# Chapter 8
# Natural Resources

This chapter describes the location and extent of existing natural resources within San Benito County, including water resources, mineral and energy resources, biological resources, and oil and gas resources.

This chapter is organized into the following sections:

- Water Resources (Section 8.1)
- Energy and Mineral Resources (Section 8.2)
- Biological Resources (Section 8.3)
- Oil and Gas Resources (Section 8.4)

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# SECTION 8.1 WATER RESOURCES

## Introduction

This section summarizes and analyzes information about the availability and quality of water resources in San Benito County. It includes information about historical and current conditions and projections for future ground water, surface water, and imported water resource conditions, where available. Analyzing existing water resource conditions and water supply data provides important information about the ability of the County to provide and manage water supplies that meet both existing and projected future growth.

## Key Terms

**Acre-foot (AF).** The volume of water required to cover one acre of land (43,560 square feet) to a depth of one foot. One acre-foot is equal to 325,851 gallons or 1,233 cubic meters. Historically, an acre-foot represents the amount of water typically used by one family during a year.

**Aquifer**. A geological formation or structure that stores and/or transmits water, such as wells and springs. Use of the term is usually restricted to those water-bearing formations capable of yielding water in sufficient quantity to constitute a usable supply for people.

**Beneficial use.** Use of water either directly by people or for their overall benefit as legally defined and identified.

**Central Valley Project (CVP).** Central Valley Project, authorized in 1933. The CVP, operated by the United States Bureau of Reclamation, is the largest water storage and delivery system in California, with facilities in 29 of the state's 58 counties. The projects features include 18 Federal reservoirs and four additional reservoirs jointly owned with the State Water Project.

**Deep percolation.** Downward percolation of water through the ground beyond depths accessible to plant roots.

**Discharge.** A rate of water flow, typically expressed as a unit volume of water per unit of time (e.g., cubic feet per second (cfs)).

**Groundwater.** Water that occurs beneath the land surface, specifically within pore spaces of saturated soil, sediment, or rock formations. Groundwater does not include moisture held by capillary action in the upper, unsaturated areas of aquifers.

**Groundwater basin.** An aquifer or series of aquifers with defined lateral boundaries and bottom layer. In some cases the boundaries of successively deeper aquifers may differ and make it difficult to define the limits of the basin.

**Groundwater recharge.** The natural or intentional infiltration/percolation of surface water into the zone of saturation (i.e., into groundwater).

**Non-point source.** A pollution source that cannot be defined at a discrete location; a dispersed or spread out source area.

**Point source.** A specific site from which pollution is discharged to a water body.

**Runoff.** Precipitation (rain or snowmelt) that is not used by plants, evaporated or infiltrated to soils, and is transported across land surfaces to streams or other surface water bodies. A volume of surface water (typically expressed in acre-feet).

**Watershed.** The land surface area from which water drains into a common downstream point.

**Water Year.** A continuous twelve-month period for which hydrologic records are compiled and summarized. Months may vary by location and agency, but October 1st through September 30th is commonly used by USGS. A given water year is named for the year in which it ends, i.e., the water year from October 1, 2008, through September 30, 2009, was water year 2009.

## Regulatory Setting

Water supply-related regulations are discussed in Section 7.2, Water Supply and Delivery. This Section addresses various Federal and State laws, regulations, and programs that relate to water quality, management, and resource protection. Water rights in California are also discussed.

Water resource protection for surface and groundwater in California is governed by a complex network of Federal and State laws and regulations. The Environmental Protection Agency (EPA) is primarily responsible for implementing Federal water quality laws; the U.S. Army Corps of Engineers (USACE) is responsible for implementing one portion of the water quality law, as described below. EPA has delegated direct authority for implementation and oversight of Federal water quality laws within California to the State Water Resources Control Board (SWRCB) and the nine regional water quality control boards (RWQCB). Both SWRCB and RWQCBs are responsible for implementing State water quality laws. SWRCB also is responsible for water rights. SWRCB provides program guidance and oversight, allocates funds, and reviews RWQCB decisions. Each RWQCB is responsible for issuing individual permits, conducting inspections, and providing enforcement actions within its designated region. At the State level San Benito County falls under the jurisdiction of the Central Coast Regional Water Quality Control Board (CCRWQCB). At the Federal level the County falls under the jurisdiction of EPA Region 9.

Federal and State laws have been enacted to protect the quality of water for a wide variety of beneficial uses. For example, the SWRCB has defined beneficial uses for every navigable waterway in the state, and has set pollution standards for each waterway to protect the beneficial uses assigned to it. Beneficial uses include domestic, agricultural, and industrial uses; use as habitat for freshwater fish and aquatic organisms; and recreational uses.

Over the past thirty years Federal and State laws have been enacted to protect the quality of surface water and groundwater resources and to meet drinking water standards and anti-degradation objectives. Most initial regulatory programs focused on point sources of contamination, such as municipal and industrial facilities; however, recent programs are being implemented to address non-point sources, such as agricultural runoff. This chapter focuses on major water quality protection regulations.

## Water Rights

California's system of water rights includes both riparian and appropriative rights for surface waters and overlying and appropriative rights for groundwater. All water rights in California are use rights, and generally speaking, all waters are property of the State. As such, a water right in California is a property right allowing beneficial use of water, but not ownership of water. The following paragraphs summarize surface and groundwater right systems.

In California SWRCB is mainly responsible for establishing and maintaining the system of water rights. Its mission is to develop, conserve, and use the public interest best in the water resources of the State while protecting vested rights, water quality, and the environment. SWRCB is also responsible for the protection of water quality by implementing Federal and State water quality laws and regulations.

## Surface Water Rights

By law the State of California owns all surface waters within the state. While surface water cannot be privately owned, rights to use water can be granted to individuals or organizations. A water right is a legally protected right to take possession of water and put it to beneficial use. There are two major types of surface water rights under California State Law: riparian rights and appropriative rights. Riparian rights are those where water is extracted for use on lands that directly border a water course. Any owner of a parcel immediately adjacent to a water course has the right to take water for beneficial use (e.g., domestic and agricultural) at any time unless specific deed restrictions are stated in the title to the land. Any removal of water from a surface water body for delivery to non-adjacent parcels constitutes appropriative use, which requires a permit from the SWRCB that establishes an appropriative right.

Under the California Water Code, SWRCB is responsible for allocating surface water rights and permitting the diversion and use of water throughout the state. Through its Division of Water Rights, the SWRCB issues permits to divert water for new appropriations or to change existing water rights. In California water rights are prioritized according to the timing of water rights; those who were granted the earliest rights have priority over those granted more recent (i.e., junior) water rights. This is often termed "first in time, first in right."

## Groundwater Rights

In most western states, except California and Texas, the use of groundwater is managed at a statewide level. In California, while most surface water rights and diversions are directly regulated by the State (SWRCB, Division of Water Rights), groundwater is managed by a variety of local and regional entities with a wide range of regulatory and management authority. Legally, groundwater in California is classified as either "a subterranean stream flowing through known and defined channels" or "percolating groundwater."

A subterranean stream is most frequently characterized as groundwater moving through permeable material underlying or comprising the bed of a stream in its natural state. This flow is considered to be essential to the existence of the stream and is subject to the same statutory provisions that apply to the appropriation of surface water.

Most groundwater in California is considered to be percolating groundwater, which is defined as the mass of groundwater contained in a basin moving towards some stream or outlet. Rights to use percolating groundwater are determined in three ways:

- Correlative/overlying rights arise solely from property ownership. These are not generally limited in quantity by the history or frequency of water use and they are prior and paramount (senior) to appropriative rights.

- Appropriative rights are attached to use of groundwater away from the overlying property or for municipal use (which is not generally considered an overlying use). These rights are defined by the historical quantity of use, are junior to overlying rights, and are prioritized according to the timing of water rights among other appropriative rights holders.

- Prescriptive rights are acquired by actual, open and notorious, adverse, exclusive, and continuous use for a period of five years. These rights cannot be acquired against public utilities, municipalities, or other public entities, and are limited to the extent of the production by overlying owners during the prescriptive period.

If groundwater users in a basin choose to litigate to resolve water rights disputes, then the basin enters into adjudication. Adjudication of a groundwater basin results from legal proceedings designed to establish rights to either surface water or groundwater, or both. An adjudicated groundwater basin has set groundwater extraction limits by either the courts or the SWRCB. Once such limits have been set, various fees and charges are levied on the groundwater users to conduct management activities to ensure that the basin is appropriately recharged. The maximum amount of annual groundwater use in adjudicated basins is set, but the right can be decreased over time in situations where the total amount of available water decreases due to drought.

## Federal Regulatory Setting

### *Federal Clean Water Act*

The Federal Clean Water Act (CWA) is the primary Federal law that protects the quality of the nation's surface waters, including lakes, rivers, aquifers, and coastal areas. Although the CWA applies to groundwater, implementation is focused on the protection of surface water. The CWA is a 1977 amendment to the Federal Water Pollution Control Act of 1972 (United States Code, Title 33), which established the basic structure for regulating pollutant discharges to navigable waters of the United States. Under the CWA, EPA sets national standards and effluent limitations, but delegates significant responsibilities to the California SWRCB and its regional boards. The CWA is based on the concept that all discharges into the nation's waters are unlawful unless specifically authorized by permit. The CWA includes a permit system that provides two general types of pollution control limits:

- Effluent limits that are technology-based and limit the quantity of pollutants discharged from a point source such as a pipe, ditch, or tunnel into a navigable water body.

- Ambient water quality standards that limit the concentration of pollutants in navigable waters based on the beneficial uses to which particular waters are put.

- The CWA contains several provisions protecting water quality, including Sections 303(c)(2)(B), 303(d), 305(b), 401, 402(p), and 404, and the Toxics Rule. Each is discussed below.

- Section 303(c)(2)(B) of the CWA requires states to adopt numeric criteria for priority pollutants as part of the states' water quality standards. In 1991 the SWRCB adopted the Inland Surface Waters Plan (ISWP) and the Enclosed Bays and Estuaries Plan (EBEP), in part, to comply with the CWA. California SWRCB amended the plans in 1993. In 1994 SWRCB rescinded the ISWP and EBEP in response to a court ruling invalidating the plans. In order to bring California into compliance with the CWA, SWRCB and EPA agreed to a two-phased approach. Phase I consisted of EPA promulgating numeric water quality criteria for priority pollutants for California in accordance with the CWA, and SWRCB adopting statewide measures to implement those criteria in a statewide policy. In Phase II SWRCB would consider the adoption of appropriate statewide water quality objectives for toxic pollutants. EPA published the California Toxics Rule (CTR 2000) in the Federal Register, adding Section 131.38 to Title 40 of the C.F.R. On May 22, 2000, the Office of Administrative Law approved, with modifications, the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (Phase 1 of the ISWP and EBEP). The policy establishes implementation procedures for three categories of priority pollutant criteria or water quality objectives. These are: 1) criteria promulgated by EPA in the National Toxics Rule that apply in California; 2) criteria proposed by EPA in the California Toxics Rule; and 3) water quality objectives contained in RWQCB water quality control plans (basin plans).

