add a new set of environmental checklist questions (VII. Greenhouse Gas Emissions) to the CEQA Guidelines Appendix G, which are provided below under Thresholds of Significance.

With the passing of SB 32 the state has adopted an aggressive GHG emissions target for 2030 that is 40 percent below 1990 levels. Until the state adopts an updated Scoping Plan to reflect the 2030 target it will be challenging to conduct CEQA analysis of GHG emissions for projects that go beyond 2020. Meanwhile, a recent California Supreme Court decision (*Center for Biological Diversity v. California Department of Fish and Wildlife*) (henceforth referred to as Newhall Ranch decision) raises new concerns and questions about substantiating the use of GHG thresholds in CEQA evaluation, and makes it clear that demonstrating consistency with a local or regional climate action plan will provide the most defensible method, provided the climate action plan uses a GHG target that is consistent with the state's 2030 target and that the plan is "qualified" per CEQA Guidelines Section 15064.4, which stipulates that the plan:

- Establish a GHG emissions baseline and business-as-usual (BAU) forecast for the planning horizon;
- Establish a GHG reduction target consistent with AB 32 (and now, SB 32);
- Include strategies and actions that will achieve the GHG target with a high level of confidence;
- Include an implementation and monitoring plan; and
- Be adopted in a public process following environmental review under CEQA.

The Newhall Ranch decision identified multiple possible paths for evaluating GHG emissions consistent with CEQA depending on the circumstances of a given project. The decision confirmed a need to analyze both near-term (e.g. 2020) and post-2020 emissions stating that an "EIR taking a goal-consistency approach to CEQA significance may in the near future need to consider the project's effects on meeting longer term emissions reduction targets."

To be consistent with state legislation and the Newhall decision, the County will consider project-related impacts in 2020, 2030, and 2040 that are consistent with both AB 32 and SB 32 and make "substantial progress" toward the statewide target of 80 percent below 1990 emissions levels by 2050.¹ The targets will be adopted through the preparation and adoption of a CAP, in accordance with GPU Policy AQ-P9 and AQ-IM3.

¹ The Climate Change Committee of the Association of Environmental Professionals (AEP) recommended in its *Beyond 2020: The Challenges of Greenhouse Gas Reduction Planning by Local Governments in California* white paper that CEQA analyses for the majority of land use development projects can continue

Energy Generation

SB 1078 (Chapter 516, Statutes of 2002) required retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010.

In November 2008, then-Governor Schwarzenegger signed Executive Order S-14-08, which expanded the state's Renewable Portfolio Standard to 33 percent renewable power by 2020. In September 2009, then-Governor Schwarzenegger continued California's commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directs the ARB under its AB 32 authority to enact regulations to help the state meet its Renewable Portfolio Standard goal of 33 percent renewable energy by 2020.

The 33-percent-by-2020 goal was codified in April 2011 with Senate Bill X1-2, which was signed by Governor Edmund G. Brown, Jr. This new Renewable Portfolio Standard (RPS) preempts the ARB 33 percent Renewable Electricity Standard and applies to all electricity retailers in the state, including publicly owned utilities (POUs), investor-owned utilities, electricity service providers, and community choice aggregators. All of these entities must achieve the new RPS goals of 20 percent of retail sales from renewables by the end of 2016 and 33 percent by the end of 2020.

SB 1368 is the companion bill of AB 32 and was signed by then-Governor Schwarzenegger in September 2006. SB 1368 requires the California Public Utilities Commission (CPUC) to establish a GHG emission performance standard for baseload generation from investor-owned utilities by February 1, 2007. The California Energy Commission (CEC) was also required to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the GHG emission rate from a baseload combined-cycle natural gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and CEC.

Land Use

SB 375 encourages housing and transportation planning on a regional scale, in a manner designed to reduce vehicle use and associated GHG emissions. As required under this law, ARB has assigned regional GHG reduction targets for automobiles and light-duty trucks for 2020 and 2035. The targets apply to the regions in the State covered by the 18 Metropolitan Planning Organizations (MPOs), including the Association of Bay Area Governments (ABAG). If MPOs do not meet the GHG reduction targets, transportation projects will not be eligible for funding programmed after January 1, 2012. ARB adopted regional reduction targets in 2010. For the Bay Area, the adopted reduction targets call for a 10 percent reduction by 2020 and a 16 percent reduction by 2035.

SB 375 also requires each MPO to include a Sustainable Communities Strategy (SCS) in their Regional Transportation Plan. The SCS must set forth a vision for growth for the region while taking into account transportation, housing, environmental, and economic needs. The SCS will be the blueprint by which the region will meet its GHG emissions reductions targets.

to rely on existing thresholds in the immediate future (with the exception of the "business-as-usual" approach), long-term projects should consider "post-2020 emissions consistent with 'substantial progress' along a post-2020 reduction trajectory toward meeting the 2050 target." The white paper recommends that the "significance determination...should be based on consistency with 'substantial progress' along a post-2020 trajectory."

Humboldt County is not part of a MPO, so SB 375 does not apply directly, but regional SCSs adopted by MPOs may provide examples of land use policies that may be incorporated in the Climate Action Plan to be prepared in accordance with GPU Policy AQ-P9 and Implementation Measure AQ-IM3.

California Building Standards

On January 12, 2010, the California Building Standards Commission adopted the 2010 California Green Building Standards Code, otherwise known as CALGreen. The list below identifies the most significant CALGreen requirements. In addition, CALGreen encourages local governments to adopt more stringent voluntary provisions, known as Tier 1 and Tier 2 provisions, to further reduce air pollutant emissions, improve energy efficiency, and conserve natural resources. If a local government adopts one of the tiers, the provisions become mandates for all new construction within that jurisdiction. CALGreen includes the following provisions:

- A 20 percent mandatory reduction in indoor water use, with voluntary goal standards for 30 percent, 35 percent, and 40 percent reductions;
- Separate indoor and outdoor water meters to measure nonresidential buildings' indoor and outdoor water use, with a requirement for moisture-sensing irrigation systems for larger landscape projects;
- Diversion of 50 percent of construction waste from landfills;
- Mandatory periodic inspections of energy systems (i.e., heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies; and
- Mandatory use of low-pollutant-emitting interior finish materials such as paints, carpet, vinyl flooring, and particleboard.

The State of California also regulates building energy consumption under the state Building Code. The Building Energy Efficiency Standards contained within Part 1 (Administrative Code) and Part 6 (also known as the Title 24 Building Energy Efficiency Standards) of the Building Code, were developed by the CEC and apply to energy consumed for heating, cooling, ventilation, water heating and lighting in new residential and non-residential buildings. The CEC updates these standards periodically, with the most recent update in 2013. The next update is slated for December 2016.

Vehicular Emissions

In 2002, Assembly Bill (AB) 1493 was passed, which required the ARB to develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks and other vehicles determined by the ARB to be vehicles whose primary use is noncommercial personal transportation in the state."

To meet the requirements of AB 1493, the ARB approved amendments to the California Code of Regulations (CCR) in 2004, adding GHG emissions standards to California's existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 1961.1), require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty

vehicle with a gross vehicle weight [GVW] rating of less than 10,000 pounds and that is designed primarily for the transportation of persons), beginning with model year 2009. For passenger cars and light-duty trucks with a loaded vehicle weight (LVW) of 3,750 pounds or less, the GHG emission limits for model year 2016 are approximately 37 percent lower than the limits for the first year of the regulations, model year 2009. For light-duty trucks with an LVW of 3,751 pounds to a GVW of 8,500 pounds, as well as for medium-duty passenger vehicles, GHG emissions will be reduced approximately 24 percent between 2009 and 2016.

Executive Order S-1-07, signed by then-Governor Arnold Schwarzenegger in 2007, proclaimed that the transportation sector is the main source of GHG emissions in California, at over 40 percent of statewide emissions. The order established a goal of reducing the carbon intensity of transportation fuels sold in California by a minimum of 10 percent by 2020. It also directed the ARB to determine whether this Low Carbon Fuel Standard could be adopted as a discrete, early-action measure after meeting the mandates in AB 32. The ARB adopted the Low Carbon Fuel Standard on April 23, 2009.

Other Greenhouse Gas Legislation

SB 350 (Clean Energy and Pollution Reduction Act of 2015) was signed into law on October 7, 2015, establishing new goals for clean energy, clean air, and GHG reduction goals for 2030 and beyond. SB 350 requires the following:

- Increase California's renewable electricity procurement goal under the RPS from 33 percent by 2020 to 50 percent by 2030.
- Double existing building energy efficiency by 2030.
- Facilitate the growth of renewable energy markets within the western U.S. by reorganizing the California Independent System Operator (CAISO).

AB 197, signed into law on September 8, 2016 along with SB 32, requires ARB to "protect the state's most impacted and disadvantaged communities ... [and] consider the social costs of the emissions of greenhouse gases." AB 197 establishes the Joint Legislative Committee on Climate Change Policies and requires the ARB to provide an annual report on GHG emissions and the Scoping Plan's progress toward meeting the emissions reduction target to the committee. AB 197 also requires ARB to post current information about GHG and air pollutant emissions on its website and protect the state's "most impacted and disadvantaged communities" by considering the social costs of GHG emissions and to "prioritize both of the following: (a) Emission reduction rules and regulations that result in direct emission reductions at large stationary sources of greenhouse gas emissions sources and direct emission reductions from mobile sources. (b) Emission reduction rules and regulations that result in direct emission reductions from sources other than those specified in subdivision (a)."

SB 1383 sets new goals for reducing short-lived climate pollutants (SLCP) to reduce methane by 40 percent, hydrofluorocarbon gases (HFCs) by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030. The bill requires the ARB to prepare a comprehensive strategy by January 1, 2018 to achieve these goals. SB 1383 also aims to reduce organic waste in landfills by requiring a 50 percent reduction from 2014 levels by 2020 and 75 percent reduction from 2014 levels by 2025, and requires a reduction in methane emissions from livestock and dairy manure management operations by up to 40 percent below 2013 levels by 2030.

All of the statewide GHG reduction measures are expected to contribute to reducing GHG emissions below Business As Usual (BAU) projections, and thus assist local jurisdictions in meeting GHG reduction goals in local Climate Action Plans.

Humboldt County's GHG Mitigation Efforts

On December 4, 2007, the Humboldt County Board of Supervisors resolved to join ICLEI – Local Governments for Sustainability USA and participate in the Cities for Climate Protection Campaign. As part of the resolution, the County of Humboldt has undertaken the Cities for Climate Protection Campaign's five milestones to reduce both GHG and air pollution emissions throughout the community, and specifically commits to progress through the following five milestones:

1. Conduct a GHG emission inventory and forecast to determine the sources and quantity of GHG emissions in the County;
2. Establish a CO₂ or GHG emissions reduction target;
3. Develop a climate action plan with both existing and future actions that, when implemented, will help meet the local GHG reduction target;
4. Implement the action plan; and
5. Monitor and report progress.

Although the County is no longer a member of ICLEI, the protocols developed by ICLEI, in conjunction with supplementation by California state agencies and organizations of environmental professionals, are recognized as the standard for the preparation of GHG inventories and projections necessary for compliance with the Global Warming Solutions Act and CEQA, and for the preparation of Climate Action Plans.

In 2008, the Redwood Coast Energy Authority (RCEA) prepared a 1990 GHG inventory for the County using the ICLEI – Local Governments for Sustainability CACP software package available at that time, along with time series estimates of GHG emissions from the unincorporated County for the years 2003-2006. The study concluded that the total GHG emissions in Humboldt County in 1990 was 1,821,532.4 T_{MCO₂e} (tonnes). Importantly, the study noted that the County measured a 439,280 T_{MCO₂e} reduction in industrial emissions between 1990 and 2005, attributed to a steady and significant decline in the lumber industry and closure of major industrial facilities related to timber processing, including numerous lumber mills and several pulp mills. The results were reported in Figure 3.12-1 in the 2012 Draft EIR for the GPU, and is reproduced on the following page.

In January 2012, as part of the 2012 Draft General Plan, Humboldt County prepared a Draft Climate Action Plan (CAP) to reduce GHG emissions in the unincorporated County, which also relied upon the 2008 RCEA report. The target set forth in the 2012 Draft CAP is to reduce county emissions to 1990 levels by 2020, consistent with AB 32. The 2012 Draft CAP also set an additional target to achieve no net increase of CO₂ emissions compared to BAU emissions from the 1984 General Plan for new residential development within the County by the year 2025. To be compliant with SB 32, the draft CAP will need to be revised to include targets for 2030 and to update the calculation of the 1990 GHG Community Emissions inventory in accordance with the current methodology.

In October 2014, RCEA released the Unincorporated Humboldt County 2005 Community Greenhouse Gas Emissions Inventory based on ICLEI's U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, Version 1, October 2012² shown below.

Table 3.13-1. Community GHG Emissions 1990 - 2006

Year	1990	2003	2004	2005	2006
County of Humboldt					
Community Greenhouse Gas Emissions					
Time Series Report					
Residential					
eCO ₂ (tonnes)	113,269.6	126,030.7	104,661.1	100,523.2	101,794.6
Energy (MMBtu)	1,992,390.3	2,196,928.6	1,741,803.9	1,629,161.4	1,705,746.6
Commercial					
eCO ₂ (tonnes)	142,355.5	140,688.1	118,714.1	118,461.1	128,404.8
Energy (MMBtu)	2,259,203.0	2,232,386.9	1,915,459.5	2,002,654.6	2,220,796.0
Industrial					
eCO ₂ (tonnes)	817,364.3	236,365.2	168,817.5	378,084.3	272,233.6
Energy (MMBtu)	42,772.9	38,266.2	40,116.1	41,528.0	59,492.5
Transportation					
eCO ₂ (tonnes)	641,049.1	623,948.5	646,515.7	643,689.4	711,963.1
Energy (MMBtu)	8,205,263.9	8,011,688.4	8,306,655.3	8,274,638.5	9,158,070.5
Waste					
eCO ₂ (tonnes)	40,965.6	13,357.7	13,967.1	14,412.8	14,558.9
Other					
eCO ₂ (tonnes)	66,528.3	84,013.8	77,927.6	81,162.6	81,037.9
Total					
eCO ₂ (tonnes)	1,821,532.4	1,224,404.1	1,130,603.1	1,336,333.4	1,309,993.0
Energy (MMBtu)	12,499,630.1	12,479,270.1	12,004,034.7	11,947,982.5	13,144,105.7
<small>This report has been generated for County of Humboldt, California using STAPPA/ALAPCO and ICLEI's Clean Air and Climate Protection Software developed by Torrie Smith Associates Inc.</small>					

² The current version is U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, Version 1.1, July 2013.

The GHG Emissions data reported for 2005 in the 2014 report differs from the data reported in 2008, due to changes in methodology and the addition of several categories of emissions in the newer protocol. For example, the inventory protocol used in 2008 did not include breakouts of solid waste and landfill in the waste category or on-road and off-road estimates in the transportation category, or estimates for emissions from water & wastewater, fugitive leakage of refrigerants. Most significantly for Humboldt County, GHG emissions from livestock were not included in the prior protocol, which account for roughly 20% of GHG emissions under the current protocol. A comparison between the two study emission reports for the year 2005 appears below:

Table 3.13-2. Comparison of GHG Report Results for 2005 Emissions (MTCO₂e)

Sector	2008 Report	2014 Report
Residential Energy Use	100,523.2	112,477
Commercial Energy Use	118,461.1	117,436
Industrial Point Sources	378,084.3	197,641
On-road Transportation	643,689.4	346,162
Off-road Transportation		58,177
Solid Waste	14,412.8	39,898
Landfill		41,991
Water & Wastewater		2,984
Fugitive Leakage of Refrigerants		1,532
Livestock		227,025
Other	81,162.6	-
Total Emissions	1,336,333.4	1,145,324

The draft General Plan Update includes policy AQ-P9 and implementation measure AQ-IM3 that requires the development and implementation of a Climate Action Plan to achieve reductions consistent with AB 32 and SB 32. The preparation of a revised GHG inventory for 1990 using the currently accepted methodology is essential so that appropriate targets can be established for the preparation of a Climate Action Plan that complies with the statutory requirements.

The primary sources of the General Plan Update GHG emissions are anticipated to be combustion of fossil fuels from grid-delivered electricity use and from motor vehicles. Additional water and wastewater treatment and distribution facilities, as described in the Capital Improvements and Public Facilities Element, could someday be located in the project area. These plants could generate some amount of GHG emissions associated with operations, pumping and emergency back-up generators. No other significant stationary source generators (e.g. fossil-fuel burning power plants) are anticipated in the project area.

Implementation of the General Plan Update through development anticipated during the planning period would contribute to long-term increases in GHGs as a result of traffic increases (mobile sources) and residential building heating (area sources), as well as indirectly, through electricity generation.

Table 3.13-3 shows the 2005 GHG inventory for unincorporated Humboldt County (RCEA, 2014) along with the “business-as-usual” (BAU) emissions forecasts for the years 2020, 2028, 2030, and

2040, using population, housing, and employment forecasts for the County prepared as part of this Revised DEIR. 2028 is included because it represents peak population and housing over the planning horizon, coinciding with peak passenger vehicle traffic and peak residential energy use under BAU conditions. As a result, 2028 also represents peak total GHG emissions for the unincorporated County expected during the project planning period.

Table 3.13-3. Unincorporated Humboldt County GHG Emissions Inventory for 2005 and BAU Forecasts for 2020, 2028, 2030 and 2040

Sector	Humboldt County GHG Emissions (MTCO ₂ e)				
	2005 ^a	2020	2028	2030	2040
Residential Energy Use	112,477	117,291	119,859	119,417	117,207
Commercial Energy Use	117,436	123,751	127,119	128,452	135,119
Industrial Point Sources	197,641	206,101	210,612	209,836	205,954
On-road Transportation	346,162	333,759	338,138	334,802	324,277
Off-road Transportation	58,177	61,305	62,974	63,634	66,937
Solid Waste	39,898	41,764	42,758	42,821	43,135
Landfill	41,991	28,717	21,192	19,641	13,434
Water & Wastewater	2,984	3,124	3,198	3,203	3,227
Fugitive Leakage of Refrigerants	1,532	1,604	1,642	1,644	1,656
Livestock	227,025	353,718	353,718	353,718	353,718
Total Emissions	1,145,324	1,271,134	1,281,211	1,277,170	1,264,663

Notes: 2005 emissions for all sectors except for On-road transportation are from RCEA, 2014

During the course of the planning period, incremental increases in GHG emissions associated with traffic increases, residential space heating, and increased energy demand would contribute to increases in GHG emissions and associated climate change effects.³ Total emissions in 2005 were approximately 1,145,324 MTCO₂e. By 2028, the year that represents peak population in unincorporated Humboldt County, GHG emissions are forecast to be 1,281,211 MTCO₂e, an increase of approximately 135,887 MTCO₂e (or 12%) over 2005 levels, but comparison to 1990 levels has yet to be established. Total emissions will decrease slightly by 2030 due to the projected population decrease from 2028 to 2030, a trend that is expected to continue through 2040, when anticipated development associated with the project under BAU conditions is expected to produce 1,264,663 MTCO₂e.

³ It should also be noted that the project proposes to accommodate growth within the Urban Study Area of unincorporated Humboldt County. The Urban Study Area, also known as the urban development boundary, is an officially adopted and mapped line that separates an urban area from its surrounding greenbelt of open lands, including farms, watersheds and parks. Growth boundaries are set to discourage speculation at the urban or suburban fringe. As such, it discourages urban sprawl by keeping development contained, and thus limiting vehicle emissions by geographically keeping development within the urban study areas.

State Measures to Reduce GHG Emissions

A number of statewide measures in the current Scoping Plan (First Update to the Scoping Plan, May 2014) are expected to reduce emissions in the County by the year 2020 and beyond:

- Renewables Portfolio Standard
- Title 24 Standards
- Lighting Efficiency and Toxics Reduction Act
- Solar Hot Water Heating
- Pavley fuel efficiency standards
- Advanced Clean Cars (Vehicle Efficiency)
- Low Carbon Fuel Standard
- Various AB 32 vehicle efficiency strategies

Table 3.13-4 presents the estimated GHG reductions expected in the County from the implementation of these state measures for the years 2020, 2028, 2030, and 2040, resulting in an “adjusted BAU” forecast for each year.

Table 3.13-4. Adjusted BAU Forecasts for Unincorporated Humboldt County Accounting for GHG Reductions from State Measures

Category of GHG Reductions from State Measures	2020	2028	2030	2040
Renewables Portfolio Standard	38,668	45,541	55,357	55,971
Title 24 Standards	3,448	4,580	4,778	6,144
Lighting Efficiency and Toxics Reduction Act	5,509	4,297	3,993	3,993
Solar Hot Water Heating	246	224	229	229
Pavley / Advanced Clean Cars	8,172	57,669	65,284	83,721
Low Carbon Fuel Standard	0	0	0	0
AB 32 Vehicle Efficiency Measures	402	402	402	402
<i>Total</i>	<i>56,445</i>	<i>112,711</i>	<i>130,044</i>	<i>150,460</i>
BAU Emissions for the County	1,271,134	1,281,211	1,277,170	1,264,663
Adjusted BAU Emissions with State Measures	1,214,689	1,168,499	1,147,126	1,114,203
Percent Reduction	4%	9%	10%	12%

As noted above, the current ARB Scoping Plan focuses on the year 2020 and does not include the additional measures that will be needed to meet the state's 2030 target represented by SB 32. The next update to the Scoping Plan, currently in draft form, will provide a statewide plan to achieve the 2030 target, and provide more clarity about the role of local governments in meeting that target.

Other Emissions Sources and Sinks

The County's forested lands also sequester carbon. Since sequestration is part of the existing natural carbon cycle and only anthropogenic emissions are included in the County's GHG

inventory per inventory protocol (ICLEI – Local Governments for Sustainability USA. 2013), sequestration is not included in the analysis. However, efforts to reduce GHG emissions and enhance carbon sequestration on natural and working lands do contribute toward GHG emission reductions in the County. Therefore, the net change in sequestration resulting from forest management can help the county meet its future GHG emissions targets. The draft ARB *2017 Climate Change Scoping Plan Update* includes a commitment for development of systems for quantification and inclusion of methods for incorporating sequestration from natural lands, forests and agricultural lands as part of the state plan for meeting 2030 GHG reduction goals, which may be of special significance for Humboldt County because of its extensive area of forest, rangeland, natural open space and wetlands.

For informational purposes, an estimate of the County's potential carbon sequestration was developed. State and national estimates have been prepared for the net flux of CO₂e associated with forest and rangelands. The CEC has identified forests and rangelands as carbon sinks, and estimated the net removal of CO₂e from these lands to be 13.05 million metric tons (MMT) CO₂e per year, or 8.76 MMTCO₂e per year net of emissions for the State (CEC 2006). The ARB has used the 13.05 MMTCO₂e per year estimate and updated the net source emissions estimates to produce statewide net sink estimates ranging between 4.719 and 3.981 MMTCO₂e per year for 2000 - 2008 (ARB 2011). Considering that Humboldt County has 7.6 percent of the state's forestland, it is estimated that between 300,000 to 357,000 metric tons CO₂e are stored by Humboldt forests each year.

Humboldt County is home to two pioneering efforts to account for carbon sequestration of forest lands in conjunction with the state's Cap and Trade Program -- the Fred VanEck Foundation Forest, created with the assistance of the non-profit Pacific Forest Trust, and the city-owned Arcata Community Forest. The potential exists to expand on those programs utilizing the 1,000 acre County-owned McKay Community Forest, and other public or privately owned lands in the County.

Humboldt County GHG Emission Reduction Targets

As discussed above, to comply with AB 32 and SB 32, the County will adopt county-wide GHG emissions targets for the years 2020 and 2030 (and possibly also 2040) as part of a Climate Action Plan that will incorporate an updated 1990 GHG Inventory, to be prepared in accordance with policy AQ-P9 and implementation measure AQ-IM3.

The level of GHG Emissions in 1990 is the statutory baseline established by AB 32 and SB 32 for establishing GHG reduction goals for 2020 and 2030, and is the reference point for the 2050 target set forth in Executive Order S-3-05. What the results of a revised GHG inventory for 1990 using the currently accepted methodology is unknown at present. It is clear however that adding emissions from livestock would likely increase the 1990 total GHG emissions by approximately 220,534 MT CO₂e, based on the livestock data included in the 1990 Crop and Livestock Report published by the Humboldt County Agricultural Commissioner and the methodology used by RCEA in its 2014 report. Utilizing a 2005 baseline or other metric that does not recognize GHG reductions attributable to the decrease in industrial point sources and industrial energy uses that occurred in Humboldt County between 1990 and 2005 would result in setting targets that are much higher than are required by the statutory standard. Said another way, the higher the GHG emissions that existed in 1990 in Humboldt County, the lower the emission reduction targets will need to be in future years.

The figures in the table below illustrate this point.

	2020 Goal = 1990	Reduction needed	2030 Goal = 40% <1990	Reduction needed	2040 Goal = 60% <1990	Reduction needed
1990 baseline*	1,821,532	0	1,092,919	184,250	728,613	536,051
1990 baseline + livestock	2,042,066	0	1,225,239	51,930	816,826	447,837
- State measures		56,445		130,044		150,460
Maximum net local reduction required		0		54,206		385,591

* Source, RCEA, 2008, for illustrative purposes only. Updated 1990 GHG Emissions Inventory compliant with current protocols is required.

3.13.3 Climate Change and Greenhouse Gas Emissions - Standards of Significance

Based on Appendix G of the CEQA Guidelines the proposed County General Plan Update would have a significant impact if it would:

- a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, or
- b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHG.

3.13.4 Greenhouse Gas – Impacts and Mitigation Measures

Impact 3.13.4.1. Greenhouse Gas Emissions

Under the thresholds of significance set forth above, evaluation of whether or not GHG emissions generated as a result of implementation of the General Plan Update would have a significant impact on the environment, or would conflict with applicable plans, policies or regulations adopted for the purpose of reducing emissions of GHG, cannot be definitively determined until the inventory of GHG emissions for 1990 has been updated in accordance with currently accepted protocols.

Analysis of Relevant General Plan Update Policies

The General Plan Update contains policies, standards, and implementation measures that potentially pertain to the generation of GHG. These policies include the following:

- AQ-G3 Greenhouse Gas Emissions.** Successful mitigation of greenhouse gas emissions associated with this Plan to levels of non-significance as established by the Global Warming Solutions Act and subsequent implementation of legislation and regulations.

- AQ-P1. Reduce Length and Frequency of Vehicle Trips.** Reduce the length and frequency of vehicle trips through land use and transportation policies by encouraging mixed-use development, compact development patterns in areas served by public transit, and active modes of travel.
- AQ-P8. Reduce Air Quality Impacts from Wildfires.** Support and encourage fire suppression of wildfires that may have an acute air quality health impact on local population centers.
- AQ-P9. County Climate Action Plan.** Through public input and review, develop and implement a multi-jurisdictional Climate Action Plan to achieve reductions in greenhouse gas emissions consistent with the state Global Warming Solutions Act and subsequent implementing legislation and regulations.
- AQ-P10. County Government Greenhouse Gas Emission Reductions.** To lead by example, the County of Humboldt shall reduce its 2003 greenhouse gas emissions from governmental operations consistent with the state Global Warming Solutions Act and subsequent implementing legislation and regulations.
- AQ-Px. Review of Projects for Greenhouse Gas Emission Reductions.** The County shall evaluate the GHG emissions of new large scale residential, commercial and industrial projects for compliance with state regulations and require feasible mitigation measures to minimize GHG emissions.
- AQ-P11. Forest Sequestration and Biomass Energy.** Provide incentives for increased carbon sequestration on forest lands and encourage the reduction of smoke production through the utilization of excess forest biomass for sustainable energy generation and other uses.
- AQ-P12. Solar Electric System Capacity.** Encourage and provide incentives to increase solar-electric capacity in residential, commercial, and industrial sectors.
- AQ-P13. Energy Efficient Building Design.** Encourage and provide incentives for construction of buildings and energy saving measures beyond Title 24 requirements for residential and commercial projects.
- AQ-P14. Electric Vehicle Accommodations.** Encourage and provide incentives for commercial and residential design that supports the charging of electric vehicles.
- AQ-P15. Preservation and Replacement of On-site Trees.** Projects requiring discretionary review should preserve large trees, where possible, and mitigate for carbon storage losses attributable to significant removal of trees.
- AQ-Sx. Evaluate Greenhouse Gas Emission Impacts.** During environmental review of large scale residential, commercial and industrial projects, include an assessment of the project's GHG emissions and require feasible mitigation consistent with best practices documented by the California Air Pollution Control Officers Association in their 2008 white paper "CEQA & Climate Change" or successor documents.
- AQ-S2. Evaluate Air Quality Impacts.** During environmental review of discretionary projects, evaluate new commercial and industrial sources of emissions using

analytical methods and significance criteria used, or recommended by, the NCUAQMD.

- AQ-S4. Preservation and Replacement of On-site Trees.** Large scale residential, commercial and industrial Discretionary review projects which remove a significant number of large trees (for example, more than 50 trees of greater than 12 inches DBH) shall plant replacement trees on-site or provide offsetting carbon mitigations.
- AQ-IM3. County-wide Climate Action Plan.** Develop and implement a Climate Action Plan that effectively mitigates the carbon emissions attributable to this Plan, consistent with the requirements of the state Global Warming Solutions Act and subsequent implementing legislation and regulations.
- AQ-IM4. County Government Greenhouse Gas Emission Reductions.** The County shall prepare a Climate Action Plan for its governmental operations consistent with the Countywide Climate Action Plan that seeks emission reductions in the following areas:
- A. Energy Efficiency and Conservation
 - B. Green Building
 - C. Waste Reduction and Recycling
 - D. Climate-Friendly Purchasing
 - E. Renewable Energy and Low-Carbon Fuels
 - F. Efficient Transportation
 - G. Offsetting Carbon Emissions
 - H. Promoting Community and Individual Action
- AQ-IM5. Greenhouse Gas Emissions.** Update the General Plan and Land Use Ordinances, as appropriate, to reflect the adopted countywide Climate Action Plan and the new state laws and regulations for greenhouse gas emissions when they become available.
- AQ-IMx. Review of Greenhouse Gas Emissions Impacts of New Development.** Modify the Zoning and Subdivision Ordinances to assess GHG emissions of discretionary large scale residential, commercial and industrial projects, and require feasible mitigation.
- AQ-IM6. Programs to Reduce Air Quality Impacts of Wildland Fires.** Support and encourage programs such as fuel reduction, prescribed fires, and vegetation management as recommended in the County's Fire Plan to reduce air quality impacts of wildfires. (Black carbon from wildfires is a GHG).
- AQ-IMx1. Transfer of Development Rights Program.** The County shall develop a voluntary transfer of development rights program which provides incentives to transfer entitlements from resource lands and other rural areas into areas served with public water and sewer to reduce GHG emissions from new development.

The following is excerpted from the General Plan Update Chapter on Air Quality:

“Through this process the County intends to lead by example and reduce GHG emissions in its own operations to 10 percent below 2003 levels by 2020. Through this General Plan and participation in a County-wide Climate Action Plan the County intends to reduce GHG emissions in the unincorporated area resulting from its discretionary land use decisions to 10 percent below 2003 levels by 2020. The County will also partner with the Redwood Coast Energy Authority and local cities to attain this level of reduction for the entire County.

“CEQA requires public agencies to identify the potentially significant effects on the environment of projects they intend to carry out or approve, and to mitigate significant effects whenever it is feasible to do so. AB 32 establishes by law that greenhouse gas emissions cause significant adverse impacts to the environment, so the General Plan must include feasible mitigations to offset the GHG emissions associated with the Plan.

“The Plan includes a range of mitigations for reducing GHG emissions and mitigations to achieve increased carbon storage within the County. Increasing carbon storage on timber and agricultural lands may be the County’s most effective means to combat global warming

“The State’s 2020 target for California’s forest lands is to retain the current carbon storage capacity of California’s forests through sustainable management practices, reducing the risk of wildfire, and the avoidance or mitigation of land-use changes that reduce carbon storage. This equates to 5 MMTCO₂e of carbon storage, which is more than 10 percent all of non-transportation reductions planned through 2020, underscoring the role that forest lands will play in California’s efforts to reduce GHG emissions.

“The state’s first forest carbon storage project to be verified through the California Climate Action Registry was located in Humboldt County on 2,100 acres owned by the van Eck Forest Foundation. The project generated more than 500,000 tons of carbon credits that are being sold to interested purchasers. Under AB32, California is planning to implement a cap-and-trade program by 2012 that could increase the demand for verifiable carbon credits. This may create increased financial opportunities for forest and agricultural land owners in Humboldt County willing to manage their lands consistent with accepted carbon storage protocols.”

While timber management is regulated by the State under the Forest Practices Act, the General Plan Update proposes the development of a program that could provide carbon credits to local forest landowners who voluntarily agree to long-term restrictions on land uses that increase GHG emissions. These carbon credits could be registered and potentially sold under a GHG emissions cap-and-trade program to offset GHG emissions from development within the County and provide a financial incentive to maintain lands in resource production.

Land Use and Circulation Elements

The Land Use and Circulation Elements have been designed to reduce VMT and to promote non-auto modes of transportation and thereby reduce GHG emissions. The planned land use intensity/urban-form and an extensive network of transit service, trails, and bike routes encourage non-auto trips. Nonetheless, as described above, the project will generate increased daily vehicle trips at buildout. The mix of land uses, however, encourages a large degree of internalization of trips within the urban study areas, which leads to shorter trip lengths and reduced vehicle emissions for those vehicle trips that start and end in the urban study areas.

The proposed General Plan Update traffic analysis prepared by TJKM provides a base year 2010 daily VMT estimate of 1,940,309 for the unincorporated county using the origin-destination method of traffic modeling. Peak VMT coincides with projected peak population in 2028, when daily VMT is expected to rise to 2,078,296. The daily VMT estimate at project buildout (2040) is 2,051,668, an increase of approximately six percent over 2010 levels.

Despite increasing VMT under the proposed General Plan Update, improvements in vehicle efficiency would result in on-road transportation emissions remaining flat into the future (see table 3.13-5).

Energy Element

As described in the Energy Element, the project encourages solar energy and other non-fossil fuel energy sources. These sources tend to support the energy needs of individual developments; however, during the build-out of the general plan, locally generated "alternative" sources are encouraged.

The policies and implementation measures described in the Energy Element also include Green Building standards to mitigate impacts associated with electricity and natural gas consumption, which would also reduce GHG emissions.

Conclusion Compliance with these policies would help reduce GHG emissions from future development under the proposed General Plan update. Additional reductions would be achieved by CAP actions that the County may develop that encourage the use of alternatively fueled and electrified equipment. However, because specific information about construction projects and yet-to-be developed CAP measures to reduce construction emissions are unknown at this time, it is uncertain what the future intensity the proposed General Plan update would exceed an adopted GHG significance threshold. Consequently, this impact is conservatively determined to be significant. Ensuring that emissions will fall below an adopted GHG emissions threshold is not feasible at this time. Therefore, this impact is considered **significant and unavoidable**.

3.14 Cultural Resources

This section provides background information regarding cultural resources within the county, the regulations and programs that provide for their protection, and an assessment of the potential impacts of implementing the proposed General Plan Update. The following key issues relating to cultural resources have been identified through the General Plan Update process: the protection of cultural resources and historic structures. These key issues will be discussed in the evaluation of impacts below. Additional information on cultural resources can be found in Chapter 6, Cultural Resources, of the *Natural Resources and Hazards Report*, September 2002 (Appendix D), which includes a background discussion of Native American settlements in Humboldt County and summarizes both historic and prehistoric cultural resources in the county. This report, which is available for review at the Planning Division public counter at 3015 H Street in Eureka or for download at <http://co.humboldt.ca.us/gpu/documentsbackground.aspx>, is incorporated by reference, and summarized below. Where any discrepancies may exist between the referenced material and the material presented here, the material presented here should be considered as the most up to date and is to be relied on for the environmental setting and analyses.

3.14.1 Cultural Resources - Environmental and Regulatory Setting

Cultural Resources - Native American and Archaeological Sites

Before European settlement, the Humboldt County area was one of the most culturally diverse regions of California, and was home to nearly a dozen distinct peoples. In large part, Native American tribes occupied distinct areas conforming largely to the natural watershed basins. The majority of tribes were Athabascan speakers and hill people who built permanent homes along rivers. The Yurok and Wiyot spoke Algonquian languages and settled along both coasts and rivers. The Karuk were Hokan-speaking and lived in mountainous territory.

Peoples that settled north of the Eel complex watersheds are grouped together as Northwest California cultures. This group includes the Hokan- and Algonquian-speaking tribes, as well as the Hoopa, Chilula, and Whilkut.

Villages were clustered around lagoons, sloughs, and river mouths along the coast. Inland settlements were usually along streams, sometimes on terraces above floodways; the Yurok sometimes built on steep slopes. Seasonal migration was common; for example, the Chilula built permanent villages on flats along Redwood Creek, but moved up to higher ridges in summer and fall. Most groups tended to build along the side of a river or hill that received more sun and on hillsides where timber was less dense.

Although some tribes to the south practiced cremation, Northwest California tribes generally buried their dead and cemeteries were established near the permanent (wintertime) villages. Bodies were buried in plank-lined graves, although it is believed that the Mattole cremated people killed in war and buried all others.

The Hoopa claimed food-rich lands (where acorns and manzanita were plentiful), but shared right-of-way with other groups; the Yurok established privately owned land. Tribes

located along the coast or near rivers, and relied on fish and sea mammals as their primary source of food.

Food was obtained by a variety of means, including hunting, fishing, and gathering greens, depending on seasonal availability. Archaeologically significant sites have been identified by the presence of refuse from marine life, debris from stone toolmaking, mortar, and tools.

Culturally Sensitive Areas

Culturally sensitive areas include sites and regions of special importance to Native Americans, primarily coastlines and riverbanks with outstanding religious or resource-producing importance. Over 32,000 acres of land in Humboldt County are designated as culturally sensitive, with notable concentrations along the Lower Klamath, the Lower Trinity, the lower end and North Fork of the Mad, and the Van Duzen Rivers, and the eastern shore of Humboldt Bay. Culturally sensitive areas exist on both public and private lands. While some locations are publicly identified, others are held as confidential information by local Native American organizations.

The North Coastal Information Center of the California Historical Resources Information System (NCIC of CHRIS) is the regional information center holding confidential records for Humboldt County and is currently operated by the Yurok Tribe in Klamath under contract agreement with the State Office of Historic Preservation. The North Coastal Information Center has records for approximately 2,040 cultural resource sites, including cemeteries, villages, and lithic scatters: surface-visible concentrations of stone chips, flakes, and tools. Three-quarters of these sites are located along rivers and major tributaries; the remaining sites are located in flat mountainous areas or prairies. High-density sites (villages, cemeteries, and ceremonial and gathering areas) are concentrated in the Hoopa and Yurok reservations and riverine areas. Ridgelines along rivers and creeks, where traveling between villages likely occurred, and lithic scatters around Trinidad, Humboldt Bay, the Eel River delta, and Shelter Cove are considered medium-density resource sites.

A provision of State law, commonly referred to as SB 18 (Chapter 905, Statutes of 2004), requires local governments to consult with tribes during general plan amendments. Humboldt County contacted tribes early in the process and held a tribal summit meeting, and had following up meetings with tribes desiring them. Letters of invitation to consult were sent to all tribal representatives included on the list supplied by the Native American Heritage Commission, per the provisions of SB 18. (See Appendix T for documentation of consultations.)

Historic Districts, Sites, Structures and Landmarks

Historic resources include districts or areas, sites, structures, landmarks, or other physical evidence associated with past human activity greater than 50 years old. Humboldt County is home to a large number of historical sites, having been one of the first areas in California to be explored and settled by Europeans. Thirteen Humboldt County locations are California State Historical Landmarks and 51 sites are listed on the National Register of Historic Places, 13 of which are in the unincorporated area. The sites recognized on the National Register of Historic Places include architecturally significant nineteenth-century homes, banks, hotels, libraries, public buildings, bridges, schools, churches, lighthouses, and the historic districts of Ferndale, Eureka, Hoopa, and Bald Hills in Orick.

The following tables contain listings of historic resources established by the federal and state governments as well as Humboldt County.

Table 3.14-1. National Register of Historic Places within the Unincorporated Area.

Resource Name	Address	Community	Year Listed
Bald Hills Archeological District	Address Restricted*	Orick	7/9/1982
Bank of Loleta	358 Main St.	Loleta	2/28/1985
Benbow Inn	445 Lake Benbow Dr.	Garberville	9/15/1983
Carlotta Hotel	Central Ave.	Carlotta	5/23/1978
De-No-To Cultural District	Address Restricted	Hoopa	4/24/1985
Fern Cottage Historic District	2099 Centerville Rd.	Ferndale	1/7/1988
Fernbridge	CA 211	Fernbridge	4/2/1987
Grizzly Bluff School	E of Ferndale on Grizzly Bluff Rd	Ferndale	11/27/1979
Humboldt Bay Life-Saving Station	S of Samoa on Samoa Rd	Samoa	10/30/1979
Lower Blackburn Grade Bridge	NW of Bridgeville on CA 36	Bridgeville	6/25/1981
Old Jacoby Creek School	2212 Jacoby Creek Rd.	Bayside	2/28/1985
Prairie Creek Fish Hatchery	Milepost 124.83 on US 101, N of Orick	Orick	2/4/2000
Punta Gorda Light Station	10.5 mi. SW of Petrolia	Petrolia	9/1/1976

Source: Humboldt County Planning Division.

*State law requires that the location of certain sensitive cultural resources remain confidential.

Table 3.13-2. California State Historical Landmarks within the Unincorporated Area.

Resource Name	Address	Community
No. 164 The Old Arrow Tree	0.8 mi E of Korbelt	Korbelt
No. 173 Centerville Beach Cross	Centerville Beach	Centerville
No. 543 California's First Drilled Oil Wells	NE corner Mattole Rd and Front St	Petrolia
No. 882 Humboldt Harbor Historical District	Harold Larsen Vista Pt, Humboldt Hill Rd off Hwy 101	Humboldt Hill

Source: Humboldt County Planning Division.

Table 3.14-3. Humboldt County Local Register of Historic Landmarks, Unincorporated Area.

Resource Name	Address	Community	Year Listed
Garberville Civic Clubhouse	477 Maple Lane	Garberville	5/23/1989
Andreasen, F. W.--John Rossen House	Port Kenyon Rd. and Bush St.	Ferndale	6/6/1989
Myers Flat Hotel	Myers Flat	Myers Flat	6/20/1989
Southport Landing - Charles Heney House	Phelan Rd. / Table Bluff	Table Bluff	10/04/1988
Petersen-Machado Centerville Dairy	Centerville Road	Centerville	6/17/2008

Source: Humboldt County Planning Division.

In addition to the resources listed in the tables above, the State Historic Preservation Office (SHPO) maintains the California Historical Resources Inventory, which has been managed by the State since 1975.

The California Historical Resources Inventory includes resources evaluated or formally determined eligible for listing in national, State or local registries. Properties in the listing are given a status code which provides a tentative indication of their eligibility for listing in the National and/or California Registers, local significance, ineligibility, or lack of evaluation. SHPO's Historical Resources Inventory for Humboldt County contains 1247 records, about 80% of which are within incorporated cities.

Pursuant to current general plan policy and CEQA, the County conducts cultural resource surveys in connection with discretionary projects. These surveys may recommend that a site or structure be designated special status, and thereby become eligible for protection and other benefits. The designations relate to eligibility for inclusion on the National Register of Historic Places, a federal list maintained by the National Park Service or the State of California Register of Historical Resources. The California Register differs from the National Register in that its focus is on resources specific to California history. The County also has its own Local Official Register of Historic Resources, which provides protective status to resources that have local significance. Unlike the California Register, properties cannot be listed on the County Inventory or the National Register without the owner's consent.

3.14.2 Cultural Resources - Standards of Significance

This analysis uses the significance criteria from the CEQA Guidelines Appendix G. The proposed General Plan Update would result in a significant impact on cultural resources if it does any of the following:

- a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5.
- b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5. Substantially degrade the existing visual character or quality of the site and its surroundings.
- c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.
- d) Disturb any human remains, including those interred outside of formal cemeteries.

Item "a", with respect to substantial adverse change in the significance of a historical resource, is discussed in Impact 3.14.3.1, Historical Resources. Items "b" and "c", with respect to adverse change in the significance of an archaeological resource pursuant to §15064.5 or the indirect destruction of a unique paleontological resource or site or unique geologic feature, are discussed as Impact 3.14.3.2, Archaeological and Paleontological Resources. Item "d", with respect to significant impacts from the disturbance to any human remains, including those interred outside of formal cemeteries, is discussed in Impact 3.14.3.3, Human Remains Outside Formal Cemeteries.

3.14.3 Cultural Resources – Impacts and Mitigation Measures

Impact 3.14.3.1. Historical Resources

Implementation of the General Plan Update would result in additional development that could adversely impact historical resources.

Based on Appendix G of the CEQA Guidelines the proposed County General Plan Update would have a significant impact if it would:

- a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5.

Adverse changes to the significance of a historical resource could occur if a resource is removed, if alterations are made and the historic character of a property is not retained and preserved, or if alterations are made to their immediate surroundings which change the historic character of the resource. Impacts to historical resources would be significant if the General Plan Update would allow such alterations or removals of historical resources.

The significance of historic resources is formally determined by a Cultural Resource Report, a study designed to identify and evaluate properties in a defined area. The methods and criteria for these reports follow guidelines established by the State Office of Historic Preservation. There are two different levels of surveys. An intensive survey is one in which the entire site is closely inspected, with detailed research. A reconnaissance survey does not require extensive research, but simply provides a visual assessment of buildings or structures that might be significant. The majority of the vast unincorporated area of the County has never been systematically surveyed.

The findings of a cultural resource report may recommend that a site or structure be designated special status, thereby becoming eligible for protection and other benefits. The designations relate to eligibility for inclusion on the National Register of Historic Places, a federal list maintained by the National Park Service or the State of California Register of Historical Resources. The California Register differs from the National Register in that its focus is on resources specific to California history. The County also has its own Local Official Register of Historic Resources which provides protective status to resources that have local significance. Unlike the California Register, properties cannot be listed on the County Inventory or the National Register without the owner's consent.

Growth in the next 20 years as contemplated by the General Plan Update has the potential to impact historic resources either through direct impacts to resources themselves or impacts to their immediate surroundings. Because of the widespread distribution of historic resources in Humboldt County, the potential for significant impacts on resources and/or their immediate surroundings exists in community centers, rural centers, rural lands, agricultural lands and public lands.

Development within Urban Development Areas has the greatest potential to impact resources because of the intensity of development planned to occur in such areas. Also, future development within other portions of community planning areas or in rural centers, rural lands, or agricultural lands, though at a relatively lower density, has the potential to adversely impact historic resources. Impact could occur as a result of development on existing legal lots of record. Developing such lots or modifying structures on such lots could be done as ministerial projects that require only a building permit, and therefore are not subject to additional CEQA

environmental review. The county currently checks the state and local listed historic resources (including those determined to be eligible for listing) prior to issuing building permits.