- Section 303(d) of the CWA requires states to identify waters that are not expected to meet water quality standards after application of effluent limitations for point sources, develop a priority ranking and determine the total maximum daily load of specific pollutants that may be discharged into the water, and meet the water quality standards. States are required to establish Total Maximum Daily Loads (TMDLs) for these water bodies that will lead to achieving the applicable water quality standards and to allocate TMDL among all contributing sources. Approved TMDLs are implemented through National Pollutant Discharge Elimination System (NPDES) permits, non-point source control programs, and other local and State requirements.

- Section 305(b) of the CWA requires states to perform a biennial assessment of the water quality of navigable waters within each state. The assessment is required to analyze the extent to which beneficial uses are supported. Therefore, the assessment provides an analysis of the extent to which elimination of pollution and protection of beneficial uses had been achieved. The assessment is also required to describe the nature and extent of non-point sources of pollution and provide recommendations for control programs including costs.

- Section 401 requires that Federally-authorized discharges into waters of the United States do not violate State water quality standards. Anyone applying for a Federal permit or license for an activity that may result in any discharge into waters of the United States must request State certification that the proposed activity will not violate State water quality standards. Within California, Section 401 is implemented by SWRCB and the RWQCBs.

- Section 402(p) of CWA requires a NPDES permit for storm water discharges from municipal separate storm sewer systems, industrial activities, construction activities, and designated dischargers that are considered significant contributors of pollutants to waters of the United States. The Phase I permitting program, which was initiated in 1990, generally addressed

stormwater runoff from: 1) municipal separate storm sewer systems serving populations of 100,000 or greater, 2) construction activity disturbing five acres of land or greater, and 3) ten categories of industrial activity. The Phase II program regulates storm water discharges associated with small construction activity (i.e., sites disturbing between one and five acres of land), and small municipal separate storm sewer systems (i.e., serving populations less than 100,000). The NPDES program is discussed in more detail below under the CVRWQCB summary.

- Section 404 of the CWA establishes a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. Responsibility for administering and enforcing Section 404 is shared by the U.S. Army Corps of Engineers (USACE) and EPA. USACE administers the day-to-day program, including managing individual permit decisions and jurisdictional determinations; developing policy and guidance; and enforcing Section 404 provisions. On the other hand, EPA develops and interprets environmental criteria used in evaluating permit applications, identifies activities that are exempt from permitting, reviews individual permit applications, enforces Section 404 provisions, and has authority to veto USACE permit decisions.

## State Regulatory Setting

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

SWRCB and the nine RWQCBs have State authority to regulate water quality under the Porter-Cologne Water Quality Control Act (Porter Cologne) and Sections 22560 through 22565 of Title 27 of the California Code of Regulations (CCR), in addition to the authority to regulate under the Clean Water Act. There are ten SWRCB water quality control policies and three SWRCB water quality control plans to which RWQCB actions must conform. The Basin Plan for the Central Coast Region (CCWQCB 1994) incorporates by reference SWRCB water quality control plans and policies to protect beneficial uses of state water resources. The Basin Plan states the beneficial uses of specific water bodies and the levels of quality that must be met and maintained to protect those uses. Regional plan objectives and discharge requirements are implemented through the issuance of waste discharge requirements (WDRs) or NPDES permits.

### *Department of Water Resources*

The mission of the Department of Water Resources (DWR) is to manage the water resources of California in cooperation with other agencies, to benefit the state's people, and to protect, restore, and enhance the natural and human environment. DWR conducts numerous programs related to flood safety, water planning, environmental concerns such as climate change, and water supply. DWR coordinates closely with the Regional Water Quality Control Boards on water quality issues. DWR does not presently have any programs or activities specifically directed towards San Benito County, but DWR's Division of Safety and Dams would have to approve any new reservoirs. Within San Benito County water is currently diverted for a variety of uses, most of which is for agriculture.

### *Groundwater Management Act (Assembly Bill 3030 / Senate Bill 1938)*

The Groundwater Management Act (first defined in 1992 in Assembly Bill 3030 and amended in 2002 by Senate Bill 1938 and again in 2008) was ratified in California Water Code Sections 10750-10756. This act provides a systematic procedure for a water supply or management agency to develop a groundwater

management plan. One hundred forty-nine agencies have adopted groundwater management plans in accordance with AB 3030. AB 3030 allows certain defined existing local agencies to develop a groundwater management plan for groundwater basins. Technical components are identified in the act and others may be included in the groundwater management plan. The twelve identified in the act are:

1. Control of saline water intrusion.
2. Identification and management of wellhead protection areas and recharge areas.
3. Regulation of the migration of contaminated groundwater.
4. Administration of a well abandonment and well destruction program.
5. Mitigation of conditions of overdraft.
6. Replenishment of groundwater extracted by water producers.
7. Monitoring of groundwater levels and storage.
8. Facilitating conjunctive use operations.
9. Identification of well construction policies.
10. Construction and operation by the local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling, and extraction projects.
11. Development of relationships with State and Federal regulatory agencies.
12. Review of land use plans and coordination with land use planning agencies to assess activities which create a reasonable risk of groundwater contamination.

The plan can be developed only after a public hearing and adoption of a resolution of intention to adopt a groundwater management plan. If there is no majority opposition by the district, the plan can be adopted within 35 days. If the majority is opposed, the plan cannot be adopted and no new plan may be attempted for one year. Once the plan is adopted, rules and regulations must be adopted to implement the program established in the plan. DWR has the authority to review groundwater management plans and must approve them prior to their implementation.

The San Benito County Water District (SBCWD), as a special district, has management powers over the San Benito County portion of the Gilroy-Hollister groundwater basin. SBCWD, in collaboration with local organizations, also has developed a groundwater management plan consistent with the AB 3030 process.

### *Groundwater Elevation Monitoring Program Act (Senate Bill 7x6)*

Senate Bill 7x6 established the Groundwater Monitoring Program Act ratified in the California Water Code Sections 10920 and 12924. This act established a monitoring program for all DWR-defined groundwater basins in California. A local public agency or organization can propose in 2010 to be designated by DWR as the groundwater monitoring entity. The entities that are eligible are: a water-master or water management engineer appointed by a court, groundwater management agency, water replenishment district, local agency that is managing all or part of a groundwater basin or subbasin, county government, or voluntary cooperative groundwater monitoring association. If none of these are available, DWR would perform the monitoring functions. The program requires monitoring and reporting of groundwater elevations in all or part of a basin or subbasin. DWR is required to work cooperatively with each monitoring entity to determine the manner in which groundwater elevation information is reported. The bill authorizes DWR to make recommendations for improving an existing monitoring program, and to require additional monitoring wells under certain circumstances. Failure to implement a groundwater monitoring program makes the county and agency responsible for the monitoring ineligible for a State water grant or loan.

### *State Water Resources Control Board*

Two principles govern the use of water in California: public trust and reasonable use. Because all surface water is owned by the State, the State has an obligation to consider the impact of water appropriations on other public rights regarding commerce, navigation, environmental, and recreational resources. As such, the SWRCB strives to ensure that water users avoid or mitigate impacts on public trust resources. The California State Constitution prohibits waste, unreasonable use, unreasonable method of use, and unreasonable method of diversion of water. The method of diversion of water may be deemed unreasonable based on its impact to fish, wildlife, or other instream beneficial uses. In order to oversee and monitor water diversions, the SWRCB includes Standard Permit Term 12 for all water rights permits and licenses. This process puts the recipients on notice that SWRCB has continuing authority to act to protect public trust resources and under the reasonableness doctrine.

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

The primary function of CCRWQCB is to protect the quality of the waters within the region for all beneficial uses. This duty is implemented by formulating and adopting water quality plans for specific ground or surface water basins and by prescribing and enforcing requirements on all agricultural, domestic, and industrial waste discharges. Specific responsibilities and procedures of the Regional Boards and the SWRCB are contained in the Porter-Cologne Water Quality Control Act. CCRWQCB is responsible for enforcing all water quality standards for permitted or other discharges. As a part of enforcement, the RWQCB may require monitoring from a regulated facility to ensure no adverse impact to groundwater or surface water. There are over 30 facilities in San Benito County where CCRWQCB regulates discharges, including leaking underground storage tanks, National Pollutant Discharge Elimination System (NPDES) permitted discharges, and other facilities that may not be meeting standards set forth by legislation. CCRWQCB implements the following major programs:

- 401 Water Quality Certification. This program involves regulation of activities related to the removal or placement of soil, sediment, and other materials in or near water bodies and requires Corps of Engineers permits under CWA Section 404. This program also addresses projects involving the construction of dams, power plants, and other facilities requiring Federal Energy Regulatory Commission (FERC) licenses.

- Irrigated Agriculture Regulatory Program. This program regulates discharges from irrigated agricultural lands. The purpose of the program is to prevent agricultural discharges from impairing surface water and groundwater. To comply with the conditions of the program, growers must prevent discharges, protect and restore water quality through effective implementation of appropriate management measures, monitor water quality, and implement corrective actions when impairments are found. The CCRWQCB is using a coordinated watershed approach to implement the Agricultural Regulatory Program.

- Basin Plan. The planning processes associated with the basin plans are required by both Federal and State law. The Basin Plans are the framework for the Regional Board's decisions. They include designation of beneficial uses of waters, water quality objectives to meet those uses, and description of programs and actions that need to be implemented to achieve the objectives. For surface waters these components are water quality standards under Federal law. Every three years a comprehensive review of the Basin Plan is conducted to determine whether revisions are needed. The most recent review of the Basin Plan occurred in July 2009, during

which the Regional Board determined that the following issues are high priority: 1) vision of healthy watersheds framework; 2) biostimulatory substances objective revision; 3) aquatic life protection; 4) watershed protection; 5) groundwater recharge area protection; 6) aquatic habitat and riparian buffer zone protections; 7) revisions of groundwater objectives; 8) designation of beneficial uses; groundwater basin configurations update; 9) bacteria objectives revision for E. coli in freshwater and Enterococcus in saline waters; and 10) tributary rule clarification.

- Non-Point Source (NPS) Program. Non-point sources of contamination are responsible for many significant impairments in the region's water resources. Non-point source discharges include agricultural, forestry, and grazing operations. The most significant problems are elevated levels of pesticides, salt, and heavy metals. Other impairments involve low dissolved oxygen, temperature changes, sediment, ammonia, and various contaminants that threaten drinking water. The program seeks to address impacts from NPS pollutants through a variety of efforts, including: watershed-based high priority management measures to control and prevent polluted runoff with site specific practices, enforcement of State policies, public education, and financial and technical assistance to projects and programs that address NPS, land use, and watershed management.

- National Pollutant Discharge Elimination Systems (NPDES) Program. The NPDES program is administered by SWRCB and RWQCBs under the supervision of the US Environmental Protection Agency (EPA). NPDES discharges can be permitted with an individual permit or covered under a general permit. Individual Permits are completed to address specific design and applicable water quality standards to an individual facility while General Permits authorize a category of discharges within a geographical area. The majority of construction sites and industrial facilities that discharge storm water are permitted under general NPDES permits. In California the General NPDES Permit for construction activities that disturb one or more acres (Order No. 99-08-DWQ, General Permit No CAS 000002) requires a Notice of Intent (NOI) to be filed with the SWRCB. Discharges are required to:

    - Develop and implement an adequate Storm Water Pollution Prevention Plan (SWPPP) with Best Management Practices (BMPs) that prevent all construction pollutants from contacting storm water and with the intent of keeping all products of erosion from moving off site into receiving waters;

    - Eliminate or reduce non-storm water discharges to storm sewer systems and other waters of the US; and

    - Perform inspections of all BMPs.

- The General NPDES Permit for discharges associated with industrial storm water (Order No. 97-03-DWQ, General Permit No. CAS 000001) regulates storm water associated with industrial activity that discharges either directly to surface waters or indirectly through municipal separate storm sewers. Industrial facilities include Federal, State, municipally-owned, and private facilities from the following categories: 1) facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards; 2) manufacturing facilities; 3) oil and gas/mining facilities; 4) hazardous waste treatment, storage, or disposal facilities; 5) landfills, land application sites, and open dumps; 6) recycling facilities; 7)

steam electric power generating facilities; 8) transportation facilities; 9) sewage or wastewater treatment works; and 10) manufacturing facilities where industrial materials, equipment, or activities are exposed to storm water.

- Wastewater Discharges to Land. Discharges of wastewater to land are commonly called "Non-Chapter 15" or "Non-15" discharges, in reference to the group of wastes excluded from the full containment, prescriptive requirements of Chapter 15/Title 27 California Code of Regulations (CCR) that apply to hazardous, designated, and other wastes.

- Central Coast Ambient Monitoring Program (CCAMP). This is the Central Coast Regional Water Quality Control Board's regionally-scaled water quality monitoring and assessment program. CCAMP is primarily funded by the State Water Board Surface Water Ambient Monitoring Program and by a private endowment held with the Bay Foundation of Morro Bay. The CCAMP mission is to collect, assess, and disseminate scientifically-based water quality information to aid decision makers and the public in maintaining, restoring, and enhancing water quality and associated beneficial uses.

- Storm Water Program. There are two major components to the storm water program: the municipal program and the industrial program. Phase I of the municipal program involves urbanized areas of 100,000 or more population and requires the Regional Board to adopt permits for their discharges. Currently Salinas is the only area with permits in the Central Coast region. Phase II of the municipal program involves smaller cities and urban areas and requires these municipalities to develop and implement programs to minimize the impact of urbanization on water quality. The City of Hollister is currently participating in Phase II of this program.

- Total Maximum Daily Load (TMDL). Section 303(d) of the Federal Clean Water Act requires the Regional Boards to submit lists of impaired water bodies to USEPA. Load reduction plans, called Total Maximum Daily Loads or TMDLs, are required to be developed for all listed water bodies. The requirements for TMDLs are consistent with responsibilities for protecting water quality under State law. The elements of a TMDL include a problem statement, numeric target, source analysis, allocations, description of how allocations relate to meeting targets, margin of safety, and an implementation plan, including monitoring.

- Underground Storage Tanks (UST). The UST unit provides oversight of the investigation and cleanup of some of the UST sites where unauthorized releases of petroleum and other hazardous substances have occurred. The UST unit provides comments and guidance to the local agencies that oversee the investigations and cleanup of UST sites where unauthorized releases of petroleum have occurred in their jurisdictions.

- Watershed Management. Watershed Management involves the development of watershed-wide programs to protect water quality. The main premise of the Watershed Management program is that Regional Board actions and decisions should be guided by consideration of water quality related impacts within the context of a watershed.

- Salt and Nutrient Management. The collapse of the Bay-Delta ecosystem, climate change, and continuing population growth have prompted the SWRCB to recently issue a Recycled Water Policy. The policy encourages water recycling with the stated goals of increasing recycled water use by at least one million AF per year (AFY) by 2020 and by at least two million AFY by 2030,

and substituting as much recycled water for potable water as possible by 2030. The SWRCB is also encouraging every region in California to develop a salt/nutrient management plan by 2014. Because each groundwater basin or watershed is unique, the plan detail and complexity will depend on the extent of local salt and nutrient problems. Plan components include basin-wide water quality monitoring, water recycling goals and objectives, salt and nutrient source identification, basin loading/assimilative capacity estimates, salt mitigation strategies, anti-degradation analysis, and emerging constituents consideration (e.g., pharmaceuticals, personal care products, endocrine disruptors).

### *State Groundwater Supply Permitting and Water Resource Verification – Title 23 Department of Public Health*

Public Water System water sources have to be permitted by the California Department of Public Health (CDPH). The CDPH has authority over all Public Water Systems. As part of the March 2008 update to CCR Title 23 California regulations related to drinking water, Chapter 16 Waterworks Standards § 64554 (e) (3) (13), a "written description of the aquifer's annual recharge," shall be provided if requested. In order to determine the recharge to an aquifer the following information is needed:

- The size of the groundwater basin, with a clear understanding of basin boundaries;
- The recharge area of the basin;
- The rate of recharge to groundwater; and
- The source of groundwater recharge.

## Local Regulatory Setting

### *San Benito County Water District*

The portion of the Hollister-Gilroy groundwater basin within the county is managed by the San Benito County Water District (SBCWD). The District Act, passed by the State Legislature in 1953, established SBCWD and provided formal responsibility for the management of surface and groundwater resources and flood control in the county. SBCWD is responsible for permitting groundwater wells, monitoring groundwater use and levels, and the importation and distribution of CVP water throughout the northern portion of the county. SBCWD is active in regional water management planning, including the Pajaro Watershed Integrated Regional Water Management Plan with Santa Clara Valley Water District and Pajaro Valley Water Management Agency. It also collaborated with the City of Hollister and Sunnyslope County Water District to prepare the Hollister Area UWMP. SBCWD also has active programs, often in cooperation with other agencies, to conduct various investigations and promote water conservation, irrigation efficiency, salt management, and water recycling. SBCWD is the designated Enforcing Agency for the inspection and enforcement of water related ordinances, as defined in County Code §15.05. SBCWD produces annual groundwater reports summarizing their activities.

### *Local Groundwater Management Plan*

A groundwater management plan for the San Benito County portion of the Hollister-Gilroy groundwater basin was prepared in 1998 through a collaborative effort among the Aromas Water District, the City of Hollister, the City of San Juan Bautista, SBCWD, Sunnyslope County Water District, Tres Pinos County Water District, Granite Rock Company, San Benito County, San Benito County Builders and Developers Association, San Benito County Farm Bureau, and the Sierra Club (Jones & Stokes 1998). The plan was

updated and superseded in 2003 by the Groundwater Management Plan Update prepared by the Water Resources Association of San Benito County (Kennedy/Jenks 2003). The Water Resources Association of San Benito County was formed by the City of Hollister, the City of San Juan Bautista, SBCWD, and Sunnyslope County Water District. The purpose of the plan is to maintain and enhance the agricultural and economic productivity of San Benito County in an environmentally responsible manner. The plan presents specific objectives and criteria for water quantity and quality and identifies and evaluates potential projects that can be implemented to meet the objectives.

## Major Findings

- The San Benito River is the largest tributary in the county. The river flows from south to north across the county and discharges into the Pajaro River. The Hollister Valley, situated in the northern part of the county and drained by the San Benito and Pajaro Rivers, is the location of most of the county's agriculture and its urban areas, including the cities of Hollister and San Juan Bautista.

- The San Benito County Water District operates two reservoirs, Hernandez and Paicines, along the San Benito River for flood control and water conservation. These reservoirs are specifically used to store water in order for the District to manage water releases to downstream surface and groundwater recharge areas.

- There are portions of 12 ground water basins in the county that provide water for municipal, agricultural (including limited domestic and livestock), and industrial uses.

- Most groundwater production and use in the county occurs in the Gilroy-Hollister groundwater basin. This basin, composed of alluvial deposits, is characterized by variable aquifer properties and by both unconfined (water table) and confined conditions. The basin has been subdivided into subbasins based on a combination of infrastructure, political boundaries, major roads, and geologic structures.

- Most local groundwater in the county is mineralized and of marginal quality for either drinking or agriculture. This is because of both natural conditions and the effects of agricultural activities and urbanization. SBCWD, water purveyors, and other agencies are currently (2010) examining ways to improve groundwater quality with respect to general mineral constituents, such as total dissolved solids, hardness, chloride, boron, and nitrate.

- County groundwater levels were documented at a historic high in 1913 before much groundwater production began. Groundwater levels declined as agricultural and urban pumping increased during the early 20$^{th}$ century, and reached historic lows during the drought in the late 1970s. Subsequently, groundwater levels have recovered in the county as a result of SBCWD recharge activities and the increased use of CVP water in Zone 6 in lieu of groundwater.

## Existing Conditions

San Benito County is located in the Coast Ranges of central California and covers approximately 1,400 square miles. Most of the population is located in the northern part of the county in the Hollister Valley, which is an approximately 100 square mile valley situated between the Diablo Range to the east and the Gabilan Range to the south (Figure 8-1). The elevation of the valley floor is approximately 140 feet

above mean sea level (msl) near the Pajaro River and rises to more than 400 feet msl at the eastern and southern portions of the valley. An outcrop of consolidated sedimentary units, referred to as the Lomerias Muertas and Flint Hills, rises up to 1,000 feet above the valley floor at the highest point and bifurcates the valley into northern and southern areas. The surrounding uplands to the east separate the Hollister Valley from the larger San Joaquin Valley and reach elevations in excess of 3,500 feet msl. Elevations in the Gabilan Range exceed 3,000 feet msl.