Precise impacts of future development in any of the community planning areas cannot be identified at this time. Comprehensive inventories of historic resources have not been completed on a community-wide basis. Potential impacts must be identified at the project level at the time site-specific plans for each of these areas are prepared along with their accompanying environmental documentation.

Impacts to historic resources can occur as a result of neglect. Potentially historic structures can become obsolete due to changes in ownership, changes in the use of the land, and eventual abandonment. For those projects that involve potentially historical structures (more than 50 years old), the County makes a referral to the local Historical Society for a determination on whether the project may qualify for an official historical designation. If the project qualifies for such a designation, the County encourages the applicant to pursue that designation.

Another potential source of impact is the development of infrastructure and facilities to support future growth under the proposed General Plan, including projects contemplated by the Circulation Element. Such improvements may include constructing roads, highways, public water systems, wastewater facilities, storm drain systems, and other amenities associated with urban land use. The nature and extent of impacts that might result from infrastructure improvements cannot be identified at this time inasmuch as the characteristics and locations of these facilities have not been identified. These impacts must be further delineated during subsequent environmental analysis at the project or master plan level, when plans for various facilities and infrastructure are developed.

The proposed policies of the General Plan Update enhance methods and procedures for protecting historic resources and avoiding or mitigating actions related to development that might otherwise result in destruction, relocation or alteration of historic resources or their surroundings. However, proposed policies may not fully protect resources from demolition through actions unrelated to discretionary development permits and review.

Analysis of Relevant General Plan Update Policies

The General Plan Update contains several policies, standards, and implementation programs intended to address potential impacts to historic resources. CU-P1, Identification and Protection, would require that cultural resources be identified during ministerial and discretionary project review and if found to be significant, protected from substantial adverse change. CU-P2, Native American Tribal Consultation, requires consultation with Tribes during discretionary project review for the identification, protection and mitigation of adverse impacts of cultural resources. CU-P2 also requires consultation during ministerial projects if it has been determined that the project may result in adverse changes to a significant cultural resource. CU-P3, Avoid Loss or Degradation, requires that projects located in areas known or suspected to be archaeological sites or Native American burial sites to be conditioned to avoid potential impacts (CU-S4 provides standards on conditioning, designing and/or mitigating projects to avoid the loss of cultural resources). CU-P4, Findings Necessary for Loss or Destruction, prohibits cultural resources from being substantially altered through a permit approval without a determination that the resource is not significant or where overriding public benefits and mitigations would occur. CU-P5, Mitigation, requires mitigations when development would adversely impact cultural resources.

The General Plan Update includes policies CU-P1 through CU-P5 which establish that the County will scrutinize development projects to identify and protect cultural resources, as well as cooperate with Native American groups where potential Native American resources could be affected by development proposals. This will lead to the identification of resources and the application of mitigation measures for both ministerial and discretionary projects on a project-by-project basis. Additionally, Standard CU-S1, Significant Cultural Resources Defined, broadly defines cultural resources to include buildings, structures, sites, districts, areas, places that are culturally, historically, or archeologically significant. CU-S3, Cultural Resources Community, specifies that the cultural resources community includes: a) Native American Tribes, defined as federally recognized and non-recognized tribes and tribal organizations that have ancestral lands in Humboldt County that are on the contact list maintained by the Native American Heritage Commission; and, the appointed Tribal Historic Preservation Officers (THPOs) of such tribes; b) Historic preservation organizations, including the Native American Heritage Commission, the California State Office of Historic Preservation, the North Coastal Information Center, the Northwest Information Center, Humboldt County Public Works Department and the Planning and Building Divisions, and local historical societies and museums; and c) Other interested parties who have requested in writing to be notified of such matters.

CU-S5, Assessment and Treatment of Impacts to Significant Historic Structures, Buildings and Districts, provides that a records check will be conducted for all ministerial projects. If a project site and/or structure is found to be listed on the local, State, or federal register, or has been surveyed and determined to be eligible for listing on the local, State, or federal register, it will be considered a significant cultural resource. Projects then must either be modified to ensure continued protection of the significant historical resources, or subjected to a discretionary review process where a Cultural Resources Report may be required if it is determined that cultural (including historic) resources may be significantly impacted by the project. To assist in identifying historical resources of significance, CU-S5 specifies that the County encourage the cultural resources community to utilize the nomination process for the California Register of Historic Places, which provides notice and comment opportunities for local government and the property owner, in determining eligibility for register listing.

Implementation Measure CU-IM1, Cultural Resources Ordinance and Advisory Committee, provides for the process of reviewing existing ordinances in order make necessary amendments that assures the protection of cultural resources. CU-IM1 also specifies the adoption of a comprehensive Cultural Resources Ordinance and the establishment of (an) advisory Cultural Resources Committee(s). The purpose of the Ordinance is to implement the goals, policies and standards of the cultural resources policies found in Chapter 10.7. These policies outline a clearly prescribed process for the identification, evaluation, assessment and treatment (mitigation) of cultural resource impacts for County permitted projects or actions that could result in significant adverse impacts and on recommendations.

Implementation Measure CU-IM3, Cultural Resources Designation, requires the development of a program that encourages and actively supports the nominations to the federal, state, and local cultural resource registration programs. Implementation Measure CU-IM4, Historic Building Code, promotes the use of the Historic Building Code of the State of California for historical sites. And Implementation Measure CU-IM5, Historic Building Identification, will establish and maintain a system for identifying significant historic buildings and structures (individually or as part of districts or landscapes).

The proposed General Plan Update includes a policy and standard (AG-P5 and AG-S5) to mitigate the loss of historic structures on agricultural land due to neglect.

The General Plan Update also includes Implementation Measure CU-IMx, Map Resource Areas. Under this Implementation Measure, the County, in consultation with the cultural resources community (as defined earlier by CU-S3), will map Overlay Zones for culturally sensitive areas (including potentially significant cultural landscapes) especially in rural, inland areas outside the Coastal Zone. This will serve to expand the County's review of projects that may affect known and unknown cultural resources to facilitate Initial Project Screening (CU-P1). CU-IMx also requires the development of a confidential database that identifies the location of sites of archaeological or cultural heritage sensitivity to prevent destruction from permitted activity. Lastly, CU-IMx requires the development of a list of listed, eligible or potentially eligible historical resources including architectural sites, districts and cultural landscapes, within the County's jurisdiction. Prior to the development of this list, CU-IMx requires the County to continue to contract with the NCIC and NWIC to provide rapid-response, reduced fee initial review of project locations for purposes of determining if known cultural resources are recorded on or near project areas, and for opinions on cultural resources sensitivity with appropriate recommendations.

Conclusion

The General Plan Update contains policies, standards and implementation measures which generally protect historical and archaeological resources or mitigate impacts to them. The General Plan Update policies and measures referenced above would reduce the anticipated impacts but not to a less-than-significant level. Historic structures may still be removed or substantially altered when building sites are prepared for new construction. Therefore, impacts to historic structures would **remain a significant and unavoidable impact** of the General Plan Update.

Impact 3.14.3.2. Archaeological and Paleontological Resources

Implementation of the General Plan Update would result in additional development that could adversely impact archaeological and paleontological resources.

Based on Appendix G of the CEQA Guidelines the proposed County General Plan Update would have a significant impact if it would:

- b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5, or
- c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Ground-disturbing activities, such as clearing, excavation and grading, have the potential to damage or destroy archaeological and paleontological resources that may be present on or below the ground surface, particularly in areas that have not previously been developed. The proposed General Plan Update could result in an adverse change in the significance of archaeological resources by the designation of land uses that would result in ground-disturbing activities without proper regulation and monitoring. Such adverse changes may result in a loss of valuable information that could be gained from the resources, or prevent potentially eligible sites from being listed on a register of cultural resources.

Cultural resources exist in many undeveloped and developed areas, within communities and forest lands, mountain areas, and under agricultural lands. Although the potential exists for cultural resources to exist in all proposed land use designations, the intensity of development associated with some land uses have a greater potential to impact cultural resources than

others. The proposed General Plan Update would designate higher density land uses within Urban Development Areas and Water Service Areas located in Community Planning Areas. Therefore, the Community Planning Areas would experience higher potential for impacts to archaeological resources as compared to other parts of the County, because higher density land uses are more likely to result in development that requires extensive excavation or grading activities. However, areas outside of Community Planning Areas would also experience potential impacts to archaeological resources from development allowable under the proposed General Plan Update and the installation of septic tanks or access roads, although to a lesser extent than areas within Community Planning Areas.

Although most land uses proposed under the General Plan Update would allow for excavation and grading activities during development, some land uses would result in greater land disturbance activities than others, and would therefore be more likely to result in impacts to archaeological resources. For example, areas designated for urban uses, such as industrial, commercial, mixed use, and low to medium density residential would be more likely to result in construction activities that involve extensive excavation or grading activities than some of the lower intensity land use designations. Impacts to archaeological resources in areas designated for higher intensity land uses would be likely to occur. In contrast, open space recreation or open space conservation land use designations would generally not allow land uses that would involve excavation or grading activities during construction. Therefore, impacts to archaeological resources in areas with these land use designations would generally not occur.

Humboldt County has established special review procedures for projects mapped with an A-Archaeological Resources Combining Zone for areas within the Coastal Zone. The County uses different review procedures for each of three categories of development projects to reduce impacts of proposed development on archaeological resources. These are described in the following paragraphs.

First, before approving any discretionary permit for development, the County obtains a response from the Northwest Information Center of the California Archaeological Inventory at Sonoma State University on whether the proposed project may affect any mapped archaeological sites. If the records of that agency show the project may affect an archaeological resource, an on-site investigation and appropriate mitigation measures are required as necessary to protect the resource (e.g., project relocation, excavation plan, and protective cover).

Secondly, for other non-discretionary projects in areas with an "Archaeological" zone district, the Natural Resources Division of the County Public Works Division is consulted prior to project approval. That agency also has information on virtually all mapped sites throughout the County. In cases where the ministerial project is determined to potentially affect archaeological resources, a site investigation and appropriate mitigation measures are required prior to project approval (e.g., project relocation, excavation plan, and protective cover).

Existing requirements administered by the County also protect historical resources. Projects that involve designated historical sites may have their building permits processed under an alternative set of building codes, the Historical Building Code (Part 8 of the California Building Standards Code pp. 8-1 through 8-607). These alternative standards relax many of the typical building code requirements that would otherwise make maintenance or remodeling of historical structures infeasible.

For the third category of development projects, ministerial projects outside mapped archaeological resource areas, the County applies 21083.2 of the Public Resources Code which identifies the following criteria for identifying unique archaeological resources:

"...(g) As used in this section, "unique archaeological resource" means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

(1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

If cultural resources are encountered during construction, all work must cease and a qualified cultural resources specialist must be contacted to analyze the significance of the find and formulate further mitigation (e.g., project relocation, excavation plan, and protective cover)."

While many archaeological sites are known and have been recorded, there is the potential these unknown archaeological resources exist within the County, particularly in areas that have not previously been surveyed for resources. The County has some mapped cultural resource areas, and the permit review process for new residential construction references these maps to avoid impacts on cultural resources, and to ensure new residential construction does not conflict with policies or ordinances protecting cultural resources. The location of past discoveries of archaeological resources can be useful in determining where potential impacts to unknown archaeological resources may occur.

The review procedures for the three categories of development projects identified in Impact 3.14.3.1 above are intended to reduce impacts of proposed development on historic resources and are also intended to reduce impacts to archaeological resources.

Analysis of Relevant General Plan Update Policies

The General Plan Update includes policies requiring review of development projects under CEQA and the National Historic Preservation Act, as well as cooperation with Native American groups where potential Native American resources could be affected by development proposals. This will lead to the identification of resources and the application of mitigation measures on a project-by-project basis. The General Plan Response to Impact 3.14.3.1 and this section 3.14.2.2 describe the policies and standards contained in the Cultural Resources Chapter of the Conservation and Open Space Element that are intended to address potential impacts to archeological and paleontological resources that could result from the implementation of the General Plan Update. It is noted that some archeological and paleontological resources also have an historic component, so in such cases both policy sets are applicable.

Prehistoric and historical archaeological deposits, some of which may qualify as historical or unique archaeological or paleontological resources under CEQA, are known to exist in Humboldt County. Development actions that could occur consistent with the General Plan Update could result in a substantial adverse change (e.g., damage or destruction) in the significance of archaeological deposits that meet either definition. Therefore, this impact could be significant. The General Plan Update proposed the addition of CU-S4 that specifically addresses this issue. CU-S4 requires that ministerial and/or discretionary projects must be re-

designed, conditioned and/or mitigated to avoid or reduce impacts to archaeological resources. CU-S4 also requires that any discretionary and/or ministerial projects that involve ground disturbing activities, provide a notation on development plans to read as follows:

"The project site is not located within an area where known archaeological sites have been identified. However, as there exists the possibility that undiscovered archaeological resources may be encountered during construction activities, the following post-review, inadvertent archaeological discovery measures are required under state and federal laws:

If archaeological resources are encountered, all ground disturbing work at the find location plus a reasonable buffer zone must be immediately suspended, the approving County department contacted, and a qualified professional archaeologist retained to analyze the significance of the find and formulate further mitigation (e.g., project relocation, excavation plan, and protective cover) in consultation with culturally affiliated tribes or other descendant groups, where applicable.

Pursuant to California Health and Safety Code §7050.5, if known or suspected Native American or other human remains are encountered, all ground-disturbing work must cease in the vicinity of the discovery, and the County Coroner contacted. The respectful treatment and disposition of remains and associated grave offerings shall be in accordance with PRC §5097.98. The applicant and successors in interest are ultimately responsible for ensuring compliance with this condition."

Conclusion

It is anticipated that conflicts would occur between land development and the preservation of significant archaeological deposits. Situations would occur in which significant archaeological deposits could be damaged or destroyed as result of development that is consistent with the General Plan Update. Policies and implementation programs contained in the General Plan Update address these situations and partially provide for the identification, evaluation, and mitigation of impacts on archaeological deposits. The programs contained in the General Plan Update would reduce potential impacts on archaeological deposits to **a less-than-significant level**.

Mitigation

None required.

Impact 3.14.3.3. Human Remains Outside Formal Cemeteries

Implementation of the General Plan Update would result in additional development that could disturb human remains, including those interred outside of formal cemeteries. Based on Appendix G of the CEQA Guidelines the proposed County General Plan Update would have a significant impact if it would:

- d) Disturb any human remains, including those interred outside of formal cemeteries.

Sensitive archaeological sites with the potential for human remains are known and mapped, and would be avoided through the existing review process. There is a possibility that some unknown burial sites would be discovered as a consequence of ground disturbing activities resultant from development. Impacts to unknown burial sites would be significant if the General

Plan Update would allow such ground disturbing activities without any protection for the buried remains.

Although the potential exists for unknown burials to exist in all proposed land use designations, the intensity of development associated with some land uses have a greater potential to impact unknown burials than others. The proposed General Plan Update would designate higher density land uses within Urban Development Areas and Water Service Areas located in Community Planning Areas. Therefore, the Community Planning Areas would experience higher potential for impacts to unknown burials as compared to other parts of the County, because higher density land uses are more likely to result in development that requires extensive excavation or grading activities. However, areas outside of Community Planning Areas would also experience potential impacts to unknown burials from development allowable under the proposed General Plan Update and the installation of septic tanks or access roads, although to a lesser extent than areas within Community Planning Areas.

Although most land uses proposed under the General Plan Update would allow for excavation and grading activities during development, some land uses would result in greater land disturbance activities than others, and would therefore be more likely to result in impacts to unknown burials. For example, areas designated for urban uses, such as industrial, commercial, mixed use, and low to medium density residential would be more likely to result in construction activities that involve extensive excavation or grading activities than some of the lower intensity land use designations. Impacts to unknown burials in areas designated for higher intensity land uses would be likely to occur. In contrast, open space recreation or open space conservation land use designations would generally not allow land uses that would involve excavation or grading activities during construction. Therefore, impacts to unknown burials in areas with these land use designations would generally not occur.

Humboldt County has established special review procedures for projects mapped with an A-Archaeological Resources Combining Zone for areas within the Coastal Zone. The County uses different review procedures for each of three categories of development projects to reduce impacts of proposed development on archaeological resources, which would also protect unknown burials in those areas. These are described in the following paragraphs.

First, before approving any discretionary permit for development, the County obtains a response from the Northwest Information Center of the California Archaeological Inventory at Sonoma State University on whether the proposed project may affect any mapped archaeological sites. If the records of that agency show the project may affect an archaeological resource, an on-site investigation and appropriate mitigation measures are required as necessary to protect the resource (e.g., project relocation, excavation plan, and protective cover).

Secondly, for other non-discretionary projects in areas with an "Archaeological" zone district, the Natural Resources Division of the County Public Works Division is consulted prior to project approval. That agency also has information on virtually all mapped sites throughout the County. In cases where the ministerial project is determined to potentially affect archaeological resources, a site investigation and appropriate mitigation measures are required prior to project approval (e.g., project relocation, excavation plan, and protective cover).

Existing requirements administered by the County also protect historical resources. Projects that involve designated historical sites may have their building permits processed under an alternative set of building codes, the Historical Building Code (Part 8 of the California Building Standards Code pp. 8-1 through 8-607). These alternative standards relax many of the typical

building code requirements that would otherwise make maintenance or remodeling of historical structures infeasible.

For the third category of development projects, ministerial projects outside mapped archaeological resource areas, the County applies 21083.2 of the Public Resources Code which identifies the following criteria for identifying unique archaeological resources:

"...(g) As used in this section, "unique archaeological resource" means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

(1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

If cultural resources are encountered during construction, all work must cease and a qualified cultural resources specialist must be contacted to analyze the significance of the find and formulate further mitigation (e.g., project relocation, excavation plan, and protective cover)."

While many burial sites are known and have been recorded, there is the potential unknown burials exist within the County, particularly in areas that have not previously been surveyed for archaeological resources. The County has some mapped cultural resource areas, and the permit review process for new residential construction references these maps to avoid impacts on cultural resources, and to ensure new residential construction does not conflict with policies or ordinances protecting cultural resources. These review processes would protect unknown burials in these cultural resource areas as well.

The review procedures for the three categories of development projects identified in Impact 3.14.3.1 above are intended to reduce impacts of proposed development on historic resources and are also intended to reduce impacts to unknown burials.

Analysis of Relevant General Plan Update Policies

The General Plan Update includes policies requiring review of development projects under CEQA and the National Historic Preservation Act, as well as cooperation with Native American groups where potential Native American resources, including unknown burials, could be affected by development proposals. This will lead to the identification of unknown burials and the application of mitigation measures on a project-by-project basis. The General Plan Response to Impact 3.14.3.1 and this section 3.14.2.2 describe the policies and standards contained in the Cultural Resources Chapter of the Conservation and Open Space Element that are intended to address potential impacts to historic resources and archeological resources, including Native American burial sites, that could result from the implementation of the General Plan Update. It is noted that some archeological resources, including Native American burial sites may have an historic component, so in such cases both policy sets are applicable.

Unknown burial sites, some of which may qualify as historical or unique archaeological or paleontological resources under CEQA, are likely to exist in Humboldt County. Development actions that could occur consistent with the General Plan Update could result in a substantial adverse change (e.g., damage or destruction) to the burial sites. Therefore, this impact could be significant. The General Plan Update proposed the addition of CU-S4 that specifically addresses this issue. CU-S4 requires that ministerial and/or discretionary projects must be re-designed, conditioned and/or mitigated to avoid or reduce impacts to archaeological resources, including Native American burial sites. CU-S4 also requires that any discretionary and/or ministerial projects that involve ground disturbing activities, provide a notation on development plans to read as follows:

"The project site is not located within an area where known archaeological sites have been identified. However, as there exists the possibility that undiscovered archaeological resources may be encountered during construction activities, the following post-review, inadvertent archaeological discovery measures are required under state and federal laws:

If archaeological resources are encountered, all ground disturbing work at the find location plus a reasonable buffer zone must be immediately suspended, the approving County department contacted, and a qualified professional archaeologist retained to analyze the significance of the find and formulate further mitigation (e.g., project relocation, excavation plan, and protective cover) in consultation with culturally affiliated tribes or other descendant groups, where applicable.

Pursuant to California Health and Safety Code §7050.5, if known or suspected Native American or other human remains are encountered, all ground-disturbing work must cease in the vicinity of the discovery, and the County Coroner contacted. The respectful treatment and disposition of remains and associated grave offerings shall be in accordance with PRC §5097.98. The applicant and successors in interest are ultimately responsible for ensuring compliance with this condition. "

Conclusion

It is anticipated that conflicts would occur between land development and the preservation of unknown human burial sites. Situations would occur in which the burial sites could be damaged or destroyed as result of development that is consistent with the General Plan Update. Policies and implementation programs contained in the General Plan Update address provide for the identification, evaluation, and mitigation of impacts on archaeological deposits, which may include burial sites. The programs contained in the General Plan Update would reduce potential impacts on buried human remains to **a less-than-significant level**.

Mitigation

None required.

3.15 Parks and Recreation

This section provides background information regarding parks and recreation facilities and services within the County, the state and local regulations that govern them, and an assessment of the potential impacts to parks resulting from the proposed General Plan Update. Existing parks and recreation facilities and programs are described in Chapter 5, Parks, Recreation, and Open Space, of the *Natural Resources and Hazards Report*, September 2002 (Appendix D, <http://humboldt.gov/DocumentCenter/Home/View/1370>), and Section 9, Parks and Recreation of the *Community Infrastructure & Services Technical Report*, July 2008 (Appendix Q, <http://humboldt.gov/DocumentCenter/Home/View/1449>). These reports, which are available for review at the Planning Division public counter during normal business hours at 3015 H Street in Eureka, are incorporated herein by reference, and summarized below. Where any discrepancies may exist between the referenced material and the material presented here, the material presented here should be considered as the most up to date and is to be relied on for the environmental setting and analyses.

3.15.1 Parks and Recreation - Environmental and Regulatory Setting

Recreation and Park Facilities in Humboldt County

More than twenty percent of the County's 2.3 million acres are protected open space, forests, and recreation areas. Within the County boundaries, there are four federal parks and beaches, ten state parks (three of which are encompassed by Redwood National Park), 16 County parks, beaches, recreational areas and reserves. These areas contribute to the quality of life in Humboldt County and provide needed recreational opportunities for residents of neighboring counties and visitors from all over the world.

Several agencies manage the parks, recreation, and open space resources in Humboldt County including Native American tribes, the Bureau of Land Management (BLM), United States Fish and Wildlife Service (USFWS), United States Forest Service (USFS), California Department of Fish and Wildlife (CDFW), California State Parks Department, local city governments, Humboldt County, and special districts.

Regional Park Facilities

Most parks in Humboldt County are regional in scope; outside the incorporated cities there are few local community or neighborhood parks. There are nearly 468,000 acres of federally managed parklands in the County, including National Forest, National Parks, and National Wildlife Areas, and 7,600 acres of Bureau of Land Management Reserve Lands. The County has about 76,000 acres of State Beach, State Parks, and State Reserve Lands. Humboldt County operates approximately 850 acres of parkland that includes ocean beaches, river access, boat ramps, and trails. Maps and figures describing the location and extent of regional parklands and open space in Humboldt County can be found in *Natural Resources and Hazards Report* Volume 1, Figure 5-1 and Tables 5-1 through 5-3 (Appendix D).

Local Park Facilities

Community and neighborhood park facilities are described in Section 9 of the *Community Infrastructure and Services Technical Report* (Appendix Q). Tables 9.1 through 9.12 in that report detail the park and recreation facilities found in Humboldt County's seven incorporated cities as well as within the Manila, McKinleyville, Scotia, and Willow Creek Community Services Districts and Resort Improvement District No. 1, and are summarized below in Table 3.15 -1. Updates have been made by staff of the Planning and Building Department since the publication of the Community Infrastructure and Services Technical Report based on best available information from service providers and other planning documents.