The valley covers a portion of the Pajaro River watershed and is drained by tributaries of the Pajaro River. The southern valley is drained by the San Benito River, which joins the Pajaro at the southwestern basin boundary, south of Lomerias Muertas. The northern valley is drained by smaller tributaries of the Pajaro River including Santa Ana Creek, Arroyo de las Viboras, and Arroyo Dos Picachos, all of which drain into Tequisquita Slough upstream of the Pajaro River. Pacheco Creek is the northernmost drainage in the valley and flows into the Pajaro River at the northwestern end of the county boundary.

Agriculture is the predominant land use in the county. Urban areas are clustered in the southern portion of Hollister Valley and include the cities of Hollister and San Juan Bautista. New areas of development can be seen by the urban acreage northeast of the city of Hollister. Urban areas cover approximately 22 percent of the Hollister Valley. The remaining acreage is predominantly agriculture with approximately 63 percent of the land area used for crops. The southern part of county has historically been home to cattle ranching and mining, including mercury mining that took place in New Idria until the 1970s.

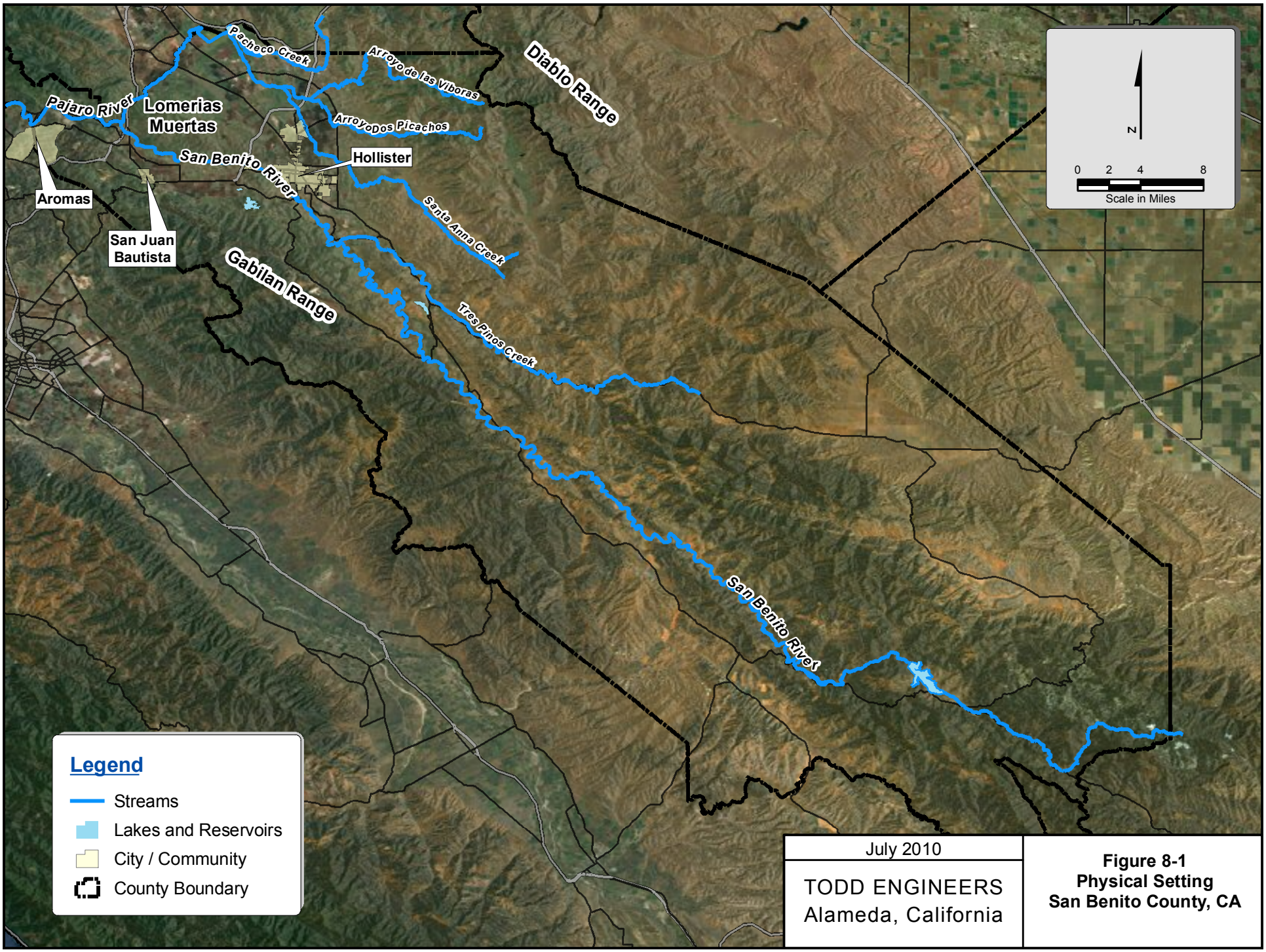
## Annual Precipitation

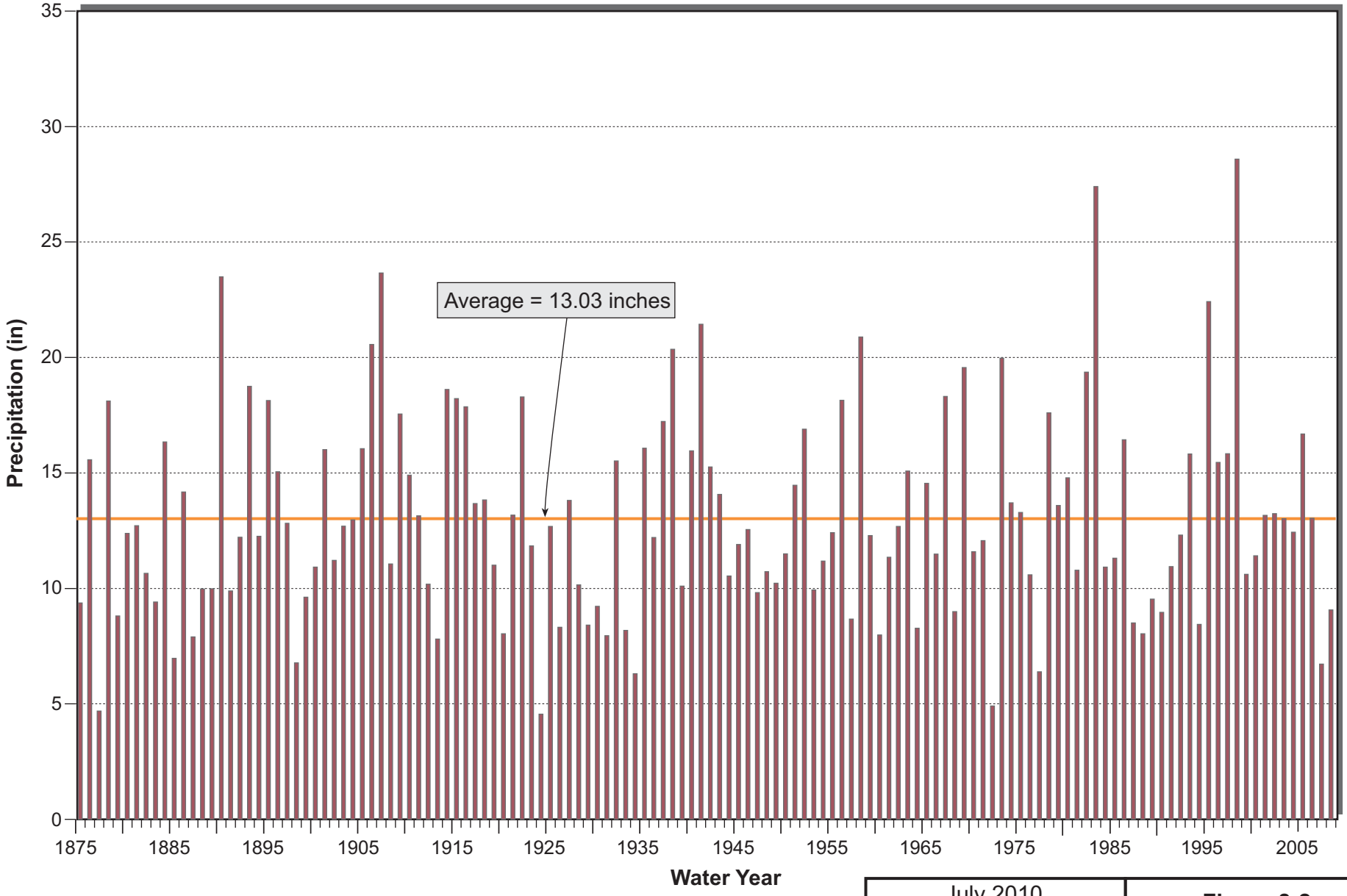
San Benito County has a moderate California coastal climate with a hot and dry summer season typically lasting from May through October. Average annual rainfall ranges from seven inches in the drier eastern portion of the county to 27 inches per year in high elevations to the south. Hollister, some 30 miles inland from the coast and separated from it by a low mountain pass, receives on average approximately 13 inches of rainfall annually. Figure 8-2 shows annual rainfall in Hollister from 1875 to 2008. Snowfalls in the mountains are infrequent and relatively light. A comparatively long growing season of 265 days or more prevails, and year-round cropping is practiced to some extent. The county has a high percentage of sunny days, particularly in summer. Most of the annual rainfall occurs in the fall, winter, and to a lesser extent spring, generally between November and April. As a result, agricultural operations require significant irrigation during summer months.

## Surface Water Resources

As shown in Figure 8-1, the San Benito River runs northward through the county and joins the Pajaro River near Chittenden Gap in the northwest. The river is dry most of the year, flowing mainly during wet winter conditions. The drainage for the river is over 600 square miles. Local surface water from the San Benito River is captured and stored in two reservoirs. These reservoirs are operated by SBCWD for flood control and to recharge downstream areas. Figure 8-3 shows the volume of water released for percolation. The available water for percolation is dependent on hydrologic conditions, in particular how much rain fall in a given year. Historically, controlled percolation of surplus CVP water and/or local surface water to the groundwater aquifer was managed by SBCWD in Pacheco Creek, Arroyo De Las Viboras, Arroyo Dos Picachos, Santa Ana Creek, San Benito River, and Tres Pinos Creek.

The Pajaro River forms the northern boundary of San Benito County. This watershed covers approximately 1,300 square miles and part of four different counties. Flow in the river is controlled by Pacheco Pass Dam operated by Pacheco Pass Water District.

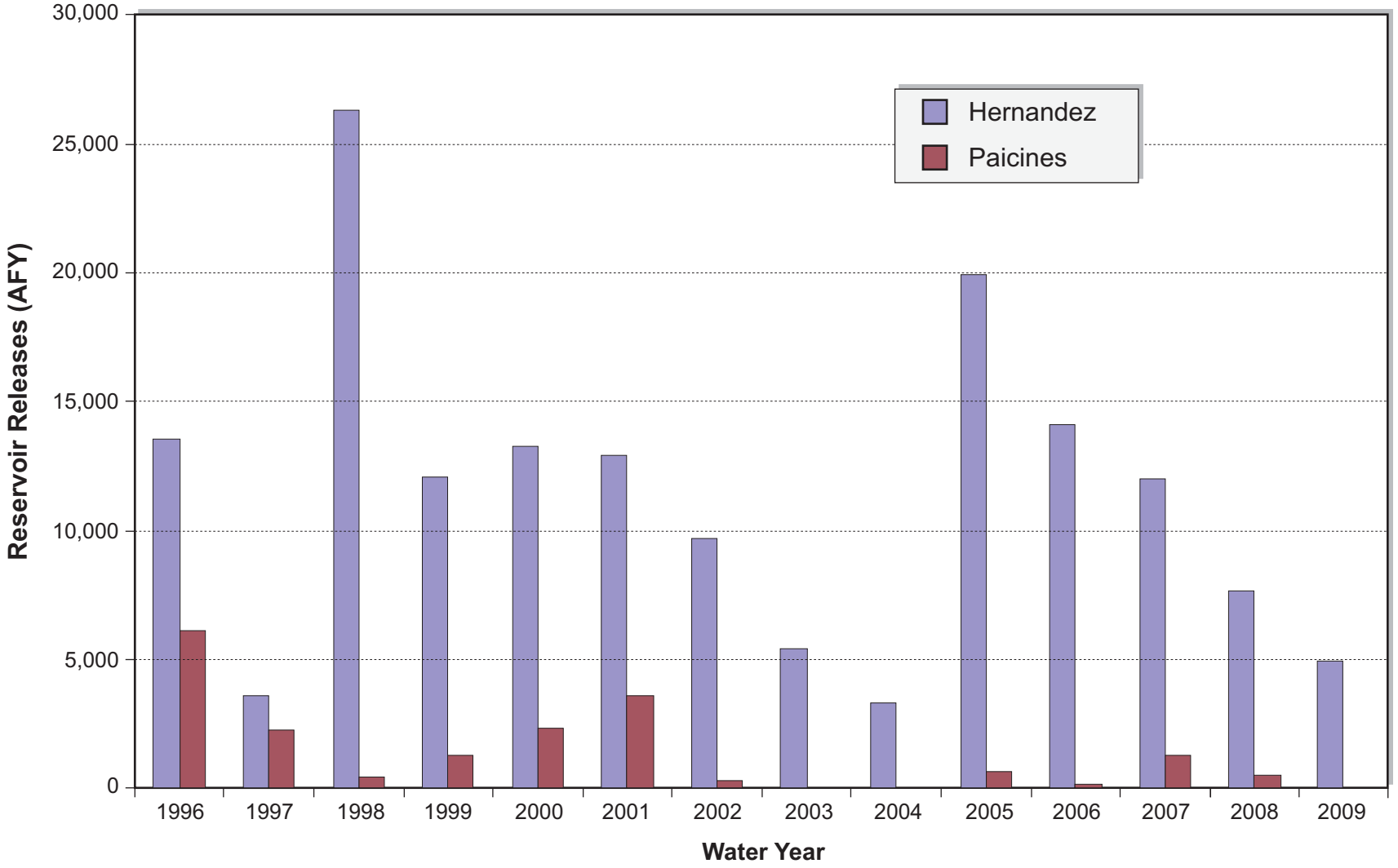

Pacheco Creek
Arroyo de las Viboras
Diablo Range
Pajaro River
Lomerias Muertas
Arroyo Dos Picachos
San Benito River
Hollister
Aromas
San Juan Bautista
Santa Anna Creek
Gabilan Range
Tres Pinos Creek
San Benito River
N
0 2 4 8
Scale in Miles
Legend
Streams
Lakes and Reservoirs
City / Community
County Boundary
July 2010
TODD ENGINEERS
Alameda, California
Figure 8-1
Physical Setting
San Benito County, CA




July 2010

TODD ENGINEERS
Alameda, California

**Figure 8-2**
**Annual Precipitation**
**Hollister**
**1875-2008**




| | |
|---|---|
| July 2010 | **Figure 8-3** |
| TODD ENGINEERS<br>Alameda, California | **Reservoir Releases for Percolation** |

There are currently (2010) five active USGS stream gauges in the county, located on the Pajaro River, San Benito River, Tres Pinos Creek, and Clear Creek. Smaller creeks in the county that have not been or are no longer monitored include Arroyo Dos Picachos, Arroyo Los Viboras, and Santa Ana Creek in the Hollister Valley area, Pacheco Creek in the northern part of the county, Willow Creek and Pescadero Creek in the western part of the county, and Panoche Creek in the eastern part of the county.

## Groundwater Resources

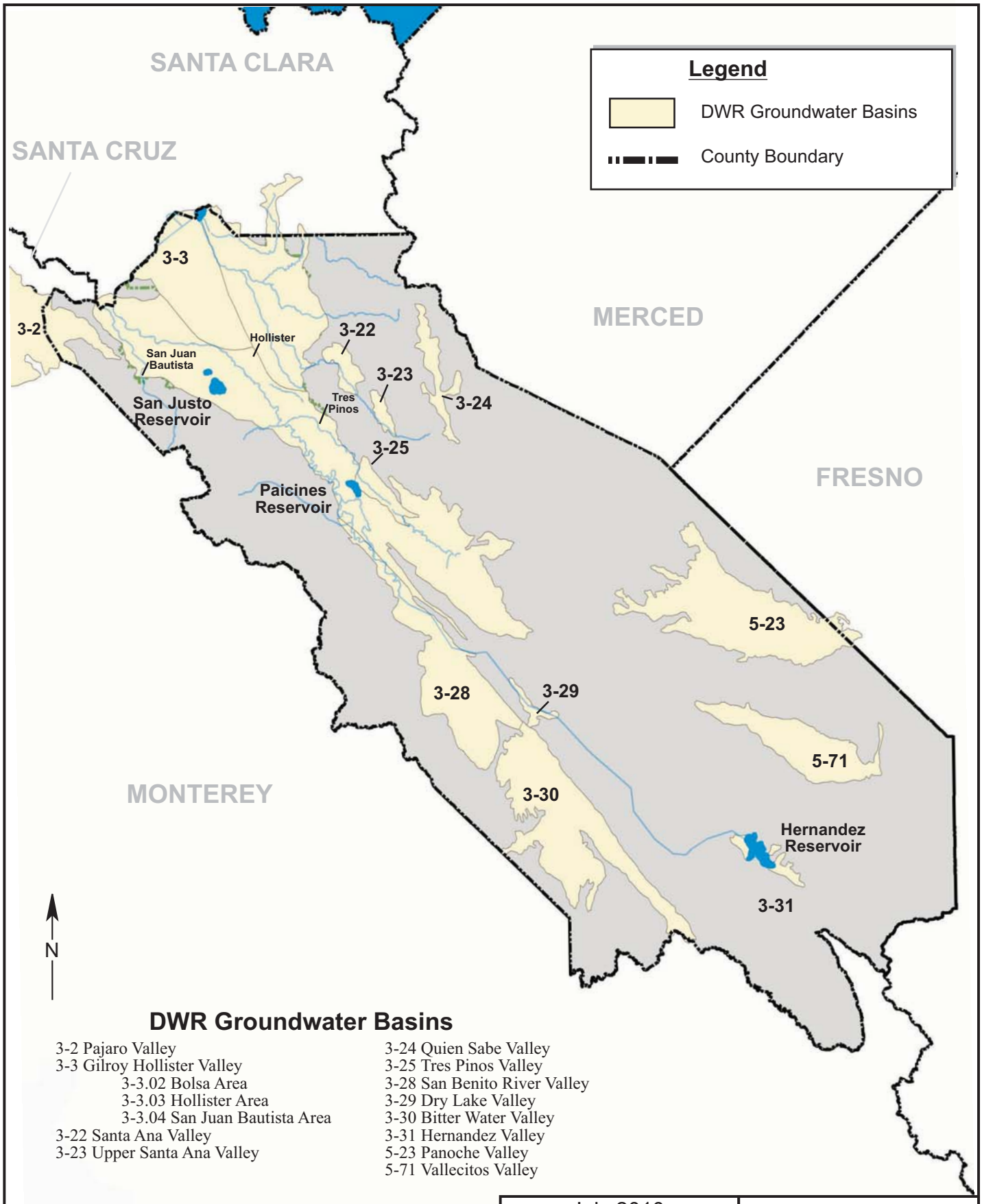
Groundwater is the major source of water supply in San Benito County. Groundwater is generally available throughout the county for limited domestic and livestock supplies. The county includes all or portions of 12 groundwater basins (as defined by DWR, see Figure 8-4) where groundwater is more readily available. The groundwater basins drain northward as part of the San Benito River and Pajaro River systems, with the exception of Bitter Water Valley, which drains generally south to the Salinas River Valley, and Panoche and Vallecitos Valleys, which drain to the east toward the San Joaquin River.

Most groundwater production occurs in the northern part of San Benito County in the Gilroy-Hollister groundwater basin. While the amount of groundwater used in other basins is unknown, it is assumed to be limited to domestic and small irrigation use. For management purposes the basin is divided into nine groundwater subbasins (Figure 8-5). These subbasins were originally delineated in 1996 as part of that year's annual report. The subbasins are referred to as Bolsa, Bolsa Southeast, Pacheco, Northern and Southern Hollister East, Tres Pinos, Hollister West, and San Juan subbasins. The Llagas subbasin is within the Gilroy-Hollister groundwater basin but in Santa Clara County. These subbasin boundaries are based on a combination of infrastructure (CVP subsystems), political boundaries, major roads, and geologic structures (faults).