Table 3.15-1. Park Facilities in Unincorporated Humboldt County.

Park Name	Location	Park Type	Size in Acres
Humboldt County Operated			
Arthur W. Way County Memorial Park	36594 Mattole Rd, Honeydew	Regional	20
Big Lagoon County Park	505 A St, Big Lagoon	Regional	52
Centerville Beach County Park	4000 Centerville, Rd, Ferndale	Regional	2
Clam Beach County Park	1100 Clam Beach Rd, McKinleyville	Regional	370
Crab County Park	4000, Cannibal Rd, Loleta	Regional	10.5
Fields Landing County Park	160 Railroad Ave, Fields Landing	Regional	1.5
Freshwater County Park	Freshwater Rd, Freshwater	Regional	7
Hammond Trail	McKinleyville	Regional	5
Luffenholtz Beach County Park	Scenic Drive, Westhaven	Regional	7.5
Mad River County Park	150 Mad River Rd, Arcata	Regional	95.5
Margarite Lockwood Park	Maple Hills Rd, Miranda	Regional	20
Moonstone Beach County Park	Moonstone Beach Rd, Westhaven	Regional	8
Pedrazzini County Park	Pedrazzini Park Ln, Loleta	Regional	1
Samoa Boat Ramp	New Navy Base Rd, Samoa	Regional	8
Table Bluff County Park	Table Bluff Rd, Loleta	Regional	34
Van Duzen County Park	St Hwy 36, Carlotta	Regional	200
Sub Total			842

Park Name	Location	Park Type	Size in Acres
Manila CSD Operated			
Manila Dunes Rec. Area & Community Center	1901 Park Street, Manila	Regional	154
Manila Park	Lupin Avenue and Peninsula Drive, Manila	Community	12
Sub Total			166
McKinleyville CSD Operated			
Hiller Park and Sports Complex	795 Hiller Road, McKinleyville	Community	58
Pierson Park	1608 Pickett Road, McKinleyville	Community	5
Larissa Park	Larissa Circle, McKinleyville	Neighborhood	0.3
Sub Total			63.3
RID No. 1 (Shelter Cove) Operated			
Shelter Cove Golf Course	1555 Upper Pacific Drive, Shelter Cove	Regional	35
Playground	9126 Shelter Cove Road, Shelter Cove	Neighborhood	0.25
Sub Total			35.25
Scotia CSD Operated			
Scotia Fireman's Park (including soccer field)	Williams Street, Scotia	Community	10
Carpenter Field	Williams Street, Scotia	Community	4
Scotia Community Forest	Scotia	Regional	22.5
Scotia Museum, Town Park, Winema Theater	Main Street @ Bridge Street, Scotia	Neighborhood	0.75
Sub Total			37.25
Willow Creek CSD Operated			
Kimtu Beach & Camp Kimtu	Kimtu Road, Willow Creek	Regional	17
Veteran's Park	Kimtu Road, Willow Creek	Neighborhood	16
Creek Side Park	Willow Road, Willow Creek	Neighborhood	3.6
Community Commons	38919 Hwy 299, Willow Creek	Neighborhood	1.2
Sub Total			37.8
Total Parkland serving Community Areas			1,182

Source: Community Infrastructure and Services Technical Report, 2008; Humboldt County Planning and Building Advanced Planning Division, 2016.

The Technical Report also contains narrative descriptions of the activities of the Northern Humboldt and Rohner Community Recreation and Park Districts. School playgrounds in

Humboldt County are often the most accessible facilities for recreational use by children and families, and although they serve a broader community need, they are not designed and constructed as community park and recreation facilities and there is no formal program to maintain them as such. In recent years, school districts have installed security measures to protect buildings and facilities which limits their accessibility for broader community use and, as with all California public agencies, funding for facility maintenance and improvement is limited. Future school district budget and security requirements are unknown; therefore there is no guarantee that school facilities will remain available to serve the community public park and recreation needs in the future.

Private individuals and groups also provide parks and recreation facilities. For example, most communities have a health club that offer services such as weight lifting and fitness classes. In addition, there are parks open to the public that are operated by private non-profit groups such as the Redwood Fields in Cutten (an approximately 12-acre site that includes ball fields, playgrounds, picnic areas, and bocce courts), and the Southern Humboldt Community Park in Garberville (a 405-acre site that includes sports fields, playgrounds, picnic areas, and trails).

Table 3.15-2 lists acres of local and community parkland in unincorporated Humboldt County by Community Planning Area (CPA) (inland and coastal), where the local agency is responsible for planning, funding, and providing parklands for that area. Park operators include special districts such as Community Service Districts. Parks located within incorporated cities, like school facilities are, in many cases, the closest facilities to unincorporated communities, but are not included in this analysis. City parklands and facilities may serve unincorporated populations, just as the residents of one city may use the parklands of another city. However, city parklands are not designed and managed to serve unincorporated areas. Parklands provided by non-profit organizations such as Redwood Fields in Cutten and the Southern Humboldt Community Park may also be important to unincorporated areas, but are not included in this analysis because they are not operated by a local agency that is responsible for planning, funding, and providing park facilities for that area.

Total neighborhood and community park acres are compared to unincorporated area population within Community Planning Areas. Additional detail regarding facility type and park location can be found in Sections 9.1.1 and 9.1.2 of the *Community Infrastructure and Services Technical Report* and Table 5-3, County Parks and Trails of the Parks, Recreation, and Open Space section of the Natural Resources and Hazards Technical Report.

Table 3.15-2. Neighborhood and Community Parks by Planning Area

Community/Coastal Planning Area	Community & Neighborhood Park Acres	Acres Per 1,000 Persons
Arcata CPA	0	0
Avenues CPA-Miranda	0	0
Avenues CPA-Myers Flat	0	0
Avenues CPA-Phillipsville	0	0
Avenues CPA-Stafford-Redcrest	0	0
Avenues CPA-Weott	0	0
Blue Lake CPA	0	0
Eel River AP	0	0
Eureka CPA	0	0

Community/Coastal Planning Area	Community & Neighborhood Park Acres	Acres Per 1,000 Persons
Fieldbrook-Glendale CPA	0	0
Fortuna CPA	0	0
Freshwater CPA	0	0
GRBA-Alderpoint CPA t	0	0
GRBA-Redway/Garberville CPA	0	0
Humboldt Bay AP	0	0
Hydesville CPA	0	0
Jacoby Creek CPA	0	0
McKinleyville AP/ CPA	63.38	4.1
North Coastal AP	0	0
Orick CPA	0	0
Orleans CPA	0	0
Rio Dell-Scotia CPA	37.25	9.1
Shelter Cove AP/ CPA	0.025	0.04
South Coast AP	0	0
Trinidad AP	0	0
Westhaven CPA	0	0
Willow Creek CPA	20.8	13
Grand Total	93	1.41

CPA – Community Planning Area

Source: Community Infrastructure and Services Technical Report, 2008; Humboldt County Community Development Services.

Coastal Accessways

The California Coastal Act encourages local agencies to provide maximum access to recreational opportunities within the coastal zone. Numerous coastal access points have been identified within each of the approved coastal plans for the coastal zone portions of the County. A complete listing of the coastal access points is included in the Natural Resources and Hazards Report Volume 1, Appendices. The *Local Coastal Plan Issue Identification Report, September 2003* (Appendix L), (<http://humboldt.gov/DocumentCenter/Home/View/1863>) includes additional information regarding coastal access points, including inventories for each local coastal plan.

3.15.2 Parks and Recreation - Standards of Significance

This analysis uses the significance criteria from the CEQA Guidelines Appendix G. The proposed General Plan Update would result in significant impacts related to parks and recreation if it would:

- a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- b) Require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Item "a" is discussed in Impact 3.15.3.1, Deterioration of Parks and Recreational Facilities. Items "b" is discussed as part of Impact 3.15.3.2, Construction of New Recreational Facilities.

3.15.3 Parks and Recreation - Impacts and Mitigation Measures

Impact 3.15.3.1. Deterioration of Parks and Recreational Facilities

Implementation of the General Plan Update could facilitate population growth that outpaces improvements to existing parks and recreation facilities, resulting in their overuse and deterioration.

This impact analysis addresses item "a" of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.15.2 above. Pursuant to these standards, the proposed General Plan Update would have a significant impact if it would:

- a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Population growth that is projected by the State of California Department of Finance (DOF) to occur during the planning period would likely utilize park and recreation facilities at a similar rate as the current population. In general, significant environmental affects would occur if population growth and park use outpace the improvements to parks and recreation facilities resulting in the deterioration of existing facilities. If park and recreation facilities are not developed at a rate commensurate with population growth, the proposed General Plan Update could result in overuse and deterioration of existing parks and recreation facilities. To avoid deterioration, sufficient additional parkland acres should be provided in order to maintain or exceed the current population to parklands acres ratio, hereafter referred to as "needed acres of parkland".

Table 3.15-3, Needed Acres of Park Land in Areas with Parkland Requirements, identifies the acres of park land required to maintain the current ratio of population to parkland at the peak population during the General Plan Update planning period as projected by the Department of Finance (peak population will occur in 2028). Peak population is determined by multiplying the proportion of 2010 unincorporated area population to total County population by the projected housing unit growth within each Community Plan Area/Area Plan.

Table 3.15-3. Needed Acres of Park Land in Areas with Parkland Requirements.

Community/Coastal Planning Area	Existing Community & Neighborhood Park Acres	2010 Population	Existing Park Acres Per 1,000 Persons	Projected Peak Population Increase (2028)	Park Acres Needed to Maintain Ratio
Eureka CPA	0.00	12,631	0.00	1,460	0.00
McKinleyville AP/ CPA	63.38	15,476	4.10	496	2.03

Source: Community Infrastructure and Services Technical Report, 2008; Humboldt County Planning and Building Department, 2016.

The only community plan that specifies parkland standards is the McKinleyville Community Plan, which requires three acres of community park land per 1,000 new residents and two acres of neighborhood and mini park/tot lots per 1,000 new residents. There are approximately 15,476 persons in the McKinleyville CPA and McKinleyville Area Plan (Coastal Zone Segment for the McKinleyville area, the developed portion of which is within the McKinleyville CSD) and 63 acres of park facilities, which results in 4.1 acres of community and neighborhood parkland per 1,000 residents (based on 2010 population and information from the 2008 Community Infrastructure and Services Technical Report). The projected 2028 population for the McKinleyville CPA and McKinleyville AP would be approximately 15,972 persons. The McKinleyville CPA/AP currently has adequate parkland to accommodate the three-acre community parkland standard and 2-acre neighborhood park standard for the projected 2028 population, but would need to develop additional parklands to maintain the current ratio of parks to population. It is assumed that by maintaining the current ratio, the deterioration of existing park facilities would be avoided.

There is no local agency park provider within the Eureka CPA. The Eureka CPA requires that at least a five acre parkland be provided as part of a subdivision for each of three large land tracts. These tracts include the Barry property atop Humboldt Hill, the Robinson\Dunn property in Cutten and the McKay South tract located east of Walnut Drive in Ridgewood Heights. The parklands shall be required to meet the requirements of the Eureka CPA. To date, none of the above listed developments have occurred nor have the five acre parks been developed.

The current Humboldt County Zoning Regulations (Section 314-110.1 Parkland Dedication) require that residential subdivisions offer to dedicate land to a public or private non-profit agency for public park or recreation use or pay in-lieu fees to provide an appropriate contribution to public parks or recreation, pursuant to the Quimby Act (Government Code section 66477). Parkland dedication requirements are consistent with policies contained in the McKinleyville Community Plan and Coastal Area Plan as well as within the Eureka Community Plan. This current Parkland Dedication program would require that residential subdivisions in Eureka and McKinleyville make fair share contributions towards new park facilities or rehabilitating existing park facilities. These contributions would serve to limit the deterioration of existing facilities in these areas.

Coastal Access policies contained in each Local Coastal Plan require that new development not interfere with existing access points to coastal resources in the coastal zone. The Public Recreation and Public Lands land use and zoning classifications limit the allowed uses to protect recreational uses from new development. The Parkland Dedication requirements provide funding for development of new parks in urban areas.

Analysis of Relevant General Plan Update Policies

Goals, policies, standards and implementation measures contained in the Community Infrastructure and Services Element, as well as of the Conservation and Open Space Elements, are intended to address potential impacts to parks and recreation. Policies IS-P3, Public Infrastructure and Services Standards, and IS-P8, Infrastructure and Services Capacity, and Policy CO-P5, Planning for Recreational Needs within Communities, set forth the requirements that the County plan for parks within communities, coordinate with appropriate service providers to monitor the capacities of infrastructure and services in relation to existing and planned demand, and specify infrastructure and service needs for new development. Policy IS-P4, Requirements for Discretionary Development, directs the County to evaluate proposed development relative to service standards adopted by the County, service providers, and state and federal agencies, and if necessary impose conditions to ensure that the appropriate standards are met. In addition, Policy IS-P21, Parks and Recreation Service in Urban Development Areas, encourages special districts to provide parks and recreation services to meet the needs of urban area populations. However, this policy is only advisory and cannot be relied upon to lessen impacts to parklands resulting from the General Plan Update.

Standard IS-S7, Parkland Requirements, requires all residential subdivisions to offer to dedicate land or pay a parkland dedication in-lieu fee pursuant to the Quimby Act (Government Code section 66477).

The General Plan Update does not specify parkland standards. Instead, park standards would be established as part of community plans, such as the McKinleyville Community Plan, through implementation measures contained in the plan. Implementation Measure IS-IM29, Parks and Recreation, would prepare standards for new development that consider community preference and differentiate between urban, suburban, and rural settings; specify acreage of park land per 1,000 residents; and specify land dedication, in-lieu fees or other mechanisms to make park and recreation improvements.

Policy CO-P6, Develop and Maintain County Parks, requires that the County secure, develop and maintain parks that are accessible to the public in order to serve the current and future needs of County residents. Policy CO-P7, Encourage Private Outdoor Recreation, encourages the development of private parklands and outdoor recreational services and facilities as a means to generate economic returns for the landowner from conservation and open space lands.

Conclusion

Table 3.15-3, Needed Acres of Park Land, specifies the number of additional parkland acres that would be required to maintain the current ratio of park acres to residents within Community Planning Areas that have park requirements. The application of policies, programs, and implementation measures contained in the General Plan Update could provide a framework for coordinated planning for park and recreation facilities to ensure that new residential development includes provisions for adequate parks and open space in order to avoid an undue burden on existing facilities which would otherwise lead to deterioration. Implementation Measures IS-S7, Parkland Requirements requires all new residential development to offer to dedicate land or pay a parkland dedication in-lieu fee pursuant to the Quimby Act. In addition, IS-IM29, Parks and Recreation, would create standards for establishing park and recreation improvements.

However, there is no guarantee that setting standards will ensure that development allowed under the General Plan Update would not place undue burdens on existing parkland.

Therefore, impacts to parks facilities resulting from the implementation of the General Plan Update would be potentially significant.

Mitigation

Mitigation 3.15.3.1.a. In order to protect existing parkland from deterioration that could result from development pursuant to the General Plan Update, the following Policies and Implementation Measures shall be added to the Community Infrastructure and Services Element:

***IS-Px. Parks Master Plan.** In cooperation with other park service providers, the County shall establish and maintain a Parks Master Plan that would assess current facilities within each inland and coastal planning area, determine appropriate locations for new facilities, and identify funding options.*

***IS-Sx. Interim Parks and Recreation Standards.** Parks and recreation standards contained in the Government Code Section 66477 shall be used as the standard for parkland dedication in the review of divisions of land for which a tentative map is required pursuant to Section 66426, until such time that the County has established parks and recreation standards for new development that differentiate between urban and rural settings; specify acreage of park land of 3 acres per 1,000 residents; and specify land dedication, in-lieu fee, or other mechanisms to fund park and recreation improvements and funding for operation and maintenance.*

Level of Significance after Mitigation

With implementation of the General Plan Update policies, standards and implementation measures, and the mitigation measures identified above, impacts relating to the deterioration of parks and recreation facilities would be **less-than-significant**, particularly when considering the extensive area of County, state, and federal parkland within the County General Plan Update planning area.

Impact 3.15.3.2. Construction of New Recreational Facilities

Implementation of the General Plan Update could facilitate population growth that would require the construction or expansion of recreational facilities which could have an adverse physical effect on the environment.

This impact analysis addresses item "b" of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.15.2 above. Pursuant to these standards, the proposed General Plan Update would have a significant impact if it would:

- b) Require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

The General Plan Update would accommodate population growth, which would lead to increased demand for recreational facilities within the County. The Eureka and McKinleyville areas are the most populous communities in the unincorporated area, and are projected to receive the most significant levels of development during the General Plan update planning period. Lower levels of development would be expected to occur in other areas. Scattered development is expected to occur in rural areas. The General Plan Update land use diagram

does not specify the location of planned new parks or recreational facilities, the need for which could be triggered by the implementation of the General Plan.

The Quimby Act allows cities and counties to establish requirements for new development to dedicate land for parks, pay an in-lieu fee, or a combination of the two, and requires that standards be adopted for recreational facilities in its general plan recreation element. The Eureka and McKinleyville Community Plans contain park dedication policies and standards consistent with the Quimby Act.

Eureka Community Plan. The Eureka Community Plan requires that at least five acres of parkland be provided as part of a subdivision for each of three large land tracts. These tracts include the Barry property at the top Humboldt Hill, the Robinson-Dunn property in Cutten, and the McKay South tract located east of Walnut Drive in Ridgewood Heights. The Eureka Community Plan specifies that the terrain of park sites should be suitable to accommodate both active and passive recreational activities. The terrain for each of the three five-acre parks is required to consist of relatively flat, stable land usable for softball/soccer fields and basketball courts. A small portion of the land may be wooded and sloped to allow for passive recreation uses. To date, none of these areas have been subdivided and none of the five-acre parks have been developed.

McKinleyville Community Plan. Tables 17 and 18 of the McKinleyville Community Plan identify a series of park and recreation facilities that are needed within the McKinleyville area. The McKinleyville Community Plan includes policies to augment and compliment the efforts of the McKinleyville CSD Recreational Plan by encouraging the acquisition and development of other recreational amenities by other non-County entities such as the Redwood Community Action Agency, McKinleyville Land Trust, or the Coastal Conservancy in order to provide a comprehensive system of public trails, greenbelts, and parks. Future park development projects within the McKinleyville Community Plan area would include various expansions to Hiller Park and the development of playgrounds, ball fields, and tot lots in major developments and other locations.

As indicated above, the location and nature of park and recreation facilities that would be required as a result of the implementation of the General Plan Update is not known at this time. Parks and recreation projects are often located at or adjacent to existing facilities, but could occur in new locations. Table 3.15-3, Needed Acres of Park Land, identifies the acres of parkland needed to maintain the current ratio of population to parkland within the Eureka and McKinleyville Community Planning Area (the only two with park standards). The acreage required for each park project would vary depending on the specific park facility needs. Some projects may be as small as 10,000 to 20,000 square feet (e.g., a tot lot, basketball court, or recreation building) while larger projects may be several acres in area (e.g., ball fields). Therefore, the construction of these facilities could result in adverse physical effects on the environment related to geology, stability, and failure hazards; hydrology and drainage; water quality, erosion and drainage; air quality; sensitive flora and fauna; streams, wetlands and riparian areas; traffic and circulation; utilities and public services; aesthetics; cultural resources; population, housing, and employment; hazardous materials; and noise. However, site-specific impacts of potential new parks and recreation facilities cannot be determined until such time as they are proposed and under environmental review.

Analysis of Relevant General Plan Update Policies

As identified in Impact 3.15.3.1 above, policies, programs, and implementation measures contained in the General Plan Update would impose requirements on discretionary

development to provide adequate parkland and recreation facilities to offset additional demands. In particular, Policy IS-P4, Requirements for Discretionary Development, requires that the County evaluate discretionary development projects greater than one single family unit relative to County, service provider, and state and federal service standards, and if necessary, impose conditions to ensure that standards are met. In addition, Policy IS-P21, Parks and Recreation Service in Urban Development Areas, encourages special districts to provide parks and recreation services to meet the needs of in urban area populations. Standard IS-S7 Parkland Requirements requires that new residential subdivisions dedicate land or pay in-lieu fees for parkland pursuant to the Quimby Act. Implementation Measure IS-IM29, Parks and Recreation, would establish urban and rural parks and recreation standards for new development and specifies land dedication, in-lieu fees, or other mechanisms to facilitate park and recreation improvements. This implementation measure does not address funding for ongoing maintenance.

The discussion above identifies the need for additional parklands in the Eureka and McKinleyville Community Planning Areas to ensure that current population to parkland ratios are maintained, which would be facilitated by the implementation of the proposed General Plan Update. The following is a summary of General Plan Update policies that would reduce construction related environmental impacts from new or expanded park facilities:

- The Circulation Element contains policies to reduce traffic impacts by supporting the location of intensive land uses near collectors and arterials (C-P1, Orderly Development; and utilizing traffic impact thresholds (C-P5, Level of Service Criteria).
- The Biological Resources Chapter within the General Plan Update contains policies to reduce impacts to plants, animals, and habitat by planning land containing sensitive and critical habitats for uses for long term habitat sustainability (BR-P1, Compatible Land Use); conditioning projects to avoid impacts to critical and essential habitat where such resources are present (BR-P2, Critical Habitat); regulating development within streamside management areas to minimize adverse environmental effects (BR-P6, Development within Streamside Management Areas); and through the delineation and protection of wetlands (BR-P-7, Wetland Identification, and BR-S10 Development Standards).
- The Water Resources Element contains policies regarding critical watersheds to protect municipal water supplies from the environmental effects of development (WR-P4, Critical Municipal Water Supply Areas) and to limit the effects of development upon threatened and endangered species including Coho salmon habitat (WR-P5, Critical Watershed Areas); minimizing erosion and sediment discharge through the implementation of performance standards (WR-Px2, Mitigate Controllable Sediment Discharge Sites, WR-P8 Erosion and Sediment Discharge and WR-P36 Erosion and Sediment Control Measures); and by limiting the transmission of contaminants from parking lots to the storm water system by requiring oil water separators (WR-P35, Oil/Water Separation).
- Noise Element policies are intended to minimize short-term noise and noise from stationary sources through the application of appropriate standards (N-P1, Minimize Noise from Stationary and Mobile Sources) and through application of noise performance standards (N-S8 Short-Term Noise Performance Standards-Maximum Noise Level).
- The Safety Element contains policies to plan land use and new development to reduce hazards (S-P1, Reduce the Potential for Loss); applying state geologic and seismic standards to new development (S-P6, Structural Hazards); regulating uses around airports consistent with Airport Land Use Compatibility Plans (S-P21, Development Compatibility and S-P22, Airport Land Use Compatibility Criteria), and by regulating land uses in flood

hazard areas (S-P10, Federal Flood Insurance Program). Also, Policy S-PX1, Site Suitability, specifies that new development may be approved only if it can be demonstrated that the proposed development will neither create nor significantly contribute to or be impacted by geologic instability or geologic hazards; and Policy S-PX3, Construction Within Special Flood Hazard Areas, restricts construction within a floodplain identified as the 100-Year Flood Boundary on FEMA's Flood Insurance Rate Map.

- Air Quality Element policies require that construction and grading dust control measures achieve local air quality standards (AQ-P4, Construction and Grading Dust Control) and air quality impacts of new development are reduced through the implementation of mitigation measure during discretionary review (AQ-P5, Air Quality Impacts from New Development).