### Hydrogeologic Setting

The Gilroy-Hollister groundwater basin is the primary geologic feature relating to water resources and encompasses most of the northern portion of the county. This basin lies within the Coast Ranges of California, which are a series of elongated ranges and valleys with a predominantly northwesterly trend. The Hollister Valley's origin and shape has been controlled by folding and faulting of basement rocks in the area, resulting in low-lying areas that have been infilled with unconsolidated to poorly consolidated alluvium of Tertiary and Quaternary age. The Quaternary alluvial deposits compose the valley floor and generally define the groundwater basin. Numerous investigators have recognized the difficulty in describing the subsurface stratigraphy of the basin, due in part to sparse geophysical log data and a lack of distinctive textures and composition among the sedimentary units.

Major geologic faults, including the San Andreas and Calaveras faults, cut through the area disrupting rock units and shaping the valley. The San Andreas fault is a major structural feature in California with a trace of more than 740 miles, separating distinct crustal blocks. Numerous additional faults that are related to the San Andreas system have been mapped in the area and trend parallel or subparallel to the San Andreas fault trace. Of these, the Calaveras fault is the most extensively mapped. It branches off of the San Andreas south of Hollister and is responsible for offset curbs and sidewalks in and near downtown. The trace trends north-northwest from Hollister to the Pajaro River at San Felipe Lake, separating the northern valley into two distinct geologic units at depth. The fault is also thought to impact groundwater flow locally, perhaps due to the presence of low permeability rock fragments and blocks displaced upward and adjacent to more permeable alluvial material along the fault zone.




## DWR Groundwater Basins

3-2 Pajaro Valley
3-3 Gilroy Hollister Valley
- 3-3.02 Bolsa Area
- 3-3.03 Hollister Area
- 3-3.04 San Juan Bautista Area

3-22 Santa Ana Valley
3-23 Upper Santa Ana Valley
3-24 Quien Sabe Valley
3-25 Tres Pinos Valley
3-28 San Benito River Valley
3-29 Dry Lake Valley
3-30 Bitter Water Valley
3-31 Hernandez Valley
5-23 Panoche Valley
5-71 Vallecitos Valley

July 2010

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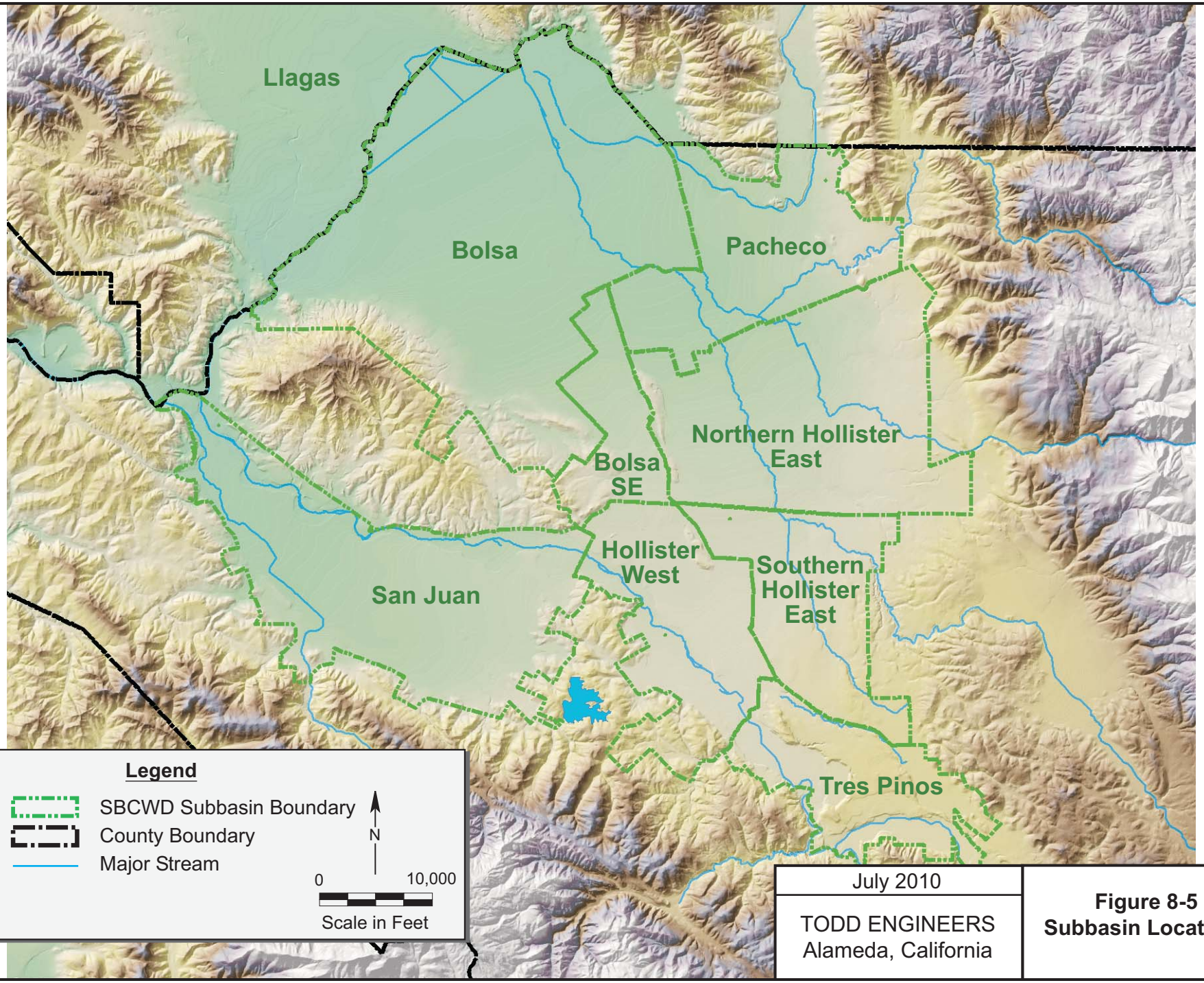
Alameda, California

**Figure 8-4**
**Groundwater Basins in San Benito County**




July 2010

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**Figure 8-5**
**Subbasin Locations**

Other faults related to the San Andreas system, such as the Ausaymas, Quien Sabe, and Santa Ana faults, have shaped the eastern side of the basin. Although some of these faults have been mapped in the outcropping bedrock, fault traces across the valley floor are unknown. Linear-trending groundwater quality changes in this area may be associated with some of these faults or related faults.

The Quaternary-age alluvium contains the main aquifers in the groundwater basin. The aquifers are the coarse-grain layers of sands and gravels with interbedded layers of silts and clays. The geometry of the basin suggests that basin-fill units were deposited in alluvial fan and fluvial environments from a variety of source rocks and directions. These deposits interfinger in the subsurface, making the differentiation of discrete aquifer packages difficult on a regional basis. This also results in variable aquifer properties across the basin. Previous investigators indicate wide variability in aquifer transmissivities. Although poorly defined, regional variations in permeability likely create preferential pathways for groundwater, especially in paleo-channel deposits, which may exist beneath current major stream courses or elsewhere in the basin.

Groundwater generally occurs under unconfined and confined conditions. Surficial clay deposits, especially in the Bolsa and San Juan Valley subbasins, create confining layers. These layers created artesian conditions historically and water in wells flowed to the surface. A 1924 USGS study delineated a 25-square mile area of artesian flow in the Bolsa subbasin. Since about 1945 groundwater extraction has lowered the water table in these areas, but artesian conditions are still observed.

## Groundwater Water Quality

The quality of groundwater in the Gilroy-Hollister groundwater basin is highly mineralized and of marginal quality for drinking and agricultural purposes. The mineralized water quality is typical of other relatively small Coast Range groundwater basins, but has also been impacted by decades of human-related activities, both agricultural and urban.

Chemicals of concern (COCs) for the Gilroy-Hollister groundwater basin include boron, chloride, hardness, nitrate, and total dissolved solids (TDS) and are important indicators of basin water quality. In some parts of the basin, these COCs do not meet water quality standards necessary to support beneficial uses of water resources. SBCWD, water purveyors, and other agencies are examining ways to improve quality in these localized areas. In addition to the historical COCs, current operations by regulated facilities have introduced new local COCs including perchlorate, metals, and volatile organic chemicals. All areas where these COCs have been discovered are regulated by the RWQCB.

Water quality has remained stable in recent years in most areas in the basin. Other areas, such as the eastern portion of the San Juan subbasin, have shown variable but increasing trends in key constituents like nitrate and chloride. This localized change in water quality results from local factors including nearby regulated facilities, land use changes, and high groundwater levels. TDS, nitrate, and chloride are considered key COCs. These three constituents vary both over time and space in the basin and indicate general trends in basin water quality.

## Groundwater Levels

In general, groundwater in the basin flows from the southeast and eastern portions of the basin toward the western and northwestern portions of the basin to the Pajaro River. However, general flow

directions have been reversed in the Bolsa subbasin due to groundwater pumping. Groundwater in the Bolsa subbasin near the Pajaro River flows southeast toward lower water levels.

Groundwater levels have been recorded in the basin since at least 1913 by various agencies including the U.S. Bureau of Reclamation (USBR), DWR, Pacheco Pass Water District, San Benito County, University of California Cooperative Extension, and USGS. During an evaluation of groundwater supply in the area, USGS recorded water levels in more than 300 wells in the groundwater basin from 1913 to 1915. Helley (1967) presented then-current water level measurements for approximately 92 wells, as well as historical water levels for wells dating back to 1937. Kilburn (1972) mapped the 1913 levels of Clark and presented 1968 water levels. The water level monitoring network of wells was updated by USGS in 1981 to include levels in about 100 basin wells. Since that time SBCWD has monitored water levels in approximately 80 to 100 wells on a semiannual and, more recently, a quarterly basis. Water levels and trends are presented in SBCWD annual reports.

Effects of geologic faults on groundwater levels have been documented by numerous investigators, including Kilburn (1972), Luhdorff and Scalmanini (1991), and Todd (1994). Water level changes across the Calaveras fault have been the focus of most of the analyses, but water level changes across some of the minor faults have also been observed. Water level impacts across the Calaveras fault are thought to be due to rock fragments and clay creating a low permeability zone along the fault. Groundwater flowing from east to west across the fault is impeded by the lower permeability and "backs up" on the eastern side of the trace. The effects on water levels are thought to be more significant along the southeastern portion and less significant along the northwestern portion of the fault.

Water levels over time have varied in response to varying precipitation, groundwater pumping, and artificial recharge conditions. Water levels are estimated to have been at historic highs prior to 1913 (i.e., before development of groundwater pumping). In drought conditions of the late 1970s, water levels in some areas had declined more than 150 feet from the estimated highs. With the exception of a few areas of persistent water level lows, by 1998 groundwater levels had recovered close to the historic highs as a result of decreased pumping (following CVP importation), increased precipitation, and artificial recharge. Water levels in wells typically fluctuate 5 to 15 feet on a seasonal basis except in the Bolsa subbasin where water levels in confined aquifers have seasonal fluctuations of 30 to 40 feet.

# SECTION 8.2 ENERGY AND MINERAL RESOURCES

## Introduction

This section provides a description of the existing (2010) energy and mineral resources found and consumed within San Benito County. Energy and mineral resources are important natural resources that support the expansion of the region's economic base, its agricultural sector, available developable land, its utility base, and infrastructure capacity.

The energy resources assessment included in this section is based on reviews of available energy reports from the California Energy Commission (CEC), the Energy Information Administration (EIA), and California Department of Conservation from 1990 through 2009. The mineral resources evaluation is based on the California Department of Conservation's open-file report 99-01, Mineral Land Classification of the Monterey Bay Production–Consumption Area.

## Key Terms

**Aggregate.** A resource composed of sand, gravel, and crushed stone used in the construction of buildings, roads, and other structures and facilities.

**British thermal unit (Btu).** The quantity of heat required to raise the temperature of one pound of liquid water by one degree Fahrenheit at the temperature at which water has its greatest density.

**Energy Resources**. Sources of electricity and natural gas. Electrical generation may come from natural gas, biomass, hydroelectric plants, solar, or wind.

**Gigawatthours (GWh).** A unit of measurement for electricity equal to one thousand megawattwatt hours or one billion watt hours.

**Kilowatthours (kWh).** A unit of measurement for electricity equal to one thousand watt hours.

**Megawatthours (MWh).** A unit of measurement for electricity equal to one thousand kilowattwatt hours or one million watt hours.

**Mineral Deposit**. A mass of naturally occurring mineral material, such as metal ores or nonmetallic mineral, usually of economic value. The mineral material may be of value for its chemical and/or physical characteristics.

**Permitted Reserve**. The part of a reserve that has approval by a lead agency for mineral extraction, the absence of which would preclude surface mining operations.

**Resources.** A concentration of naturally occurring solid, liquid, or gaseous material in or on the earth's crust in a location and in such an amount that economic extraction of the commodity is feasible. Typical materials with economic value include gold, precious metals, and materials used in construction, such as sand, gravel, and clay.

**Reserve.** The part of the resource base that can be economically extracted or produced in the foreseeable future. The term reserve does not imply that extraction facilities are in place and operational.

**Serpentine Mineral.** A common group of minerals consisting of hydrous sheet silicates. Serpentine minerals are commonly found as alteration products of olivine, pyroxene, and amphibole.

**Serpentinite.** A rock composed mainly of serpentine minerals.

## Regulatory Setting

Under the requirements of the California Public Resources Code, the California Energy Commission in conjunction with the California Department of Conservation (DOC) Division of Oil, Gas, and Geothermal Resources is required to assess electricity and natural gas resources on an annual basis or as necessary. A complex network of Federal and State regulations govern energy and mining operations. Major regulations and policies pertaining to energy planning and conservation programs, and mineral resources, are summarized below.

## Federal

**Federal Energy Regulatory Commission (FERC).** FERC is an independent agency that regulates the interstate transmission of electricity, natural gas, and oil. FERC also reviews proposals to build liquefied natural gas (LNG) terminals and interstate natural gas pipelines, and licenses hydropower projects. Licensing of hydroelectric under the authority of FERC includes input from State and Federal energy, environmental protection, fish and wildlife, and water quality agencies. The California Energy Commission's Systems Assessment and Facilities Siting Division provides coordination to ensure that needed energy facilities are authorized in an expeditious, safe, and environmentally-acceptable manner.

## State

**California Energy Commission.** CEC is California's primary energy policy and planning agency. Created by the California Legislature in 1974, CEC has five major responsibilities: 1) forecasting future energy needs and keeping historical energy data; 2) licensing thermal power plants 50 MW or larger; 3) promoting energy efficiency through appliance and building standards; 4) developing energy technologies and supporting renewable energy; and 5) planning for and directing state response to energy emergencies. Under the requirements of the California Public Resources Code, CEC, in conjunction with the California Department of Conservation Division of Oil, Gas, and Geothermal Resources is required to assess electricity and natural gas resources on an annual basis or as necessary.

**Surface Mining and Reclamation Act (SMARA) of 1975**. The California Public Resource Code, Division 2-Geology, Mines and Mining, Chapter 9-The California Surface Mining and Reclamation Act (SMARA) of 1975 mandates that the State Board of Mining and Geology Board (SMGB) and Division of Mines and Geology (SMGB or DMG) prepare a mineral resource report for each county. SMARA additionally regulates the permitting of mining operations, provides for inspections during the life of the mine, and contains provisions to ensure that remediation occurs after completion of mining operations. SMARA is administered by the California Department of Conservation, Office of Mine Reclamation (OMR). SMARA requires cooperative efforts from the California Geological Survey (CGS) and the SMGB to identify and classify mineral areas in the state.

The CGS classifies mineral resources in one of four Mineral Resource Zones (MRZ) or as a Scientific Zone (SZ), as described in Table 8-1. Resources of specific significance can be designated by SMGB as having regional or statewide significance.

| TABLE 8-1<br>MINERAL RESOURCE ZONE DEFINITIONS<br><br>Statewide<br>2010 | |
|---|---|
| **Mineral Resource Zone** | **Description** |
| MRZ-1 | Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence. |
| MRZ-2 | Areas where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists. |
| MRZ-3 | Areas containing mineral deposits, the significance of which cannot be evaluated from available data. |
| MRZ-4 | Areas where available information is inadequate for assignment to any other MRZ zone. |
| SZ | Areas containing unique or rare occurrences of rocks, minerals, or fossils that are of outstanding scientific significance shall be classified in this zone. |

*Source: Guidelines, Title 14, California Administrative Code, Chapter 8, Subchapter 1, Article II, Section (2).*

**Electric Utility Industry Restructuring Act of 1998 (AB 1890).** Initially intended to deregulate the provision of electric utilities to encourage competition, the act primarily focused on public benefits/public goods programs. These programs fund energy efficiency programs and development of renewable resources in the form of rebates, low-income assistance, and research and development programs.

**Energy Action Plan (2003).** In 2003 California adopted an energy action plan that focuses on energy efficiency as the primary way in which the state would meet its future energy needs.

**Energy Efficiency Act of 2006 (AB 2021).** This bill encourages all investor-owned and municipal utilities to aggressively invest in all achievable, cost-effective energy efficiency programs in their service territories. The results of this bill are expected to reduce forecasted electricity demand by 10 percent over ten years from 2006 through 2016, offsetting the projected need to build 11 new major power plants.

**Renewables Portfolio Standard (RPS) (CA Public Utilities Code Section 399.11 et seq., and Public Resources Code Section 25740 et seq.).** Effective January 1, 2003, the California Legislature mandated an increase in the percentage of renewable retail electricity sales by publicly regulated electrical utilities by at least one percent per year, to reach at least 20 percent by the end of 2010 and 33 percent by the end of 2020.

Collectively, California's three largest service providers served 12.7 percent of their 2007 retail electricity sales with renewable power, with PG&E delivering 11.4 percent renewable electricity sales, Southern California Edison delivering 15.7 percent renewable electricity sales, and San Diego Gas and Electric delivering 5.2 percent renewable electricity sales. Table 8-2 presents a breakdown of 2007 renewable energy sales within the State by resource type (CEC 2008).

| TABLE 8-2<br>RENEWABLE ENERGY SALES<br><br>California<br>2008 | |
|---|---|
| **Resource Type** | **Percentage of Renewable Energy Sales** |
| Geothermal | 47.93% |
| Wind | 19.04% |
| Biomass | 14.32% |
| Hydro Electric | 11.12% |
| Biogas | 4.73% |
| Solar | 2.86% |
| TOTAL | 100.00% |

*Source: California Energy Commission, 2008.*

**Executive Order S-06-06.** This Executive Order calls out the benefits and potential of bioenergy in helping meet the future needs of the State for clean, renewable power, fuels, and hydrogen. By 2010 it calls for the production of 20 percent of biofuels in California, an increase of this amount to 40 percent by 2020, and to 75 percent by 2050. It also aims to produce 20 percent of the renewable electricity generated from biomass resources within the state by 2010. This bioenergy action plan is tasked by the CEC through the California Biomass Collaborative to prepare a roadmap for biomass research and development.

**Executive Order S-14-08.** This Executive Order established the goal of reaching 33 percent of renewable retail electricity sales by publicly related electrical utilities by 2020. It was signed to streamline the renewable energy project approval process and to increase the State's Renewable Portfolio Standard. In other words, it increases the development of renewable electricity sources, energy efficiency, and demand response needed to increase the state's renewable portfolio and meet GHG emission reduction goals by 2050.

**Executive Order S-21-09.** Executive Order S-21-09 increases California's Renewable Portfolio Standard (RPS) to 33 percent by 2020, which was first established by EO S-14-08. It allows the Air Resources Board (ARB) and other agencies such as the Public Utilities Commission (PUC) and California Energy Commission to ensure that regulations are adopted that consider approaches that achieve AB 32 and S-14-08.

**Senate Bill 375 (2008).** SB 375, signed into law on September 30, 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation in an effort to reduce energy consumption. SB 375 requires Metropolitan Planning Organizations (MPO) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS), which will prescribe land use allocation in that MPO's Regional Transportation Plan (RTP). CARB, in consultation with MPOs, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years, but

can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's SCS or APS for consistency with assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects would not be eligible for funding programmed after January 1, 2012.

## Local

### *San Benito County General Plan*

The following oil, gas, and energy resource-related policies, objectives, and actions are from the Existing General Plan Open Space and Conservation Element. The Environmental Resources and Constraints Inventory maps significant aggregate mineral resources in northern San Benito County as required by the Surface Mining and Reclamation Act. These maps are available from the County's Building and Planning Department.

**Open Space and Conservation Element (1995)**

**Policy 20.** Significant mineral resources

It is the policy of the County to recognize areas classified Mineral Resource Zone 2 (MRZ-2) or Scientific Zone (SZ) pursuant to the Guidelines for Classification and Designation of Mineral Lands as mineral resources of statewide and regional significance. Strategies shall be developed to protect these mineral resources from premature development incompatible with mining.