Conclusion

Implementation of the General Plan Update would result in the need for new or expanded parks and recreation facilities, the construction of which could result in significant environmental effects. Such new parks and recreation facilities would likely be constructed as part of a subdivision or require another County land use approval. New parks or recreational facilities could also be carried out by public park service providers on land planned and zoned in a manner that does not require a County land use approval. In such instances, the public park service provider would be required to seek General Plan conformance review by the County pursuant to Government Code Section 65402, and the above-listed General Plan Update policies would direct the County to work cooperatively with the service provider to plan and implement the project consistent with this plan. In particular, the General Plan encourages public agencies to plan for park and recreation facilities in areas with adequate road, pedestrian, and bicycle circulation and access to appropriate utility services.

However, the nature and location of potential new or expanded park and recreation facilities that would be constructed by another agency and that do not trigger a County land use approval is not known. As a result, the potential impacts of these facilities are too speculative for evaluation. Such potential new or expanded park and recreation facilities are within the responsibility and jurisdiction of other public agencies, and not the County, and appropriate mitigations can and should be adopted by such other agency.

If the new or expanded facilities were to be constructed as part of a subdivision or other process requiring County land use approval, such as an amendment to the General Plan Land Use Map, rezone, use permit, or a special permit, the County would ensure that environmental impacts are addressed through the application of the policies listed above, appropriate Zoning Regulations, and its land use authority. Therefore, with implementation of the General Plan Update policies, General Plan Update impacts relating to the need for new or expanded parks and recreation facilities triggered by the General Plan would be **less-than-significant**.

3.16 Scenic Resources

This section provides background information regarding scenic resources within the County, the regulations and programs that provide for their protection, and an assessment of the potential impacts to scenic resources from implementing the proposed General Plan Update. Existing scenic resource conditions are described in Chapter 8, Scenic Resources, of the *Natural Resources and Hazards Report*, September 2002 (Appendix D), which includes a discussion of Humboldt County scenic resources and viewsheds. This report, which is available for review at the Planning Division public counter at 3015 H Street in Eureka during normal business hours, or for download at <http://humboldt.gov/571/Background-Reports>, is incorporated by reference herein, and summarized below. Where any discrepancies may exist between the referenced material and the material presented here, the material presented here should be considered as the most up to date and is to be relied upon for the environmental setting and analyses.

3.16.1 Scenic Resources - Environmental and Regulatory Setting

Scenic Resources in Humboldt County

Humboldt County contains a wide range of scenic or visual resources. Views include coastline, mountains, hills, ridgelines, inland water features, forests, agricultural features, and rural communities in various combinations. Views are distant and proximate, panoramic and discrete. There are perhaps very few areas of the County where scenic resources are not evident.

Coastal Views

Humboldt County's varied and extensive Pacific Ocean coastline allows for a wide range of scenic vistas from State Route 101, and from beaches, state parks and coastal access points. The County's Local Coastal Program includes a technical study on visual resources, which evaluates opportunities and constraints within the Coastal Zone. This study, completed in 1979, includes a detailed inventory of local visual resources along Humboldt's coastline, such as vantage points that offer coastal views. The study inventories and maps areas of visual concern and identifies areas as "highly scenic" or "visually degraded."

Forests

Forestland is the dominant visual landscape of Humboldt County. Redwood National Park, Six Rivers National Forest, Redwoods State Park, and Kings Range National Conservation Area are all significant, protected forests within the County. Forestland is abundant well beyond these protected areas. The scenic value of these natural resources viewed both from within or from outside, is greatly valued.

Open Space and Agricultural Lands

The rural character of the County is also defined, in part, by its topography and the views afforded by the natural landforms. The interspersed heavily vegetated areas, such as forests, with open spaces and agricultural lands, as viewed from the changing topography, characterizes another one of the County's important scenic resources.

Scenic Roads

Many roads in Humboldt County have unique scenic qualities because of their natural settings. Scenic roads provide opportunities to enjoy natural and scenic resources in addition to their transportation functions. Scenic roads offer views of areas of beauty, natural resources or landmarks, or areas of historic and cultural interest.

Chapter 8, Scenic Resources, of the 2002 *Natural Resources and Hazards Report*, contains a qualitative evaluation of local viewsheds that analyzes eight key viewpoints along roads in the County using the County's GIS database. The eight key viewpoints represent a sample of Humboldt County viewpoints that were selected for this viewshed analysis because they represent Humboldt County views in general, and based on the quality of their views inland and to the coast, views of developable rural residential land, and the presence of parkland and public land in the viewshed. The evaluation provides a useful comparison of susceptibility to change in scenic character based on the surrounding land use types and area of the viewshed. The following are descriptions of federal and state programs that could be used to protect scenic routes.

National Scenic Byways Program. The National Scenic Byways Program was established as part of the Intermodal Surface Transportation Efficiency Act of 1991 as a means to maintain the scenic, historic, recreational, cultural, archeological, and natural qualities of scenic byways. The National Scenic Byways Program provides procedures for state designation of National Scenic Byways, in cooperation with local jurisdictions, as well as the designation of All-American Roads and Federal Agency Scenic Byways. Federal Agency Scenic Byways are roads or highways located on lands under Federal ownership which have been officially designated by the responsible federal agency as a scenic byway. In Humboldt County, the Bigfoot Scenic Byway is a USDA Forest Service Scenic Byway that begins in Willow Creek and follows State Route 96 north through Hoopa, Weitchpec, and Orleans to Happy Camp in Siskiyou County. State Route 299 is also a Forest Service Scenic Byway between Arcata and Redding.

State Scenic Highway Program. Several state highways in the County have unique scenic qualities owing to their natural setting and, in addition to transportation functions, provide opportunities for the enjoyment of natural and scenic resources. Although no state highway in the County is "officially designated" as a State Scenic Highway, the following state highways are listed in Sections 263.1 through 263.8 of the California Streets and Highways Code as eligible for designation (specific California Streets and Highways Code references are listed below):

- *Route 36 from Route 101 near Fortuna to the Trinity County line (§263.3)*
- *Route 96 from Route 299 at Willow Creek north to Siskiyou County (§263.1)*
- *Route 101 for its entire length in Humboldt County (§263.6)*
- *Route 254 in the Avenue of the Giants Community Plan Area (§263.1)*
- *Route 299 from Arcata to Willow Creek (§263.8)*

In order to be officially designated, state highways must be nominated according the State Scenic Highways Program Guidelines and protective measures must be adopted by the County, including the regulation of land use, control of outdoor advertising, and site grading and design review standards. The Streets and Highways Code also contains provisions for the designation of county highways that are believed to have outstanding scenic values (Streets and Highways Code §154). The designation of county scenic highways pursuant to the State Scenic Highway Guidelines follows the same process and has the same requirements as State Scenic Highways but does not require action by the State Legislature.

Wild, Scenic, and Recreational Rivers

The National Wild and Scenic Rivers Act was established in 1968 to maintain the natural beauty, biology, and wildness of designated “wild,” “scenic,” or “recreational” rivers that are potentially threatened by the construction of dams, diversions and canals. The Act seeks to preserve these designated rivers in their free-flowing condition, as well as to protect their immediate environments for the benefit and enjoyment of present and future generations.

In addition, the California State Legislature created a California Wild and Scenic Rivers System in 1972, administered by the California Resources Agency. While the U.S. Congress created a national system designating the same rivers in 1968, the California system is intended to enhance local coordination of riparian management.

The California and federal system classifies rivers as wild, scenic, or recreational in a similar manner. The state criterion is nearly identical to the federal and is specified in the California Public Resources Code §5093.53:

- Wild rivers are those “free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted.”
- Scenic rivers are those “free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.”
- Recreational rivers are those “readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.”

In Humboldt County, the Klamath, Trinity, Eel, and Van Duzen Rivers were classified as wild, scenic, or recreational under the Federal and State Wild and Scenic Rivers Acts. Table 3.16-1, State Designated Wild and Scenic Rivers in Humboldt County, below shows the State of California Wild and Scenic River and Recreational designation by river reach for each river in Humboldt County. The 2002 *Natural Resources and Hazards Report* (Table 1-2 and Figure 1-2) provides additional information regarding wild, scenic, and recreational river designations in Humboldt County pursuant to the State and federal Acts.

Table 3-16.1. State Designated Wild, Scenic, and Recreational Rivers in Humboldt County.

River	River Section	Designation
Klamath River, Main Stem	From the Humboldt County line to the Pacific Ocean	Recreational
Trinity River, South Fork	From the point where the river first touches the Humboldt County line to Todd Ranch in Section 18 T5N R5E	Wild
Trinity River, South Fork	From Todd Ranch in Section 18 T5N R5E to the confluence with the main stem	Scenic
Trinity River, Main Stem	From the confluence of the South and Middle Forks to the west boundary of Section 2 T8N R4E	Recreational
Trinity River, Main Stem	From the west boundary of Section 2 T8N R4E to the river mouth at Weitchpec	Scenic

River	River Section	Designation
Van Duzen River	From the Dinsmore Bridge to the power line crossing above Little Larabee Creek	Scenic
Van Duzen River	From the power line crossing above Little Larabee Creek to confluence with the Eel River	Recreational
Eel River, Middle Fork	Humboldt County line to confluence with South Fork	Recreational
Eel River, South Fork	Humboldt County line to confluence with Middle Fork	Recreational
Eel River, Main Stem	South and Middle Fork confluence to Pacific Ocean	Recreational

Source: Section 5093.545 of the California Public Resources Code.

Community Areas

Many Humboldt County communities were originally established as logging camps, rail and wagon stops, and dairy centers due to their proximity to natural resources and transportation routes. The character of these communities has been preserved to varying degrees by the presence of working resource lands (e.g. timberland or grazing lands) at their edges, which continue to serve as an urban/rural boundary. Factors that have contributed to the maintenance of these community separators include the continuing viability of timber and agricultural operations within these buffer lands, the 1984 Framework General Plan development timing policies, and LAFCo policies discouraging the conversion of agricultural lands. However, development pressure to convert resource lands adjacent to existing communities has increased over recent years. Conversion of such resource lands would affect both the character of the communities and the views of surrounding undeveloped lands.

Existing Light and Glare

Most of the Humboldt County land area is rural in character without urban type development and without the streetlights, nightlights, interior lighting, and paved areas that create sky glow and light trespass (commonly referred to as light pollution). Sky glow is defined as the added sky brightness caused by the scattering of light into the atmosphere. The term light trespass describes light that strays from its intended target and illuminates adjacent properties. Such excessive lighting can significantly change the character of rural and natural areas by making the built environment more prominent at night and creating visual clutter. Section 8, Street Lights, of the 2008 *Community Infrastructure and Services Technical Report*, identifies the areas within the County that are served by street light providers as well as discusses street lighting standards and light pollution.

3.16.2 Scenic Resources - Standards of Significance

This analysis uses the significance criteria from the California Environmental Quality Act (CEQA) Guidelines Appendix G. The proposed General Plan Update would result in a significant impact on scenic resources (aesthetics as listed in the CEQA Guidelines Appendix G checklist) if it would:

- a) Have a substantial adverse effect on a scenic vista.

- b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
- c) Substantially degrade the existing visual character or quality of the site and its surroundings.
- d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Items "a" and "b" are discussed in Impact 3.16.3.1, Scenic Vista. Item "c" is discussed in Impact 3.16.3.2, Visual Character. Item "d" is discussed in Impact 3.16.3.3, Sources of Light and Glare.

3.16.3 Scenic Resources - Impacts and Mitigation Measures

Impact 3.16.3.1: Adverse effect on Scenic Vistas and Scenic Resources

Implementation of the General Plan Update would allow additional development and changes in land use, and contains new policies that could lead to damage or destruction of scenic resources and vistas.

This impact analysis addresses items "a" and "b" of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.16.2 above. Pursuant to these standards, the proposed County General Plan Update would have a significant impact if it would:

- a) Have a substantial adverse effect on a scenic vista.
- b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.

3.16 Potential impacts could include land use map changes or new policies that would lead to the destruction of scenic resources and vistas, such as the conversion of timber or agricultural lands adjacent to communities or along candidate scenic highways or roadways, or allow the construction of structures that would block coastal views or damage scenic vistas.

Aesthetic and visual resources are subjective by nature. In addition, specific development proposals that could take place under the proposed General Plan Update are currently unknown. As a result, site-specific impacts resulting from allowable development cannot be determined until it is proposed and undergoes design review and/or environmental review. Consequently, the visual resource analysis in this Environmental Impact Report (EIR) is qualitative, assessing the potential aesthetic implications of the General Plan Update to degrade the existing visual character of the County. The analysis evaluates the land use diagram and policies of the General Plan Update to determine the extent to which policies protect existing aesthetic resources and minimize the degradation of visual quality.

Important scenic vistas and resources in Humboldt County include those that are visible from major public roadways and public areas those that contain views of the coast, forests, open space or agricultural lands, as well as views of historic districts, landmarks, and cultural sites (see Section 3.13.1, Cultural Resource Setting, for a listing of historic and cultural resources). To date, scenic resources in Humboldt County have not been mapped.

Adverse changes to scenic resources resulting from the implementation of the proposed General Plan Update could result from a number of circumstances. These include dramatic large and small-scale shifts from one land use to another, such as the change from open space to urban use, or project-specific impacts such as construction of large homes on hillsides or

ridgelines. Such changes may also be caused by an incremental change over time, such as the trend towards residential use in areas where the existing principal land use is timber or grazing.

It is estimated that 1,721 housing units will be needed to accommodate the peak population in the unincorporated area in 2028, and 3.1 million square feet of commercial and industrial building to accommodate projected new employment by 2040. Although new construction would be distributed across the unincorporated area, over 90 percent of housing units, and of commercial and industrial square footage, is projected to be developed within the more urbanized community plan and coastal zone areas. Over 60 percent of new housing units are projected to be located within the communities in the Humboldt Bay area, including the residential areas of Cutten, Ridgewood, and McKinleyville. Almost 50 percent of commercial and industrial square footage is projected to be located within the communities around Humboldt Bay, two-thirds of which would occur in the industrial areas along the Samoa Peninsula and Fields Landing.

Land uses that could affect scenic vistas and scenic resources visible from major roadways or other public areas include currently undeveloped land planned for urban levels of development and existing developed land for which a significant change in use is planned, such as the reuse of former industrial sites. The following is a discussion of the potential visual resource impacts involving significant land use changes that could occur as a result of the implementation of the General Plan Update land use diagram.

Industrial Site Reuse

The General Plan Update encourages the reuse of former industrial sites, including mill sites. Several such large industrial sites are visible from candidate scenic roads as identified in the setting section above. The following sites are described below because the reuse of the former industrial site could substantially alter views from scenic roads.

Carlotta. The former Pacific Lumber mill in Carlotta contains remnant mill structures, is planned for industrial uses, and is proposed to be redesignated Mixed Use (MU). This former mill site is visible from State Route 36.

Orick. A former mill site in Orick is located along State Highway 101 and adjacent to Redwood National Park land. The mill site contains only remnants of mill buildings and paved areas, and is proposed to be redesignated Commercial Recreation (CR).

The former industrial sites listed above are currently unused or are significantly underutilized. Implementation of the proposed land use diagram would involve the reuse of these sites and could result in a substantial change to scenic views along candidate scenic roadways. Development could involve the construction of new residences at a density of at 16 dwelling units per acre for land designated MU, with the addition of non-residential development at a floor to area ratio of 3, depending upon the availability of water and sewer service. Where former mill buildings have been removed and industrial land is sitting idle, reuse at these urban levels of residential and commercial development could substantially alter views. Where reuse would involve the replacement of vacant industrial buildings, viewshed changes would include new and different types of structures, likely at higher density. Such development could represent a substantial change to the viewshed from these candidate scenic highways. However, development consistent with the land use diagram could also be considered an improvement from the current blighted condition.

New Development in Undeveloped Areas

Several currently undeveloped areas that may be visible from candidate scenic highways have been, and continue to be, planned for urban uses, the development of which could change scenic vistas. The most prominent undeveloped area that is planned for urban levels of development is the Barry property, which is located on Humboldt Hill and is visible from portions of State Highway 101 and numerous coastal access points. This area contains open fields interspersed with trees and shrubs, and is currently planned Residential Low Density (RL). The General Plan Update land use diagram maintains this land use designation. This land could be developed as planned during the period of the plan. Development of this site would involve the construction of homes at a density of 3 to 8 dwelling units per acre, site serving roads and utilities, and streetlights. Such development would represent a substantial change to the viewshed from State Route 101 and other public areas.

In addition to the potential scenic resource impacts that could occur as a result of industrial site reuse and new urban development along candidate scenic roadways, the development of new residences within resource lands could also result in scenic resource impacts. As indicated in Chapter 8, Scenic Resources, of the *Natural Resources and Hazards Report*, the amount of public land in a viewshed contributes to the potential for preservation of the viewshed because public land is more easily protected from development than private land. Development would be expected to occur on privately owned timber and agricultural land that is within the viewsheds of candidate scenic roadways and many other important County roads. Such development could include homes and accessory structures, roads, and new interior and exterior sources of lighting. Development in these areas, even at low densities, could result in potentially significant scenic resource impacts.

Analysis of Relevant General Plan Update Policies

Coastal Area Plans contain policies to ensure that new development does not block coastal views to the detriment of the public and to protect areas that are mapped as scenic. Local Coastal Programs also contain policies to protect natural landforms, such as natural contours, including slope, visible contours of hilltops and tree lines, bluffs and rock outcroppings, which have informed proposed new policies in the General Plan Update.

The General Plan Update land use diagram largely maintains existing resource and open space land use designations, which would serve to limit the development of forested and agricultural open space lands. In addition, in Conservation and Open Space Element, Scenic Resources, Policy SR-P1, Development in Identified Scenic Viewsheds, in combination with Implementation Measure SR-IM1, Mapping of Scenic Areas and Scenic Highways, would identify and map scenic areas and allow development within such lands only in a manner consistent with natural slopes and contours. Scenic viewsheds are not currently identified or mapped, and would be mapped as part of a public process as an implementation of the General Plan Update. Standard SR-S1, Development in Mapped Scenic Areas, requires that discretionary and ministerial development avoid visual disturbance of natural contours, hilltops, tree lines, forest landscapes, bluffs and rock outcroppings, to the maximum extent feasible. It further requires that roads and public utility corridors be as narrow as feasible and follow natural contours, natural features disturbed by construction be restored as close to natural condition as feasible, and prohibits new off-premise billboards.

The General Plan Update acknowledges the importance of existing resource and open space lands between communities. Conservation and Open Space Element, Open Space, Policy CO-P4, Community Separation, requires that separation of urbanized communities be maintained

through appropriate land use designations and zoning density, and requires avoidance of the merging of urban development boundaries of adjacent communities. Policy CO-P4X, Development Within Community Separation Areas, in combination with Standards CO-S6, Development in Community Separation Areas, and CO-S7, Subdivisions in Community Separation Areas, would establish development standards to minimize the view of new development within community separators and establish tools such as the permanent dedication of open space and clustering of development that would preserve to the greatest extent possible such community separator lands, while allowing some development compatible with surrounding properties, especially those used for agricultural pursuits.

In addition, one of the goals of the General Plan Update as stated in Conservation of Open Space Goal (CO-G1) is open spaces that distinguish and showcase the County's natural environment, including resource lands, without impacting livelihoods, profitable economic returns and ecological values.

As indicated above, there are several local candidate scenic highways specified in the California Streets and Highways Code, but no scenic highways are officially designated in Humboldt County. Policy SR-P3, Scenic Highway Protection, would establish a policy to protect the scenic quality of designated Scenic Highways, with standards for protection provided through the implementation of SR-S3, Scenic Highway Standards.

Although the General Plan Update would provide general policies and standards for development projects, it does not specifically identify the design elements that would be included in such standards (e.g., landscape earth forms, building architecture, façade treatments, or lighting fixtures), or the effectiveness of the design elements in reducing the potential visual impacts of the development. Policies in the General Plan Update require urban development to implement features that would reduce the potential impacts on views of scenic vistas; however, the development envisioned in the General Plan Update could permanently alter views, partially or wholly. In addition, the General Plan Update would allow development, subject to development standards, within community separators, which could permanently alter scenic views.

Conclusion

The policies, standards, and implementation measures described above would reduce impacts to scenic vistas and damage to scenic resources, including, but not limited to, trees, rock and outcroppings. A total of 1,721 housing units and 3.1 million square feet of commercial and industrial buildings are projected to be constructed countywide during the General Plan Update planning period. The majority of new residential, commercial, and industrial development projected to occur during the General Plan Update planning period is projected to occur within already urbanized areas or areas that been planned for urbanized development in the Humboldt Bay region as part of existing community or coastal plans. Implementation of scenic resources policies in the General Plan Update would ensure that projects are designed in a manner that would lessen significant impacts to scenic views in the County. Development could permanently change views of scenic vistas throughout Humboldt County. In addition, scenic roadways have not yet been identified and as a result, development consistent with the General Plan Update that permanently affects such roadways could occur prior to the development of a program for coordinated protection of scenic roads. Therefore, this impact is potentially significant.

Mitigation

Mitigation 3.16.3.1.a. Standard SR-SXXX, Scenic Highway Map , shall be added to the General Plan Update to reduce potential adverse impacts to scenic highways that could be caused by ministerial projects until SR-IM1, Mapping of Scenic Areas and Scenic Highways, is implemented:

***SR-SXXX. Scenic Highway Map.** Until such time as a General Plan Scenic Highway Roadway Map is prepared and adopted, Humboldt County Highways listed in Sections 263.1 through 263.8 of the California Streets and Highways Code shall be considered to be Scenic Highways pursuant to Policy SR-P3, Scenic Highway Protection, and the County shall address the potential for significant impacts to scenic resources during ministerial and discretionary permit review.*

Implementation this mitigation measure would lessen impacts to some scenic resources resulting from development consistent with the General Plan Update; however, because scenic resources including Highways and viewsheds have not been mapped and are therefore not specifically identified, such impacts would remain **significant and unavoidable**.

Impact 3.16.3.2: Visual Quality and Community Character

Implementation of the General Plan Update would result in increased development that could impact the visual quality and community character within the County.

This impact analysis addresses item "c" of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.16.2 above. Pursuant to these standards, the proposed County General Plan Update would have a significant impact if it would:

- c) Substantially degrade the existing visual character or quality of the site and its surroundings.

3.16 Implementation of the General Plan Update could result in impacts to the visual quality and community character within the County through the construction of additional residential, commercial and industrial development, and the construction of roads and other infrastructure supporting such development, or the continued use of illegal billboards or the installation of new billboards. Unless carefully sited and designed, this development would have the potential to alter visual character or quality within and around communities.

Development consistent with the land use diagram could affect the visual character of existing communities. The most likely development types that could affect visual character of existing communities would include large subdivisions on undeveloped land or underdeveloped areas that are planned for significantly higher development density.

The following is a discussion of specific changes to community character that could occur as a result of the implementation of the General Plan Update land use diagram. Orick, South Eureka, McKinleyville, and Carlotta are highlighted in this analysis because each of these areas contains vacant land, typically comprised of an old industrial facility, which is planned for more intensive development as part of this General Plan Update. However, other areas within the County could also experience the construction of additional residential, commercial and industrial development that could alter views. However, changes to visual character for the areas evaluated below would likely be substantial.

Orick

Under the proposed General Plan Update, a 15-acre undeveloped parcel on the north side of the Redwood National and State Parks Thomas H. Kuchel Visitor Center in Orick will be re-designated from Commercial Recreation (CR) to Mixed Use (MU). Although many of the commercial uses allowable in the CR land use designation are also allowable in MU, multi-family residential uses at a density of up to 16 dwelling units per acre would now be allowable, subject to the availability of community wastewater service. The proposed General Plan Update land use diagram would allow for the potential development of this parcel with mixed uses at urban densities. Such development could change the character of this portion of Orick.

South Eureka Urban Development Area

The South Eureka Urban Development Area includes Cutten, Ridgewood, Bayview, and Rosemont. The Bayview and Rosemont areas have only limited undeveloped land, and new development would be expected to primarily occur as infill. The Ridgewood and Cutten areas contain substantial amounts of undeveloped land that was designated as part of the 1995 Eureka Community Plan for single-family residential use. These sites were identified in the Eureka Community Plan as the Robinson or Robinson-Dunn property (now referred to as the Forster-Gill Property), which consists of forest land located on the north side of Ridgewood Boulevard near Home Drive; McKay Tract (North, Mid, and South), which consists of forest land located east of Walnut Drive between Harris Street to the north and North Ridge Road to the south; Eggert (North and South), which consists of forest land between Ridgewood Drive and Elk River Road on either side of Eggert Road; and Slack and Winzler, which consists of forest land located west of the Forster-Gill Property and north of Westgate Drive.

Development of these parcels consistent with the proposed land use diagram and the 1995 Eureka Community Plan would replace forested areas with urban levels of development. Although gulch areas would be retained as open space, new houses, commercial structures, and roads with attendant utilities and lighting would be developed. The character of this area and the surrounding community would be permanently changed.

McKinleyville Town Center Area

Under the General Plan Update, approximately 44 acres in McKinleyville west and south of the McKinleyville Shopping Center is proposed to be redesignated from Commercial Services (CS) to MU. This proposed change would not necessarily increase the intensity of urban development in this area, but could change the ultimate mix of uses. The development of the McKinleyville Town Center area would substantially alter the existing visual character of the project site and its surroundings by replacing open fields containing interspersed trees and shrubs visible from adjacent areas with urban development. The McKinleyville Community Plan acknowledged the importance of the Town Center and states that it should contribute to the sense of community character, should respect the community's social, cultural and economic diversity, and should emphasize human scale and pedestrian orientation. The Community Plan established policies to guide the design of mixed-use development within the McKinleyville Town Center area and requires the adoption of a design review ordinance.

Carlotta

The former Pacific Lumber mill in Carlotta (also analyzed in Impact 3.16.3.1, Scenic Vistas) is currently planned industrial with remnant mill structures and is proposed to be redesignated MU. This former mill site is visible from State Route 36. The General Plan Update land use diagram

would allow the development of this parcel with mixed uses at urban densities. The MU designation would allow many commercial uses; multi-family residential uses at a density of up to 16 dwelling units per acre would now be allowable, subject to the availability of community wastewater service. Such development could change the character of this portion of the Carlotta area.

The General Plan Update encourages development in urban areas and seeks to reduce development within forested and agricultural land located between communities; these lands are referred to as community separators. These areas are subject to pressure to develop due to their proximity to developed areas and infrastructure. Development within community separators would degrade the individual identity of communities, and left unchecked, could create a corridor style of urbanization. However, development would be expected to occur within community separators on privately owned forest and agricultural land between communities. Development within these areas could include homes and accessory structures, roads, and even at low densities, could result in potentially significant impacts to community character.

Analysis of Relevant General Plan Update Policies

The General Plan Update Land Use Element, Urban Lands Chapter goals UL-G2, Design and Function, and UL-G4, Community Character, call for aesthetically appealing urban development areas that preserve and enhance existing community character and identity. A number of policies within the Urban Lands Chapter serve to lessen impacts to community character. Urban Land Policy UL-P5, Community Identity, directs the County to preserve community features that residents value and encourages new development that compliments or adds to community identity and character. Policy UL-P9, Historic Resources, encourages designated historic resources to be retained and restored to serve as focal points of neighborhoods and communities. The retention of historic resources within communities would serve to preserve the original character of communities; however, this policy is not mandatory because it only encourages, rather than requires, the retention and restoration of historic resources. It should be noted that the Cultural Resources Chapter of the Conservation and Open Space Element contains Policy CU-P1, Identification and Protection, would protect cultural resources found to be significant during ministerial and discretionary project review, including historic structures, from deterioration, loss, or destruction.

Policy UL-P11, Natural Amenities, encourages incorporation of natural amenities such as landmark trees and rock outcroppings, into their design, thereby retaining important features of neighborhoods and communities. However, this policy is not mandatory because it only encourages, rather than requires, the retention of natural amenities. In addition, neither this policy nor other policies or standards sufficiently define natural amenities, especially landmark trees. Policy UL-P12, Design Review, would require that development within designated Design Review overlay zones shall undergo design review consistent with an adopted Design Review Ordinance. In addition, Policy UL-P20, Landscaping, requires that all designs shall use landscaping to enhance the appearance of neighborhoods, control erosion, conserve water, improve air quality and improve pedestrian and vehicular safety. However, this policy does not specify if the intent is to use common species or native species.

Police SR-P1, Development in Mapped Scenic Areas described in Impact 3.16.3.1, Scenic Vistas and Scenic Resources, above is important to the protection of visual character within the unincorporated area. Scenic Resources Goal SR-G1, Conservation of Scenic Resources, calls for the protection of high-value scenic forest, agriculture, river, and coastal areas within the County. Standard SR-S1, Development in Mapped Scenic Areas, specifies that discretionary and

ministerial development shall avoid visual disturbance of natural contours, hilltops, tree lines, forest landscapes, bluffs and rock outcroppings, to the maximum extent feasible; that roads and public utility corridors shall be narrow as possible and follow natural contours; that natural features disturbed for construction purposes shall be restored to as close to natural condition as feasible; and that the construction of new off-premise billboards is prohibited. Conservation and Open Space Element, Open Space, Policy CO-P4X, Development Within Community Separation Areas, in combination with Standards CO-S6, Development in Community Separation Areas, and CO-S7, Subdivisions in Community Separation Areas, identify the need to protect community separators and set forth several development standards such as standards for tree removal, cut and fill, landscaping, building color, and clustering.

Proposed policies, standards, and implementation measures relating to scenic roadways would also limit potential degradation of the visual character or quality within and around communities that could occur because of the implementation of the proposed General Plan Update. Policy SR-P3, Scenic Highway Protection, would establish a policy to protect the scenic quality of designated Scenic Highways. The Scenic Highways would be protected through the implementation of SR-S3, Scenic Highways Standards. Scenic highway standards would establish a visual buffer of not more than 200 feet adjacent to mapped Scenic Highways, within which grading and construction would be required to occur in a manner harmonious with surrounding development and the natural terrain. In addition, utilities shall be placed underground wherever feasible, and potentially unsightly features shall be screened or located in areas not visible from the scenic roads.

The continued use of illegal billboards and the installation of new billboards could also degrade the visual character or quality within and around communities. Policy SR-P6 Term of Off-Premises Billboards and Prohibition, would limit the term of new and existing off-premise billboards by ordinance to provide for removal, and prohibit the construction of new off-premise billboards along mapped Scenic Highways and coastal views. Policies SR-P9, Removal of Illegal Billboards, and SR-P8, **Removal** or Relocation of Billboards on Public Lands and Right-of-Ways in the Northwestern Pacific Railroad Right-of-Way, supports efforts of public agencies, such as the North Coast Railroad Authority and the U.S. Fish and Wildlife Service, to remove or relocate billboards from their right-of-way between Fields Landing and Arcata on lands under their control.

Conclusion

Implementation of the General Plan Update land use diagram would result in substantial changes to the visual character of developed communities, especially those communities listed above. These areas would experience urban levels of development that would change their appearance and character. While urban uses are planned primarily in areas that already contain urban development, the introduction of additional urban development in these areas would irreversibly alter the visual character of these areas.

The General Plan Update and Community Plans contain policies intended to avoid and minimize adverse impacts to visual character. These policies emphasize land use compatibility and the preservation of resource and open space areas. Nonetheless, implementation of the land use diagram would alter the visual character of urban areas and would be an irreversible consequence of General Plan Update buildout. In addition, while the proposed General Plan Update does discourage the extension of urban services into community separators, it does not prohibit development at higher densities within open spaces between communities, and would therefore allow growth between communities that could diminish the value that these open

spaces provide to community character. Therefore, impacts to visual character or quality of unincorporated communities and their surroundings would be significant.

Mitigation

Mitigation 3.16.3.2.a. The following policy would lessen potential impacts to natural amenities that are important to visual character:

***BR-Px. Landmark Trees.** Establish a program to identify and protect landmark trees, including trees that exhibit notable characteristics in terms of their size, age, rarity, shape or location.*

Level of Significance after Mitigation

The effectiveness of Standards CO-S6 & CO-S7, Development and Subdivisions within Community Separator Areas, would depend on landowner participation, the extent of which cannot be predicted. Consequently, it cannot be determined if this program would be effective in substantially changing the development pattern in community separator areas. Therefore, this impact is significant and unavoidable.

The implementation of the above mitigation measures identified above would lessen impacts to community separators, but not to a less than significant level. No other feasible mitigation measures are available to further reduce impacts to community separators or further reduce impacts to the visual character of existing communities that would result from additional planned urban development that would permanently alter community character. This impact remains **significant and unavoidable**.

Impact 3.16.3.3: Sources of Light and Glare

Implementation of the General Plan Update would result in increased development that would be new sources of light that could have adverse impacts day or nighttime views.

This impact analysis addresses item "d" of the significance standards listed in Appendix G of the CEQA Guidelines as provided in Section 3.16.2 above. Pursuant to these standards, the proposed County General Plan Update would have a significant impact if it would:

- d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Urbanized areas of Humboldt County currently generate significant sources of light, glare, or light trespass into the night sky. New urban development planned as part of the General Plan Update would likely be located within or adjacent to these existing urban communities and would increase sources of light, glare, or light trespass into the night sky. In addition, development proposed under the General Plan Update could increase the amount of light in the County due to new street lighting, signage, floodlights, security lighting, private residential lights, automobile lights, and other similar sources.

The California Department of Fish and Wildlife (previously Department of Fish and Game) submitted a comment letter regarding the General Plan Update Notice of Preparation on July 17, 2007 letter (comment letters are available at the General Plan Update website at <http://www.co.humboldt.ca.us/gpu/documentsdraft1publiccomments.aspx>) indicating that

adverse ecological effects of artificial night lighting can occur to terrestrial and aquatic resources such as fish, birds, mammals, and plants (Comment Letter W-96, Department of Fish and Game, 2007, page 16)). Some of these effects include altered migration patterns and reproductive rates, changes in foraging behavior and predator-prey interactions, altered wildlife species richness and community composition, and phototaxis (attraction and movement towards light). A significant amount of the future development potentially allowed by the General Plan Update could take place on land close to resource areas with significant wildlife habitat values. (Comment Letter W-96, Department of Fish and Wildlife, 2007, page 16).

The General Plan Update would allow development near wetland and other streamside management areas and within forest land and other sensitive habitat areas that support insects, mammals, birds, fish, reptiles, and other wildlife species. Sensitive habitat areas are present in urban and rural areas. New development could introduce new exterior lighting such as street lights, exterior and safety lighting, or aviation hazard/warning lighting that, for example, would be installed on tall structures. Such lighting could have the effect of altering wildlife behaviors, foraging areas, and breeding cycles.

The Humboldt County Zoning Regulations contain general exterior lighting requirements for new development within several combining zones such as the "D" Design Review and Planned Development (P) combining zones, as well as exterior lighting performance standards for several uses such as for Cottage Industry, and industrial uses. These regulations require that new lighting be compatible with the surrounding setting and not be directed beyond the boundaries of the parcel.

Analysis of Relevant General Plan Update Policies

The General Plan Update includes policies, standards and implementation measures that are intended to reduce impacts from nighttime lighting and glare. The creation and impact of new light sources is addressed as it relates to street lighting in the Community Infrastructure and Services Element. Policy IS-P25, Street Lighting, requires that street lighting be provided if there is a need to improve public safety in urban and suburban areas and Village Centers. Standard IS-S10, Street Lighting, specifies that streetlights be designed to block upward transmission of light, avoid light trespass, and achieve design illumination in prescribed areas with limited scatter. Implementation Measure IS-IM30, Street Lighting, directs the preparation of street lighting standards that allow for community-specific priorities and standards and that specify when streetlights are required based on intersection type and functional classification, and directs the establishment of lighting criteria, considering AASHTO and International Dark-Sky Association guidelines. Conservation and Open Space, Scenic Resources, Standard SR-SX, Light and Glare, requires that new outdoor lighting be compatible with the existing setting, and that exterior lighting fixtures and street standards (both for residential and commercial areas) be fully shielded, and designed and installed to minimize off-site lighting and direct light within the property boundaries.

Conclusion

Implementation of scenic resources policies in the General Plan Update would ensure that street lighting is installed in a manner that would lessen significant light or glare impacts. For other development, however, light pollution remains an issue. To address this potential adverse impact, additional mitigation will be required. The following mitigation measure addresses the impacts related to light and glare:

Mitigation

Mitigation 3.16.3.3.a . In order to minimize light trespass, light pollution, and glare, new development and projects that would make significant parking lot improvements or add new lighting would be required to prepare a lighting plan. The following new program would need to be added to the Scenic Resources Chapter of the Conservation and Open Space Element:

***SR-IMX Lighting Design Guidelines.** Amend the Zoning Regulations to include lighting design guidelines for discretionary projects. Require new development and projects that would make significant parking lot improvements or add new exterior lighting to submit a lighting plan consistent with these guidelines. Lighting design guidelines should address:*

- A. *Intensity – Acceptable standards shall be defined for various land uses and development types specifying the maximum allowable total lumens per acre.*
- B. *Directional Control – Standards shall be developed to minimize the upward transmission and intensity of light at various distances from its source through the use of full-cutoff lighting, downward casting, shielding, visors etc.*
- C. *Signage – Standards with respect to illuminated signs shall be developed that prohibit or limit the size, spacing, design, upward transmission of light, and hours of operation. In addition, signs should be white or light colored lettering on dark backgrounds.*
- D. *Night Lighting – Hours of operation for various uses shall be specified in order to prohibit all night lighting except when warranted for public safety reasons. On demand lighting shall be encouraged.*
- E. *Incentives – The County shall develop incentives for residents and businesses encouraging the conversion of existing lighting sources to compliant ones.*
- F. *Enforcement – These standards shall be incorporated into the County Development Code and design review process for new development.*

Level of Significance after Mitigation

Implementation of the above mitigation measure would reduce adverse changes to scenic resources and ecological impacts to wildlife resulting from additional sources of lighting that would occur from implementation of the proposed General Plan Update. However, because some of the additional sources of lighting could increase as a result of ministerial projects, it may not be reasonable to assume this impact would be reduced to a less-than significant level. Therefore, this would be a **significant unavoidable impact**.

3.17 Energy Consumption and Conservation

This section provides background information and contains an analysis of the impacts that the General Plan Update (GPU or Plan) may have on the consumption of energy, including but not limited to the measures proposed to minimize the environmental effects of the consumption of energy that is wasteful, inefficient, and unnecessary. Energy consumption as an environmental impact is to some extent evaluated and discussed in other sections of the RDEIR, including sections 3.1 Land Use, Housing and Population; 3.3 Utilities and Services; 3.5 Transportation; and 3.13 Greenhouse Gas Emissions. This section is intended to provide an overall perspective on energy consumption to address the requirement in CEQA, Government Code section 21100 (b)(3) that an EIR include mitigation measures that are proposed to reduce the wasteful, inefficient, and unnecessary consumption of energy, and an analysis of the potentially significant energy implications appropriate and relevant to a programmatic EIR for a General Plan Update, as outlined in CEQA Guidelines, Appendix F. At this first tier programmatic level of analysis, it will necessarily be more general than the analysis that would be required for a specific development project.

3.17.1 Energy Consumption and Conservation - Environmental Setting

Energy Resources

Climate and Energy Demand. Humboldt County is a region with moderate temperatures and considerable precipitation. Average temperatures along the coast vary only about 10 degrees from summer (58°F) to winter (48°F), although a greater range is found over inland areas. Maximum temperatures on the coast typically do not exceed 80°F, while inland areas may reach 100°F or greater. Temperatures of 32 degrees or lower are experienced nearly every winter throughout the area, and colder temperatures are common in the interior. Because of its moderate summer temperatures, Humboldt County's electricity demand peaks in the winter, rather than the summer when the peak is reached in most of California.

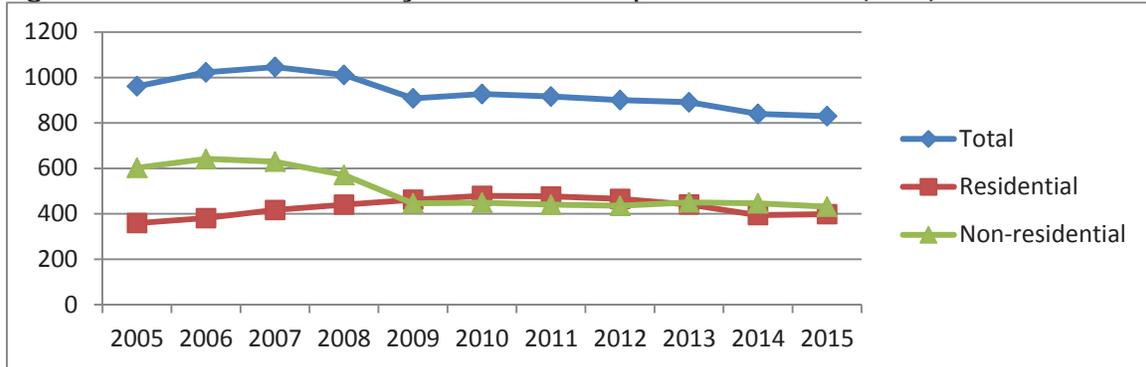
Energy Production and Use. Humboldt County is geographically isolated and is almost an energy island. The majority of petroleum-based transportation fuels are imported to the county by barge. There is only one pipeline connecting the county to the larger natural gas grid, and only two major connections to the larger electric grid. The electric transmission capacity (approximately 60-70 MW) that connects Humboldt County to the regional grid is less than half of the County's 170 MW peak electrical demand. For this reason Humboldt County generates much of its own electricity, mostly using natural gas and biomass fuels. (RePower Humboldt a Strategic Plan for Renewable Energy Security and Prosperity, Schatz Energy Research Center for the Redwood Coast Energy Authority, Page 11-Humboldt Energy Background)

According to the Humboldt County Energy Element Background Technical Report, the residential, commercial, industrial and agricultural sectors consumed 940 Gigawatt-hours (GWh) in 2003, and total peak electrical demand was 158 Megawatts (MW). This comprised approximately 0.3% of the State total (note that Humboldt County's population accounted for 0.4% of the State total). Electricity use was divided almost

evenly between the residential, commercial and industrial sectors, with a remaining 2% consumed in the agricultural sector. Electricity use per capita for Humboldt County and the State of California as a whole were both in the range of 7000 to 7500 kWh per year.

The following figures show electrical and natural gas energy use by sector between 2005 and 2015 (data from the California Energy Commission). Total residential electrical consumption ranged from a low of approximately 360 GWh in 2005 to approximately 400 GWh in 2015, peaking at almost 480 GWh in 2010. While population in the County has increased at an average annual rate of 0.27 percent, residential electrical energy consumption increased at an average annual rate of 0.77 percent. Humboldt County's per capita residential energy consumption increased at a higher rate than the rest of California during this period, due at least in part to the "suspected connection between indoor (marijuana) cultivation and a rise in residential per capita electricity consumption" (Energy Consumption and Environmental Impacts Associated with Cannabis Cultivation, Jessica M. Arnold, May 2013, Humboldt State University, Master's Thesis http://humboldt-dspace.calstate.edu/bitstream/handle/2148/1461/Arnold_Jessica_M_Sp2013-r.pdf?sequence=4).

Figure 3.17-1. Humboldt County Electric Consumption, 2005- 2015 (GWh)



Source: California Energy Commission, 2017

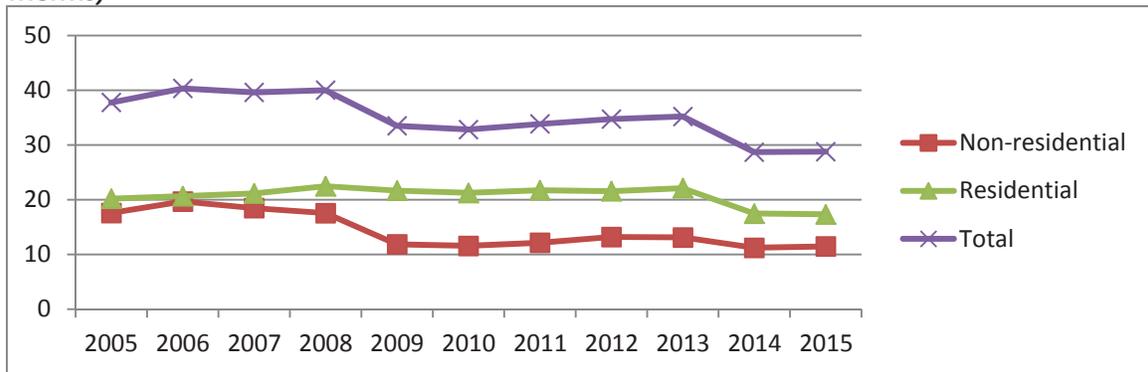
On September 13, 2016, Humboldt County adopted the Commercial Medical Marijuana Land Use Ordinance (CMMLUO), which regulates the cultivation of marijuana for medical purposes consistent with State law. These regulations specify that indoor cultivation shall only be permitted within commercial and industrial zoned property. In addition, CMMLUO regulations specify that electric power for indoor cultivation shall only be provided by renewable power or with the purchase of carbon offsets for any portion of power provided by non-renewable sources. These regulations alone do not ensure energy conservation or efficiency, but limit the likelihood that residential per capita electricity consumption will continue to rise due to indoor marijuana cultivation.

Between 2005 and 2015, non-residential electrical consumption dropped from approximately 600 GWh in 2006 to roughly 430 GWh in 2015, an average annual decrease of -3.54 percent. According to California Forestry Association (Calforests), a statewide trade association, nine lumber mills in Humboldt County were closed or consolidated between 2000 and 2012. In addition, the Samoa Pulp Mill permanently closed in 2010 and the California Redwood Company Korbel Sawmill closed in 2015, which, when combined with the other mill closures during this period, could account for the significant decrease in non-residential electric consumption.

For natural gas, the total amount consumed was estimated at 93.9 million therms, which makes up approximately 0.34% of the State total. Almost half that amount was burned to generate electricity, and the remainder was used primarily in the residential (22%), industrial (18%) and commercial (10%) sectors. The peak demand for natural gas occurs in the winter months. Lighting and refrigeration accounted for the majority of electricity consumption, whereas space heating and water heating account for the majority of natural gas consumption. Electricity use in the industrial sector is primarily in saw mills (2003), with a small amount used in food and kindred products and durable and non-durable goods industries. Similarly, natural gas use in the industrial sector is almost entirely associated with saw mills (for drying wood), with the remainder being used in the food and kindred products and non-durable goods industries.

Residential natural gas consumption exceeds non-residential in Humboldt County. While non-residential natural gas consumption declined after a peak in 2006, residential consumption peaked in in 2008 and remained generally stable until 2013 and then declined thereafter. It should be noted that natural gas is not available outside of the greater Humboldt Bay area (south to Scotia).

Figure 3.17-2. Humboldt County Natural Gas Consumption, 2005 - 2015 (Millions of Therms)



Source: California Energy Commission, 2017

While the majority of electricity (73%) is generated within the County, a large portion of this locally generated electricity is generated using natural gas (the new PG&E Humboldt Bay Generating Station that began operation in September- 2010), and the natural gas is primarily imported (89%). The generating station provides 163 MW of total output, which can serve approximately 120,000 homes. The rest of locally generated electricity is primarily produced from biomass (Pacific Lumber and Fairhaven Power), with the remainder coming from local hydroelectric facilities and a very small amount from distributed rooftop solar electric and wind energy systems.

In 2003, diesel/gasoline for transportation comprised 49% of the energy used in the County. Gasoline and diesel consumption in Humboldt County in 2003 was about 71 million gallons. Between 1997 and 2003, gasoline consumption rose at 1.5% per year, according to the Humboldt County Energy Element Background Technical Report. The use of transportation fuels is closely linked to the number of vehicle miles traveled (VMT). Because it is rural, Humboldt County has a higher average VMT than many more densely populated areas.

The *Humboldt County General Plan 2025 Draft Energy Element* prepared by the Redwood Coast Energy Authority in 2005 for consideration in the update of the

Humboldt County General Plan presents the following energy consumption data for Humboldt County:

Table 3.17-1. Consumption of Local Versus Imported Energy Sources.

Energy Resource	% imported	% local
Gasoline	100%	0%
Diesel	100%	0%
Natural gas	89%	11%
Electricity	27%	73%
Biomass	0%	100%
Propane	100%	0%

Source: Humboldt County General Plan 2025 Draft Energy Element Technical Report, Table 4, Consumption of Local versus Imported Energy Sources.

Energy Development Potential. Table 3.17-2 below shows the potential to develop and enhance energy resources in Humboldt County varies by resource. For example, there are many potential opportunities to capture solar energy in the County. However, while

Table 3.17-2. Potential Local Energy Resources for Humboldt County.

Resource	Potential	Technology Status	Geographic Location	Comments
Wind Electricity	Large 400 MW, 1000 GWh/yr	Mature	Cape Mendocino, other	Good resource, need transmission access, few viable sites
Wave Electricity	Large 500-1000 MW, 2500-5000 GWh/yr	Early Development	Coastline	Good resource, technology too new to assess
Biomass Electricity	Medium ≥60 MW, 300-400 GWh/yr	Mature	Variable	Already developed, may be opportunity for growth
Natural Gas	Medium >1 million MCF/yr	Mature	Eel River Basin	Existing, further development underway, non-renewable
Hydroelectricity	Medium 20-40 MW, 80-160 GWh/yr	Mature	Rivers	Existing, more potential but environmental barriers including high costs, regulatory hurdles, lack of financing, siting and transmission access issues, and lack of public support
Solar Electricity	Medium 10-30 MW, 10-30 GWh/yr	Mature	Dispersed	Many small systems
Solar Water Heating	Medium	Mature	Dispersed	Many small systems
Solar Space Heating	Small	Mature	Dispersed	Hard to retrofit
Biogas Fuels	Small	Mature	WW Treatment Landfill, Dairies	Existing, opportunity for growth
Biodiesel Fuel	Small 40,000-80,000 gal/yr	Mature	Variable	Existing, opportunity for growth

Source: Redwood Coast Energy Authority, Table 5, Potential Local Energy Resources for Humboldt County, 2005.

there are several producing natural gas wells currently in operation, such as in the Tompkins Hill and Grizzly Bluff areas; further development is limited by the availability of gas resources. The background reports for the General Plan Update assessed the potential of developing Humboldt County's local energy resources.

Biomass. Biomass energy generally refers to the combustion of plant and plant-derived material for heat and power generation. Biomass fuel from forest and mill residues can be associated with wood waste from mill operations, as well as forest slash left over from timber harvest operations and other forest residue fuel reduction programs aimed at minimizing forest fire hazards. Timberlands located throughout the county are the primary source of biomass fuels.

Biomass energy has been used in Humboldt County for many years. The Pacific Lumber Company in Scotia has produced steam and electricity for the mill and the town since 1931. In the early 1980's there were three mills (LP Samoa, PALCO, Simpson Paper Co.) generating electrical power from wood waste in Humboldt County. Their total capacity was approximately 75 MW. Much of the power was consumed on site, with the remainder supplied to the town of Scotia or sold to PG&E. The Ultrapower facility in Blue Lake is the newest facility in the County and was originally brought online in 1985.

Today there are two operating wood waste fired plants in Humboldt County, the combined heat and power plant in Scotia and the Fairhaven plant, with a total electrical capacity of 48 MW. The Blue Lake Power facility (13.8 MW), formerly Ultrapower, suspended operation in 1999, and was in the process being brought back on-line; however, these efforts were suspended in 2011. The two operating plants provided approximately 30% of Humboldt County's total electricity needs (including their on-site loads), or about 13% of the rest of the county's needs (excluding their on-site loads) in 2003.

Natural Gas. Natural gas deposits represent a significant underdeveloped energy resource in Humboldt County. Natural gas deposits also exist offshore but have not been developed locally to date. Active gas wells in Humboldt County are concentrated in the Tompkins Hills Gas Field of the Lower Eel River planning watershed. As of 2008, there were 39 gas wells in the County, 31 of which are currently producing and eight are considered shut in, meaning they cannot produce gas at their current depths and are sealed off in order to maintain the pressure on remaining deposits. In 2000, net gas production was 1,337,796 million cubic feet (mcf); this represents a 31 percent decrease in gas production since 1992, when net production was 1,927,787 mcf. Also in 1992, 34 gas wells were in production and five were shut in.

Wind. Since the publication of the California Wind Atlas by the California Department of Water Resources in 1985, portions of Humboldt County have been rated as having "excellent" or "good" wind energy generation potential. All of the areas rated as "excellent" with mean annual wind speeds above 14 mph are near Cape Mendocino in the Cape Mendocino Planning Watershed. Additional areas rated as "good" with mean annual wind speeds from 10 to 14 mph include more areas near Cape Mendocino, an area northeast of Loleta in the Lower Eel River Planning Watershed, Patrick's Point and Big Lagoon in the Trinidad Planning Watershed, Schoolhouse Peak in the Redwood Creek and Lower Klamath Planning Watersheds, and an area in the Trinity Alps in the Lower Trinity Planning Watershed. A wind resource assessment for Northwestern California presented in the California Wind Atlas focuses on Bear River Ridge (Cape Mendocino Planning Watershed) and estimates a potential wind power generation capacity of 425

MW for the 60 miles of ridgeline with 14-16 mph average annual wind speed. There are several small scale wind turbines in use in Humboldt County, including three turbines located at dairies in the Lower Eel River Valley and a turbine at the Bear River Rancheria.

Hydroelectric. Hydroelectric power systems convert the energy in flowing water into electrical energy by spinning a turbine. Federal law and the State of California define "small hydroelectric" as having a capacity of 30 MW or less, which the State of California further defines as a renewable energy source. Small hydroelectric systems typically use small dams or employ run-of-the river techniques where only a portion of the river flow is diverted so that fish passage is not blocked.

There are currently six small hydroelectric facilities that serve Humboldt County. These facilities have a combined rated capacity of 11.5 MW. All but one of these systems is run-of-the-river type. The Mathews Dam facility at Ruth Lake, located in Trinity County and operated by the Humboldt Bay Municipal Water District (HBMWD), does not employ run-of-the-river techniques. Similarly, the Kekawaka Creek project is just over the county line in Trinity County; however, PG&E lists the Kekawaka unit as serving the Humboldt area. There are also many, (likely 100 or more), micro-hydroelectric systems in Humboldt County that serve off-grid homes. The total capacity of these systems is unknown, but it is likely rather small (i.e. less than a few hundred kW cumulative capacity).

Solar. Solar electric, or photovoltaic (PV), systems convert sunlight directly into electricity. Grid-connected systems are comprised of PV modules, often roof mounted, and an inverter that converts DC electricity to AC electricity. No batteries are required. Instead, these systems effectively use the electrical grid for energy storage. When excess power is produced, it is fed out to the larger electrical grid and consumed by a neighboring customer. When the PV power production is less than what is required onsite (e.g., at night) electrical power is drawn from the grid to meet the onsite loads.

California is one of the leading states in the U.S. in PV installations. Since 1998, the California Energy Commission has offered installers of small (< 30kW) PV systems a substantial rebate that has covered as much as half of the installed system cost. The interest in PV in Humboldt County has been even greater than for the state as a whole. Between 1998 and 2010, the residents of Humboldt County have installed over twice as many grid-connected solar electric systems, per capita, compared to the State of California as a whole. The total grid-connected capacity in 2010 was 1.44 MW from 428 systems (Humboldt County as a Renewable Energy Secure Community, Resource and Technology Assessment, Final Draft, March 2013, Schatz Energy Research Center). Humboldt County also features a strong solar installer/supplier network, one that has been developed over the last 25 years.

Humboldt County also has a significant number of off-grid solar electric systems, many of them in the southern part of the county. In the mid-1980's one of the largest distributors of off-grid PV systems was Alternative Energy Engineering in Redway, and most of the systems they sold were installed in Humboldt County. It is estimated that well over 1,000 off-grid PV systems are installed in the county, representing perhaps 1.0 MW or more of capacity (Humboldt County Energy Element Background Technical Report, 2005).

Wave Energy. Wave Energy Conversion (WEC) devices capture energy in ocean waves and convert it to electrical power. Because this technology is still in the early stages of development, its potential is uncertain. The primary wave energy resource sites for Humboldt County coastline were estimated to have a total theoretical potential

capacity of 3,910 MW. Primary sites for the southern Humboldt and northern Mendocino coastlines (an 81 mile stretch) were estimated to have a total theoretical potential capacity of 3,709 MW, approximately half of which falls within Humboldt County's coastline.

In 2009, PG&E proposed an ocean wave energy pilot study to be conducted off the coast of Humboldt County, the Humboldt WaveConnect™ Pilot Project. This study was intended to give WEC manufacturers the opportunity to test their devices on a common site and facilitate the development of wave energy technology. The wave energy was to be captured by the WECs and transferred through a sub-sea power cable to land, where the energy would be fed to the electrical grid. In 2011, PG&E suspended permitting efforts on the Humboldt WaveConnect™ Project, stating that the decision was made after several major challenges caused the project to be unviable at its proposed configuration and location.

Other Energy Resources. The first production oil well drilled in California was located in Humboldt County in 1861 (Oil and Gas Production History in California, State of California Department of Conservation, 2003). This well was unsuccessful, like numerous other Humboldt County wells drilled between 1861 and 1864. Humboldt County contains three inactive oil wells and has not produced oil in the past decade or more. There is no record of geothermal production in Humboldt County.

Electric and Natural Gas Transmission and Distribution

Electricity. According to Humboldt County as a Renewable Energy Secure Community - Resource and Technology Assessment Report, Schatz Energy Research Center August 2012 (CEC-500-2013-005), the Humboldt area electrical grid covers about 3,000 square miles and is connected to the bulk PG&E transmission system by four transmission circuits, each ranging from 31 to 115 miles in length. Electricity imports are primarily transmitted through two 115kV circuits originate near the community of Cottonwood in the Central Valley and follow a route roughly parallel to Highway 36 and Highway 299 to the Humboldt County coast. Lower capacity circuits include a 60 kV circuit coming from the south between the Bridgeville and Garberville areas (roughly parallel to Highway 101) and a second 60 kV line coming from Trinity County to the east that connects to the 115 kV lines. The total electrical transmission capacity into Humboldt County through the existing lines is 60 to 70 MW, less than half of the county's current peak demand. Therefore, local electrical generators are critical to meeting local electricity needs.

According to the Community Infrastructure and Services Technical Report, electric service for most of the unincorporated area is provided by PG&E. PG&E is an investor owned utility regulated by the California Public Utilities Commission (CPUC). The CPUC establishes rules for operation, customer rates, and PG&E's rate of return. The PG&E electric distribution system serving the County is largely in place, and PG&E is obligated to provide service to users within its service area. New service requests, or requests for additional service, are generally governed by CPUC approved Rule 15 (Distribution Line Extensions) and Rule 16 (Service Extensions). Among other things, the line extension rules specify the allocation of construction cost between PG&E and the customer.

In the Shelter Cove area electricity is provided by Resort Improvement District No. 1, which is the entity that establishes rates and provides electric service to multiple privately owned properties. Unlike PG&E, Resort Improvement District No. 1 is a government entity and is not subject to regulation by the CPUC. The Resort Improvement District No. 1 is

regulated by the locally elected district Board of Directors and establishes rates, charges, and standards for service. PG&E transmission facilities extend to a substation in Shelter Cove. Resort Improvement District No. 1 operates and maintains the substation as well as its own distribution facilities that serve the residents of the district. Resort Improvement District No. 1 also maintains three 500 kW diesel generators that provide backup service within the district when there are problems with PG&E service.

Natural Gas. According to Humboldt County as a Renewable Energy Secure Community - Resource and Technology Assessment Report, Humboldt County is remotely located at the end of the electrical and natural gas supply grids. PG&E owns the natural gas and electricity transmission and distribution systems in Humboldt County. There is one major natural gas supply line that comes from a compressor station in Gerber in the Central Valley and follows a route roughly parallel to Highway 36. This pipe is between two and 12 inches in diameter and according to PG&E is capable of transporting enough natural gas to meet current local needs. There are no gas storage fields in the local area, though there are some native gas fields in the Eel River Valley. It is estimated that approximately 65 to 70 percent of households in Humboldt County have access to the natural gas grid

Natural gas service provided by PG&E is regulated in a manner similar to electric service. Natural gas is generally available to residents of the broader Humboldt Bay area communities and as far south as Scotia. As with electricity, PG&E is obligated to provide service to users proximate to its natural gas facilities. New service requests or requests for additional service are generally governed by Rule 15 (Gas Main Extensions) and Rule 16 (Gas Service Extensions). Where natural gas is not available, residents can purchase propane for cooking and heating, from a variety of suppliers.

3.17.2 Energy Consumption and Conservation - Regulatory Setting

Federal Laws and Programs for Energy Consumption and Conservation

Federal Energy Regulatory Commission. The Federal Energy Regulatory Commission (FERC) is an independent agency that regulates the transmission and sales of electricity, natural gas, and oil in interstate commerce, licensing of hydroelectric projects, and oversight of related environmental matters. The setting and enforcing of interstate transmission sales is also regulated by FERC.

Fuel Economy Standards. The national program for greenhouse gas emissions (GHG) and fuel economy standards for light-duty vehicles (passenger cars and trucks) was developed jointly by U.S. Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA). The standards were established in two phases: Phase 1 - Model years 2012 - 2016; and Phase 2 - Model years 2017 - 2025. Together the final standards are projected to: result in reductions of 6 billion metric tons of GHG over the lifetimes of the vehicles sold in model years 2012-2025; achieve an average industry fleetwide fuel consumption of 54.5 miles per gallon (mpg) by model year 2025, save families more than \$1.7 trillion in fuel costs; and reduce America's dependence on oil by more than 2 million barrels per day in 2025 (<https://www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-greenhouse-gas-emissions-passenger-cars-and#annual>).

State Laws and Programs for Energy Consumption and Conservation

Greenhouse Gas Emissions. The State of California established legal framework for GHG emission reductions has come about through Executive Orders, legislation, regulations, and court decisions. The State's GHG emissions reductions standards are heavily reliant upon "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by ARB to be vehicles whose primary use is on commercial personal transportation in the state" (Assembly Bill 1493, January 1, 2005), which would clearly also have the benefit of reducing fuel consumption. Section 3.13 Greenhouse Gas Emissions, contains a detailed discussion of State regulations relating to greenhouse gas emissions that would also improve energy efficiency and reduce energy consumption, including: Lighting Efficiency and Toxics Reduction Act; and various fuel efficiency standards.

California Senate Bill 1037 and Assembly Bill 2021. In 2003 (and updated in 2005 and 2008), the CPUC and the California Energy Commission (CEC) adopted an Energy Action Plan that prioritized resources for meeting California's future energy needs, with energy efficiency identified as the highest priority. Since then, this policy has been codified as SB 1037 and AB 2021 into statute through legislation that requires electric utilities to meet their resource needs first with energy efficiency. This policy also set new targets for statewide annual energy demand reductions of 32,000 GWh and 800 million therms from business-as-usual—enough to power more than 5 million homes or replace the need to build about ten new large power plants (500 MW each).

Building Energy Efficiency Standards. Title 24, Part 6, of the California Code of Regulations (CCR), was established in 1978 in response to a legislative mandate to reduce California's energy consumption. Also known as the Title 24 of the Building Code, these regulations apply to energy consumed for heating, cooling, ventilation, water heating and lighting in new residential and non-residential buildings. The CEC updates these standards periodically, with the most recent update in 2013. The next update is slated for December 2016.

2010 California Green Building Standards Code. The Green Building Standards Code includes the following provisions that would reduce waste and energy consumption and increase the efficiency of building, including: 20 percent mandatory reduction in indoor water use; mandatory periodic inspections of energy systems (i.e., heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies. The intent of this code to achieve more than a 15 percent reduction in energy use when compared to existing standards, to reduce indoor potable water demand by 20 percent, to reduce landscape water usage by 50 percent, and to reduce construction waste by 50 percent. It should be noted that public water and wastewater pumping and treatment systems involve significant electrical service demand, so that water conservation can also contribute to electrical energy conservation.

Local Laws and Programs for Energy Consumption and Conservation

Humboldt County General Plan. The Humboldt County Housing Element contains Implementation Measure H-IM18, Encourage Energy and Water Conservation, which directs the County to support changes to the County's tax code (likely to Division 5, Assessment of Property, of Title VII - Finance, Revenue and Taxation, of the County Code) to encourage new alternative energy systems, such as solar, wind and hydroelectric energy systems, among other water related items. This measure is intended to limit increases to a property's assessed value for property tax purposes when any of the above improvements are made and is to be fully implemented by April 30, 2018.

Redwood Coast Energy Authority (RCEA). In 2003, the Redwood Coast Energy Authority (RCEA) was formed as a joint powers authority (JPA), representing seven municipalities (the cities of Arcata, Blue Lake, Eureka, Ferndale, Fortuna, Trinidad, and Rio Dell) and Humboldt County. As a JPA, RCEA is governed by a board composed of a representative from each jurisdiction. RCEA's mission statement is to develop and implement sustainable energy initiatives that reduce energy demand, increase energy efficiency, and advance the use of clean, efficient, and renewable resources available in the region.

The RCEA adopted the Comprehensive Energy Action Plan (CAPE) in September 2012, which is intended to foster, coordinate, and facilitate countywide strategic energy planning, implementation, and education. The CAPE does not directly regulate land use or energy use; instead it contains energy efficiency and conservation strategies and programs that could be implemented by RCEA, its member agencies, and others. The CAPE's broad strategies that are intended to achieve the above objectives include: coordinated strategic energy planning within Humboldt County; energy reliability and security programs; support for the development of emerging energy technologies; support for energy efficiency and renewable energy retrofits in existing buildings. A proposed revision to the CAPE is currently under development by RCEA.

The following is a list of non-regulatory support programs administered by RCEA relating to energy efficiency for homes, businesses, and other facilities that are intended to help reduce energy cost and consumption for existing and new development.

- **Community Choice Energy program**, (also known as Community Choice Aggregation) where the Redwood Coast Energy Authority is the default electricity provider for Humboldt County and provides an alternative means of procuring electricity by offering electricity consumers a choice in their service, with the option to purchase cleaner electricity at competitive prices (<http://cce.redwoodenergy.org/>).
- **Property Assessed Clean Energy (PACE)**, funding program includes unincorporated area properties in the California Statewide Communities Development Authority (CSCDA) Open PACE programs that provide 100 percent upfront financing to residential and commercial property owners for a wide range of eligible property improvements, such as renewable energy, energy efficiency, water efficiency, electrical vehicle charging, and other such improvements, with flexible repayment terms ranging from five to twenty years. The improvements are financed by the issuance of bonds that are secured by a voluntary assessment on the property. Repayment is made in annual installments through a county property tax bill. (<http://www.cscda.org/getdoc/205a5831->

[d67d-40e8-b726-086edfae2358/Open-PACE-Property-Assessed-Clean-Energy-Program](https://www.pge.com/en_US/residential/save-energy-money/savings-programs/home-upgrade/home-upgrade.page)).

- **Redwood Coast Energy Watch (RCEW)**, in partnership with PG&E, provides a wide set of in-house no/low cost resources based services to drive energy efficiency investment in the residential, commercial and public sectors (https://www.pge.com/en_US/residential/save-energy-money/savings-programs/home-upgrade/home-upgrade.page), and non-resource based support that are referred to as Strategic Energy Resource (SER) activities. Activities are either considered in alignment with the CPUC's Strategic Plan Menu Items or innovative pilots (http://ee coordinator.info/wp-content/uploads/2012/08/JBattis-LG-SP-Update-9-2014-9_23_2014.pdf, <http://ee coordinator.info/2011-ee-strategic-plan-updates/>)
- **Grid Alternatives**, a non-profit organization that provides local job training and solar at no-cost for families with limited or fixed incomes (<http://www.grid solar.org/>)
- **USDA Rural Energy Assistance Program (REAP) Renewable Energy Systems and Energy Efficiency Improvement Loans and Grants**, provides guaranteed loan financing and grant funding to agricultural producers and rural small businesses for renewable energy systems or to make energy efficiency improvements (<https://www.rd.usda.gov/programs-services/rural-energy-america-program-renewable-energy-systems-energy-efficiency>)
- **Low-Income Programs**, income qualified services through the Redwood Community Action Agency (<http://rcaa.org/division/energy-services>) including: Weatherization Assistance Program; Energy Assistance Program; Energy Education, and PG&E's Energy Saving Assistance Program, which accesses federal dollars and PG&E accesses ratepayer dollars under the auspices of the CPUC (https://www.pge.com/en_US/residential/save-energy-money/help-paying-your-bill/energy-reduction-and-weatherization/energy-savings-assistance-program/energy-savings-assistance-program.page)
- **PG&E Programs:**
 - **PG&E 3rd Party Programs**, several distinct programs that assist our customers' efforts towards saving energy (https://www.pge.com/en_US/business/save-energy-money/contractors-and-programs/find-partner-programs/find-partner-programs.page)
 - **PG&E Core Rebates**, Any ratepayer can access PG&E's core rebates to offset the incremental cost of an eligible energy efficiency measure (https://www.pge.com/en_US/business/save-energy-money/business-solutions-and-rebates/product-rebates/product-rebates.page)
 - **PG&E Customized Retrofit Incentives**, a program for non-residential customers based on calculated energy savings and permanent peak demand reduction (https://www.pge.com/pge_global/common/pdfs/save-energy-money/facility-improvements/custom-retrofit/Customized-Policy-Procedure-Manual.pdf)
 - **Above Code Support**, services to building designers and owners intended to exceed California's Title 24 energy-efficiency standards (https://www.pge.com/en_US/business/save-energy-money/facility-improvements/savings-by-design/savings-by-design.page)

3.17.3 Energy Consumption and Conservation - Standards of Significance

This analysis uses the significance criteria from the CEQA Guidelines Appendix F:

1. The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including construction, operation, maintenance and/or removal. If appropriate, the energy intensiveness of materials maybe discussed;
2. The effects of the project on local and regional energy supplies and on requirements for additional capacity;
3. The effects of the project on peak and base period demands for electricity and other forms of energy;
4. The degree to which the project complies with existing energy standards;
5. The effects of the project on energy resources; and
6. The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

Based on the above topics, the proposed General Plan Update may result in a significant impact related to energy, if the General Plan Update would:

- a) Land uses or development patterns cause wasteful, inefficient, or unnecessary consumption of energy;
- b) Land Uses require or result in the construction of new or expanded energy production or transmission facilities, the construction of which could cause significant environmental effects

Item "a" is discussed in Impact 3.17.4.1, Land uses or development patterns cause wasteful, inefficient, or unnecessary consumption of energy. Item "b" is discussed in Impact 3.17.4.2, Land Uses require or result in the construction of new or expanded energy production or transmission facilities, the construction of which could cause significant environmental effects.

3.17.4 Energy Consumption and Conservation - Impacts and Mitigation Measures

Impact 3.17.4.1: Land uses or development patterns cause wasteful, inefficient, or unnecessary consumption of energy

Residential and commercial development generated by population growth during the General Plan Update planning period could cause wasteful, inefficient, or unnecessary consumption of energy that have an adverse physical effect on the environment.

This impact analysis addresses item "a" of the significance standards listed in Section 3.9.2 above and is based on Appendix F of the CEQA Guidelines. Pursuant to these standards, the proposed General Plan Update would have a significant impact if it resulted in land uses or development patterns that cause wasteful, inefficient, or unnecessary consumption of energy.

Approximately 1,721 new housing units and 3,130,717 square feet of commercial and industrial buildings are projected to be constructed during the General Plan Update planning period. During construction and following the occupancy of homes and commercial spaces, energy would be consumed in the form of fossil fuels and electricity, including for transportation, which could have an adverse physical effect on the environment.

The current pattern of development within the County is not expected to change substantially during the General Plan Update planning period. In addition, the plan establishes new policies and programs to support mixed uses in developed areas, placing homes near business, thereby reducing travel distances associated with commutes and shopping trips. According to Section 2.4 of the Project Description, the GPU land use maps and land use policy are intended to:

- Generally maintain the characteristics of existing communities.
- Apply land use designations that support mixed-use development and other techniques to increase efficiency of land utilization, including the use of alternative subdivision standards, density bonuses, second unit incentives, live-work commercial centers, etc.
- Maintain current planned residential densities outside of community planning areas and facilitate opportunities for second residential units.
- Increase available resource production land protections using a range of planning tools such as, clustered development incentives, open space standards, conservation easements and regulatory reform.

In April 2017, RCEA and Environmental Indicator Accounting Services staff prepared energy consumption forecasts for population, households, employment, commercial and industrial building square feet, and vehicle miles travelled. Forecasts, using actual values from 2005, based on population and employment growth levels for the years 2010, 2016, 2028, 2030, and 2040 during the General Plan Update planning period. See Appendix U, Humboldt County Energy Consumption Forecast- Calculation Methodology, for additional detail regarding forecasts of unincorporated area energy consumption during the General Plan Update planning period.

Energy consumption results from the 2005 County-Wide Community GHG Inventory were converted to MMBtu (Million British Thermal Units) to enable aggregating consumption across different fuel types. The MMBtu results were used from the following sectors: Residential, Commercial, Industrial, and Transportation. Using the MMBtu totals from the Inventory as a baseline, estimated energy consumption for years during the General Plan Update planning period was forecast using compound annual growth rates developed using specific growth metrics.

To forecast energy consumption for the requested years, sector-specific compound annual growth rates were calculated for the periods of 2005-2010, 2010-2016, 2016-2028, 2028-2030, and 2030-2040. Compound annual growth rates were calculated using data provided by the County for 2010, 2028, and 2040, and then extrapolating/interpolating for 2005, 2016, and 2030. Because the County requested compound annual growth rates that reflect projected growth for Unincorporated County, the following data was either provided by the County for Unincorporated County, or a calculation was applied to County-Wide data to estimate the fraction attributable to Unincorporated County.

Sector-specific compound annual growth rates were calculated based on the following data:

- Residential energy consumption growth – Unincorporated household estimates
- Commercial energy consumption growth – Unincorporated commercial and industrial square footage estimates calculated using employment data. Employment data by sector was provided for Unincorporated County. The number of jobs for each sector was then multiplied by the estimated square footage per employee, as provided by the County and shown in Appendix A. Estimated square footage for each employment sector was summed to produce a total square footage estimate each year.
- Industrial energy consumption growth – Identical to estimates used for Commercial energy consumption growth.
- Transportation energy consumption growth – Unincorporated vehicle miles traveled

Table 3.17-3. Forecasts of Unincorporated Area Energy Consumption.

Sector	Fuel Type						
		2005	2010	2016	2028	2030	2040
Residential	Electricity	766,840	777,780	790,909	817,167	814,154	799,091
	Natural Gas	861,015	873,299	888,040	917,522	914,139	897,226
	Propane	180,753	183,332	186,426	192,616	191,905	188,355
	Wood	231,109	234,406	238,363	246,276	245,368	240,829
Commercial	Electricity	517,714	527,157	538,487	561,149	567,132	597,046
	Natural Gas	1,484,301	1,511,372	1,543,858	1,608,829	1,625,982	1,711,749
Industrial	Electricity	21,915	22,315	22,794	23,754	24,007	25,273
	Natural Gas	19,602	19,960	20,389	21,247	21,473	22,606
Transportation	Gasoline	3,648,759	3,738,804	3,846,859	4,062,968	4,054,859	4,014,315
	Diesel ²	1,472,529	1,508,868	1,552,476	1,639,691	1,636,419	1,620,056
Total		9,204,536	9,397,293	9,628,601	10,091,217	10,095,439	10,116,546

1) Note that the number of significant figures reported do not indicate precision, but are provided for transparency in calculation results. A formal error analysis was not conducted for these projections.

2) Projected diesel consumption for 2005 in the Inventory was roughly 18% less than tracked fuel sales provided by the North Coast Unified Air Quality Management District for the year 2005. The source of this discrepancy has not been addressed. The potential impact to total MMBtu values shown here is roughly 3%.

Source: Humboldt County Energy Consumption Forecast- Calculation Methodology, Redwood Coast Energy Authority and Environmental Indicator Accounting Services, April 4, 2017.

According to Section 3.5, Transportation, of this RDEIR, vehicle miles travelled is projected to increase by 8.7% between 2010 and 2028; the year population is projected to peak during the planning period. During the same period, population is projected to increase by 4.8%. Humboldt County's average number of vehicle miles travelled is currently higher than more urban counties due to the size of the County and its rural nature (Humboldt County Energy Element Background Technical Report, July 2005, Page 1, Energy Use and Cost).

The General Plan Update seeks to reduce vehicle miles traveled per person by providing balanced transportation opportunities, whereby the needs of motorized vehicles, public

transit, bicyclists, and pedestrians are considered during land use and transportation planning. However, due to already established auto-oriented land use patterns, the private automobile would likely continue to be the dominant mode of transport in Humboldt County.

The PACE program is currently available in the unincorporated area and provides 100 percent upfront financing to residential and commercial property owners for a wide range of eligible property improvements, such as renewable energy, energy efficiency, water efficiency. This program would result in significant improvements in energy conservation and efficiency for existing and future residential and commercial building owners that implement energy or water efficiency retrofits or renewable energy installations.

RCEA administers a number of other programs focused on improving energy efficiency, including the Redwood Coast Energy Watch, which provides a wide set of in-house no/low cost resources based services to drive energy efficiency investment in the residential, commercial and public sectors; energy efficiency programs for low income programs in partnership with PG&E and the Redwood Community Action Agency; and a broad range of programs from PG&E for eligible energy efficiency measures. These programs would also result in significant improvements in energy conservation and efficiency if existing and future residential and commercial building owners were to participate.

When it is implemented in 2018, Housing Element Implementation Measure H-IM18, Encourage Energy and Water Conservation, would amend the County Code to limit increases in assessed value for property tax purposes to encourage improvements to real property such as new alternative energy systems, such as solar, wind and hydroelectric energy systems, and new water conservation measures. This program would reduce demand on the regional power generation and distribution system and, given the most water is pumped using electric motors, reduce energy consumption through water conservation. In addition, fuel economy standards specified in Federal regulations and the various fuel efficiency standards established as part of the State's legal framework for GHG emissions reduction would reduce fuel consumption associated with vehicle trips within the County by new cars and trucks.

Current state regulatory requirements for new building construction contained in the 2010 California Green Building Standards Code and Title 24 would increase energy efficiency and reduce energy demand in comparison to existing residential and commercial structures, and therefore reduce actual environmental effects associated with energy use. Programs available through RCEA and PG&E provide incentives and savings to install energy efficient light bulbs and appliances in existing structures as well as increased insulation and renewable energy systems, which will help reduce energy consumption for existing development.

Analysis of Relevant General Plan Update Policies

The General Plan Update includes a number of policies and standards in the Energy Element intended to increase energy efficiency and conservation. For example, Goal E-G2, Increase Energy Efficiency and Conservation, guides efforts to decrease energy consumption through conservation and efficiency in building, transportation, business, industry, government, water and waste management. A number of policies are intended to carry out this goal, including E-P1, Energy Conservation Standards and

Incentives, which calls for the development of incentives for building to exceed California Building Standards Code requirements for energy conservation. Although E-P1 does not specify increased energy conservation standards, Implementation Measure E-IM8, Energy Efficiency Standards, would direct the development and implementation of energy-efficiency standards that incorporate cost effective measures for subdivision, mixed use, infill, and planned unit development. Specific measures would be developed and analyzed on a project-by-project basis, so the measurable results of these measures cannot be determined at this time.

E-P10, Transportation Management Plans, requires that major commercial, business, or industrial facility developments submit a transportation management plan that addresses energy conservation measures such as connectivity to alternative transportation modes. E-P10 requirements are also intended to become incentives for projects not deemed as "major". In addition, E-M1, Alternative Energy Use, specifies the establishment of land use of regulations that eliminate obstacles to alternative energy use.

Other than those described above, the Energy Element does not have specific standards and additional requirements for energy efficiency and conservation. Examples of elective, non-mandatory, policies and programs that promote energy efficiency and conservation include: E-P13, Water Efficiency, which promotes the efficient use of water in residences, businesses, industries, and agriculture; E-P14, Incentives for Using Alternative Energy; E-IM6, Energy-conserving Landscaping, which directs the County to consider natural and drought-resistant planting materials and other measures to reduce energy demand in the preparation of the County landscaping ordinance; E-IM14, Energy Conservation, which requires the adoption of residential and commercial energy conservation for building construction and retrofit that establishes energy conservation incentives and performance standards for projects exceeding state building codes.

The Energy Element also contains Policy E-P5, Regional Energy Authority, and Implementation Measure, E-IM2, Comprehensive Action Plan for Energy, which recognizes RCEA as the regional energy authority for coordinating countywide energy planning and supports implementation of the Comprehensive Action Plan for Energy, or CAPE, which includes sustainable energy initiatives that reduce energy demand, increased energy efficiency, and advances the use of clean, efficient, and renewable resources available in the region. The CAPE could include recommended specific standards and requirements that could be implemented if adopted by the authority's member local governments, including the County.

For County owned buildings, E-P7, County Government Energy Consumption, specifies that the County shall reduce building and transportation energy consumption by implementing energy conservation measures and purchasing renewable energy and energy efficient equipment and vehicles whenever cost-effective. E-P8, County Building Design Standards, states that all new and renovated County-owned facilities shall be designed, constructed and operated U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED)"Silver" or better energy efficiency standards, including the installation of cost-effective conservation measures, renewable energy systems, cogeneration systems, and distributed energy systems (E-IM4, Install County Systems). In addition, E-IM3, County Energy Consumption Reduction, directs the development of a program to reduce the County's energy consumption in buildings and facilities, street lights, vehicle operation, and equipment procurement.

The Air Quality Element contains policies and programs that relate to greenhouse gas emissions, and although greenhouse gas emissions and energy efficiency and conservation are not one in the same, there is a close relationship-the less energy used, the fewer emissions produced. Policy AQ-P9, County Climate Action Plan, requires the development and implementation of a multi-jurisdictional Climate Action Plan to achieve reductions in greenhouse gas emissions consistent with the state law. This would be expected to result in increased energy efficiency and reductions in energy waste. Implementation measure AQ-IM4, County Government Greenhouse Gas Emission Reductions, specifies the components of a climate action plan for government operations that seeks emissions reductions through energy efficiency and conservation; "green building;" waste reduction and recycling; and efficient transportation. AQ-IM3, County-wide Climate Action Plan, directs the development and implementation of a climate action plan and AQ-IM5, Greenhouse Gas Emissions, directs the update to the General Plan and land use regulations to reflect the adopted countywide Climate Action Plan. Although the General Plan Update does not contain additional detail regarding the contents of the countywide Climate Action Plan, it is assumed that it will contain similar topics to the County Climate Action Plan for County government greenhouse gas emission reductions, such as energy efficiency and conservation; "green building;" waste reduction and recycling; and efficient transportation.

The Land Use Element includes policies and programs to promote mixed use development, which places higher density residential development adjacent to jobs and shopping. UL-P6, Mixed-Use Zoning, directs the application of mixed use zones in Urban Development Areas.

There are several policies in the Circulation Element that encourage modes of transportation other than automotive trips. C-P23, Public Transit Service, provides for coordination with transportation providers so that a full range of travel patterns and connectivity with other modes of transportation are provided. C-Pxx, Long Term Transit Plan, supports planning with the goal of increasing transit vs. automobile trips. C-P25, Multimodal Level of Service (LOS) and Quality of Service Standards (QOS), would consider "walkability audits" and "bikeability audits" suitable for the locality to assess and plan the multi-modal quality and capacity of county roads and intersections.

Conclusion

The General Plan Update does not include specific development projects. Rather, the Plan identifies land uses and policies to accommodate the growth that is projected to occur during the planning period. In accommodating projected growth, the General Plan Update encourages energy efficiency, maintains existing land use patterns, and promotes mixed use land use patterns in urbanized areas which would reduce vehicle trips by placing residences near services. The proposed Energy Element requires that major development submit a transportation management plan that addresses energy conservation measures such as connectivity to alternative transportation modes and proposes the use of incentives to encourage energy efficiency and conservation from other development and supports the implementation of the CAPE by RCEA and its member jurisdictions.

The Air Quality Element also specifies that a County-wide CAP be prepared and that the General Plan and land use regulations be amended to reflect that plan. Energy efficiency and conservation would be an important component of the County-wide Climate Action Plan. For new County-owned buildings, the General Plan Updates

specifies LEED "Silver" or better energy efficiency standards and the preparation of a Climate Action Plan for County government greenhouse gas emission reductions would also result in energy efficiency and conservation.

The proposed General Plan Update policies, standards and implementation measures addressing energy efficiency, greenhouse gas emission, land uses, and development patterns, combined with current laws and regulations would help to reduce the wasteful, inefficient, or unnecessary consumption of energy resulting from new development. In addition, the RCEA CAPE and the other RCEA incentives to encourage the installation of increased insulation and renewable energy systems in existing structures; and will help reduce energy consumption from existing development.

The General Plan Updates specifies the development and implementation of a County-wide Climate Action Plan that is intended to achieve reductions in greenhouse gas emissions consistent with state law. It is assumed that a County-wide Climate Action Plan that is consistent with state law would include measures to increase energy efficiency, reduce energy consumption, and reduce energy waste in new and existing development.

However, because specific information about new development projected to occur during the General Plan Update planning period is unknown at this time; the effectiveness of the soon to be updated CAPE and the yet-to-be developed CAP measures at reducing energy use or increasing energy efficiency cannot be determined; and because the County has not yet adopted GHG thresholds that would strongly influence future energy use, the degree to which General Plan Update land uses or development patterns cause wasteful, inefficient, or unnecessary consumption of energy cannot be determined. Consequently, this impact is conservatively determined to be significant. Ensuring that could cause wasteful, inefficient, or unnecessary consumption of energy that have an adverse physical effect on the environment is not feasible at this time. Therefore, this impact is considered **significant and unavoidable**.

Mitigation

None identified, beyond those to be included in the pending CAPE update and CAP.

Impact 3.17.4.2: Land Uses require or result in the construction of new or expanded energy production or transmission facilities, the construction of which could cause significant environmental effects

Projected population and job growth during the General Plan Update planning period would lead to increased housing and non-residential development in the unincorporated area. Energy demand would be expected to increase due to the use of heating, cooling, and electricity in homes and businesses; for public infrastructure and service operations; and for industry, commercial, and a variety of other uses. Energy consumption during the General Plan Update planning period may result in the need for new or expanded energy production or transmission facilities, the construction of which could cause significant environmental effects.

This impact analysis addresses item "b" of the significance standards listed in Section 3.9.2 above and is based on Appendix F of the CEQA Guidelines. Pursuant to these

standards, the proposed General Plan Update would have a significant impact if it resulted in land uses that require or result in the construction of new or expanded energy production or transmission facilities, the construction of which could cause significant environmental effects.

As described in Section 3.9.3.4 above, approximately 1,721 new housing units and 3,130,717 square feet of commercial and industrial buildings are projected to be constructed during the General Plan Update planning period. The precise location of new development is not known. Construction would likely occur throughout the County, but most development would likely occur within Community Plan Areas that are served by existing energy production or transmission facilities. Construction may occur adjacent to existing electrical and natural gas distribution facilities that are sized appropriately to accommodate the new development or may require the construction of new transmission or distribution facilities. The Humboldt Bay Generating Station has the capacity to serve 122,000 housing units, which is nearly twice the number of housing units that are currently within the entire County, although, energy produced at the Humboldt Bay Generating Station is both used locally and exported to other parts of the state. The potential need for new power generation facilities is unlikely.

Most development would be served by PG&E electric facilities and, if located in the greater Humboldt Bay area, may be served by natural gas. PG&E is obligated to provide service to new development within its service area, subject to CPUC Rules governing the service and that also define responsibility for the cost of construction and the manner in which construction occurs. Electric transmission and distribution lines are typically located along overhead powerlines and both powerlines and underground gas lines are typically located within public rights of way. PG&E conducts periodic load forecasts to ensure the reliability of its electricity and gas service. As growth occurs during the General Plan Update planning period, PG&E would be expected to incorporate these new levels of demand into its reliability forecasts. For new development that would occur within Resort Improvement District No. 1, requirements contained in the adopted "Capacity Buy-In/Connection Costs & New Installation Fees" govern the construction of new or expanded energy production or transmission facilities for new electric service, subject to other applicable land use regulations.

Analysis of Relevant General Plan Update Policies

The General Plan Update includes the following policies and standards in the Energy Element relating to energy production and transmission facilities. Policy E-P9, Electrical Transmission, promotes PG&E funded capacity upgrades to electric distribution lines. Standard E-S5, Electrical Transmission Lines, establishes standards to reduce environmental impacts resulting from the siting and construction of electric transmission lines, including consolidating new facilities with existing facilities and within existing rights of way, minimizing visual impacts, and minimizing alterations to landform. In addition, the Conservation and Open Space Element Scenic Resources Chapter Standard SR-S3, Scenic Highway Standards, specifies standards for mapped scenic highways that would minimize the impacts of new, relocated, or existing utility distribution lines within the visual buffer areas.

The General Plan Update Energy Element Goals also encourages countywide strategic energy planning focused on self-sufficiency, the development of renewable energy resources, and energy conservation. The Energy Element contains policies and programs that are intended to protect known energy resources and encourage the development

of renewable energy. Specifically, E-P9x, Electricity Buyback, supports revisions to the electricity buyback program that encourages more distributed local generation. E-P14, Incentives for Using Alternative Energy, encourage the use of renewable energy and environmentally preferable distributed energy generation systems in the county. E-IM9, Develop Incentives for Private Sector, specifies incentives to encourage the installation of distributed generation, and solar electric and solar heating systems, in all new construction and building retrofits. E-IM13, Renewable Energy Permitting Process, would provide for a clear permitting process for distributed energy generation systems and identifies zones where distributed energy generation facilities will be allowed as a permitted use.

Policies and programs that address construction related environmental impacts to water quality, air quality, biological resources, cultural resources, and scenic resources are analyzed throughout this EIR. These analyses would also address environmental impacts relating to the construction of new or expanded energy production or transmission facilities. The following is a summary of General Plan Update policies that would reduce construction related environmental impacts from new or expanded water facilities:

- The Circulation Element contains policies to reduce traffic impacts of new and expanded wastewater facilities by utilizing traffic impact thresholds (C-P5, Level of Service Criteria) and by requiring that new development be conditioned to proportionally mitigate significant traffic impacts through construction of on- and off-site improvements and dedication of rights-of-way (C-P4, Mitigation Measures).
- The Biological Resources Chapter within the General Plan Update contains policies to reduce impacts to plants, animals, and habitat by planning land containing sensitive and critical habitats for uses for long term habitat sustainability (BR-P1, Compatible Land Use); conditioning projects to avoid impacts to critical and essential habitat where such resources are present (BR-P2, Critical Habitat); regulating development within streamside management areas to minimize adverse environmental effects (BR-P6, Development within Streamside Management Areas); and through the delineation and protection of wetlands (BR-P-7, Wetland Identification, and BR-S10 Development Standards).
- The Water Resources Element contains policies regarding critical watersheds to protect municipal water supplies from the environmental effects of development (WR-P4, Critical Municipal Water Supply Areas) and to limit the effects of development upon threatened and endangered species including Coho salmon habitat (WR-P5, Critical Watershed Areas); minimizing erosion and sediment discharge through the implementation of performance standards (WR-Px2, Mitigate Controllable Sediment Discharge Sites, WR-P8 Erosion and Sediment Discharge and WR-P36 Erosion and Sediment Control Measures); and by limiting the transmission of contaminants from parking lots to the storm water system by requiring oil water separators (WR-P35, Oil/Water Separation).
- Noise Element policies are intended to minimize short-term noise and noise from stationary sources through the application of appropriate standards (N-P1, Minimize Noise from Stationary and Mobile Sources) and through application of noise performance standards (N-S8 Short-Term Noise Performance Standards- Maximum Noise Level).
- The Safety Element contains policies to plan land use and new development to reduce hazards (S-P1, Reduce the Potential for Loss); applying state geologic and seismic standards to new development (S-P6, Structural Hazards); regulating uses around airports consistent with Airport Land Use Compatibility Plans (S-P21,

Development Compatibility and S-P22, Airport Land Use Compatibility Criteria), and by regulating land uses in flood hazard areas (S-P10, Federal Flood Insurance Program).

- Air Quality Element policies require that construction and grading dust control measures achieve local air quality standards (AQ-P4, Construction and Grading Dust Control) and air quality impacts of new development are reduced through the implementation of mitigation measure during discretionary review (AQ-P5, Air Quality Impacts from New Development).

Conclusion

Federal and state regulations and ongoing planning by PG&E consistent with its obligation to the CPUC to provide reliable power service with its service area would help to ensure that sufficient energy supplies are available to serve projected development during the General Plan Update planning period. The General Plan Update includes policies and programs to encourage distributed renewable energy production, locating renewable generation near consumption, and could reduce the need for additional energy production or transmission facilities.

Policy E-P9, Electrical Transmission, Standard E-S5, Electrical Transmission Lines, Scenic Resources Chapter Standard SR-S3, Scenic Highway Standards, are specific General Plan Update policies and standards that are intended to reduce environmental impacts from electrical transmission facilities. In addition, the proposed policies, standards, and implementation measures listed above that relate to all construction consistent with the General Plan Update would help to avoid environmental impacts associated with the construction of new or expanded energy production or transmission facilities. The Noise, Hazards and Hazardous Materials, Geology and Soils, Hydrology and Water Quality, Air Quality, Biological Resources, Cultural Resources, and Scenic Resources sections of this EIR identify existing regulations, measures contained in the General Plan Update, and additional mitigations to further reduce potential environmental impacts resulting from new or expanded energy production or transmission facilities.

However, the nature and location of any potential new or expanded energy production or transmission facilities that may be constructed by PG&E or Resort Improvement District No. 1 and that do not trigger a land use approval by the County is not known. As a result, the potential impacts of these facilities are too speculative for evaluation in this first tier programmatic EIR. If potential new or expanded energy production or transmission facilities are within the responsibility and jurisdiction of other public agencies, and not the County, appropriate mitigations can and should be adopted by such other agency, or other findings made after certification of an EIR in accordance with CEQA.

If the new or expanded energy production or transmission facilities were to be constructed as part of a subdivision map approval or other process requiring County discretionary land use approval, such as an amendment to the General Plan Land Use Map, rezone, use permit, or a special permit, the County would ensure that environmental impacts are addressed through appropriate site-specific mitigation measures and the application of the policies listed above, appropriate Zoning Regulations, and its land use authority. Therefore, with implementation of the General Plan Update policies, impacts relating to new or expanded energy production or transmission facilities or expansion of existing facilities triggered by the General Plan would be **less than significant**.

Mitigation

None required.