**Actions**

1. Implement existing "MR" zoning on selected mineral resource areas determined by the Board of Supervisors to require a special level of protection as an additional method of avoiding land use conflicts between mineral extraction and other incompatible uses with the following criteria:

    a. Lands classified as MRZ-2 or SZ by the State of California Division of Mines and Geology qualify for the "MR" zoning designation, and/or;

    b. Evidence of the location, extent, and depth, and quality of mineral resources shall be submitted as part of the MR overlay zoning application. The material shall be reviewed by a geologist selected by the County for accuracy.

    c. Deny MR overlay zoning requests that do not provide evidence of significant mineral resources on site.

2. Review the General Plan Land Use map in significant mineral resource areas to identify potential land use conflicts.

3. Allow the use of voluntary conservation easements on mineral lands and contiguous properties to protect significant resources.

4. A notice explaining the location of important mineral resources shall be recorded on any parcel within a MRZ2 or SZ designation or within one-half mile.

**Policy 21.** Limit adverse effects of mining on infrastructure

The structural integrity and hydraulic capacity of bridges, pipelines, or other structures in the river shall not be affected by new or expanding sand and gravel mining operations in the floodplain of the San Benito River or Tres Pinos Creek.

**Actions**

1. A hydrologic report shall be prepared to evaluate the up- and down-stream effects of the proposed mining expansion or new operation on structures in the river.

2. A sedimentation budget shall be prepared for mining operations.

**Policy 22.** Reclamation for mining

Require mining operators to implement reclamation programs to restore land for alternative uses consistent with the General Plan Land Use Map, policies for wildlife, flood, and erosion, and the Surface Mining and Reclamation Act of 1975 with amendments.

**Actions**

1. Reclamation plans shall be prepared for all surface mining operations in conformance with the Surface Mining Reclamation Act and subsequent amendments, and the San Benito River Landscaping Guidelines.

2. Residual hazards from mining operations to the public health and safety shall be eliminated by the operator.

3. Require performance bonds for existing and future quarry operations.

**Policy 23.** Avoid land use conflicts

The County policy should be to assign compatible land uses adjacent to agricultural lands and selected mineral resource lands to ensure their protection. The County should encourage the use of the Williamson Act, as well as agricultural zoning and other legislative means to preserve large agricultural open space areas.

**Actions**

1. The County should strive to stabilize values in areas that are not expected to be used for urban development in the near future, and are presently in agricultural or mineral use through proper land planning.

2. The County Board of Supervisors may, by resolution, reaffirm and encourage the use of the Williamson Act for the preservation of agricultural resources where financially feasible for the owner.

4. Buffers should be established within proposed development areas to reduce land use conflicts with agricultural or mineral operations.

*5.* Approval of residential subdivisions where residential densities are already allowed will be permitted if the following evidence is provided:

a. Future or existing mining operations will not create a significant noise impact to future homeowners;

b. Future or existing mining operations will not significantly reduce the available quantity or quality of water for homes;

c. Future or existing mining operations will not create land use conflicts with potential homeowners from dust, truck traffic, scarred landscape, night glare, etc.; and

d. Subdivision is clustered to minimize land use conflicts.

**Policy 29.** Energy Conservation

It will be the County's policy to encourage the use of energy-efficient design in new construction.

**San Benito County Code.** Surface mining operations and reclamation are governed by San Benito County Code, Title 19 Land Use and Environmental Regulations, Chapter 13.

## Major Findings

- Electricity consumption in the county in 2007 was 322,807 million kWh, which included 120,089 million kWh (37 percent) of residential electricity consumption and 202,718 kWh (63 percent) of non-residential electricity consumption. These figures represent roughly 2,078 kWh per capita for residential uses. However, the county's current (2010) average electricity demand is 3,148 GWh, which exceeds the electricity it produces. Although there are oil and gas fields within the county that produce energy once refined, there are currently no thermal power plants of any type within the county.

- Natural gas consumption in the county decreased from 18,837,799 therms in 2006 to 13,069,164 therms in 2009. In 2007 the total natural gas consumption in the county was 15,024,158 therms, which included 6,865,349 therms (45 percent) used for residential uses and 8,158,809 therms (54 percent) used for non-residential uses. This results in approximately 118 therms per capita for residential uses.

- Based on 2008 retail gasoline sales, which does not include non-retail sales (such as commercial fleets, governmental entities, and rental facilities), 21 million gallons of gasoline were sold in San Benito County. This is only about 1 percent of the statewide total of 14,633 million gallons of gasoline sold. Similarly, residents and businesses in the county purchased roughly 1.47 million gallons of diesel fuel in 2008, one of the lowest amounts of diesel fuel purchased by any county within the state.

- Mineral land classification studies completed before 1989 used Production-Consumption (P-C) regions as the study area boundaries. The Monterey Bay P-C Region, which is made up of one or more aggregate production districts, includes portions of Monterey, San Benito, Santa Clara, San Mateo, and Santa Cruz Counties. As such, the estimated quantitative calculations for both

permitted and non-permitted aggregate resources cover the entire Monterey P-C region (not just San Benito County). The Monterey P-C regional also does not cover the entire San Benito County. As such, the amount of resources that may occur in the county based on this analysis is limited to the northern part of the county that falls within the Monterey P-C region.

- According to Special Report 146 (SR 146) the estimated aggregate consumption in the Monterey Bay P-C region (which includes part of northern San Benito County) through 2030 is 347 million tons. The 786 million tons of permitted reserves in the P-C region exceeded the 50-year demand by a factor of two. However, the surplus from the Monterey Bay P-C region was insufficient to offset the shortfall of the South San Francisco Bay P-C region.

- Two Mineral Resource Zones (MRZs) Sectors fall within San Benito County, including Sectors E and F. Sector E includes the Holocene Stream Channel and Terrace Deposits adjacent to the San Benito River and Tres Pinos Creek. This sector zone is located long the channel of the San Benito River from Tres Pinos to the county line in the northwest. Total reserves in Sector E were calculated as 226 million tons of total reserves, all resources were considered PCC grade, and all the resources were classified as MRZ-2. Sector F, which includes the Cretaceous Hornblende Gabbro–Aromas Deposit, extends nearly five miles from Chittenden Pass to Pajaro Gap. This area is also classified as MRZ-2. Aggregate resources in Sector F are considered to be of Portland cement concrete grade (PCC grade) and total reserves were estimated to be 395 million tons.

- The updates in OFR 99-01, which include reclassified and newly classified reserves, estimated that the total aggregate resources in San Benito County that fall within the Monterey Production-Consumption (P-C) regional boundary identified as MRZ-2 totaled 33 million tons for sand and gravel reserves (these have been permitted), 113 million tons for other sand and gravel resources, and 386 million tons for crushed rock resources. Currently (2010), crushed rock reserves and detailed breakdowns on permitted resources are not published due to confidentiality and to preserve company's proprietary data.

- In total the Monterey Bay P-C region resources classified as MRZ-2 totaled 56 million tons for sand and gravel reserves, 387 million tons for other sand and gravel reserves, and 213 and 823 million tons for crushed rock and reserves respectively. According to the California Geology Survey 2006 Aggregate Availability in California (Map Sheet 52), estimated permitted aggregate resources for the Monterey Bay P-C regional are 347 million tons, and the projected 50-year forecasted consumption is 383 million tons. As such, the permitted reserves equal 91 percent of projected consumption. Overall, an estimated 1,210 million tons of aggregate resources underlie the Monterey Bay P-C region (OFR 99-01).

# Existing Conditions

## Energy Resources

Despite historically high gas prices, concerns over energy security, air quality, and climate change, energy demand continues to increase in California. While customers advocate for affordability, many of the planning areas within the state lack the implementation of conservation practices and, therefore, still require new energy facilities. Pacific Gas and Electric (PG&E), one of the five largest utilities in the state, is the only purveyor of electricity and natural gas in the county. PG&E has been actively involved in supporting several renewable energy projects within the county, such as photovoltaic (PV) solar

power plant development, as a way to meet increasing energy demands within the region and the State's Renewable Portfolio Standard (RPS).

PG&E also has three major transmission lines running west to east across the county to substations in Fresno and Merced Counties. Because population growth is a key driver for increasing residential and commercial energy demands and for water pumping and other services, and because the county population and energy demand is forecast to grow through 2035, energy demands in the county will increase. In order to avoid the need to construct new, large-scale electricity generation facilities, both the State and regional energy purveyors have focused on reducing the growth in demand through energy conservation and efficiency over the past decade. As such, there has been an increasing investment in a range of energy efficiency and conservation programs.

### *Electricity Use*

In 2009 California produced 205,695 GWh of power in-state, which included 57 percent natural gas, 15 percent nuclear, 14 percent renewable energy, and 12 percent large-scale hydropower. The remainder is obtained from a variety of sources. The state produces approximately 70 percent of the electricity it uses, with the remainder being imported from either the Pacific Northwest or the Southwest. As a result, the State has been pressed to ensure that adequate supplies are provided and that electricity is obtained from preferred generation methods. State preferences for matching energy demand with supply list energy efficiency and reducing demand first, implementing renewable energy resource power supplies second, and clean and efficient natural gas-fired power plants third.

Californians consumed 7,032 kilowatt hours (kWh) per capita of electricity in 2005. The state's per capita electricity consumption is ranked 51st in the nation (least consumptive or most efficient of all states). In comparison, the national average is 12,347 kWh consumed per capita.

The total electricity consumption in the county was 316,433 million kWh in 2006, including 117,331 million kWh (37 percent) of residential electricity consumption and 199,101 million kWh (63 percent) of non-residential (e.g., commercial, industrial) electricity consumption. Total electricity consumption decreased in 2009 to 314,891 million kWh, with a slight decrease in residential electricity consumption to 117,747 million kWh (38 percent), and a small decrease in non-residential electricity consumption to 197,144 million kWh (62 percent). This results in approximately 2,078 kWh per capita for residential electricity use in the county based on 2007 residential electricity usage and population estimates.[1] A detailed breakdown of both electricity and natural gas consumption between 2007 through 2009 is provided in Table 8-3.

The county's 2009 average electricity demand of 3,148 GWh far exceeds the electricity it produces. There are no thermal power plants of any type within the county. Therefore, besides the aggregate oil and gas production and some solar power generation, the county produces very little, if any, of its own energy.

[1] Per capita energy usage was based on total residential electricity usage in 2007 provided by the California Energy Commission and 2007 population estimates (57,784 total people in County) from the Department of Finance, 2008, Chapter 2, *Demographics and Economic Trends* of the Background Report.

**TABLE 8-3**
**ELECTRICITY AND NATURAL GAS CONSUMPTION**
**San Benito County**
**2007**

| Year | Residential | Commercial | TCU* | Industry | AG & Water Pumping | Unclassified | Total |
|---|---|---|---|---|---|---|---|
| **Electricity (million kWh)** | | | | | | | |
| 2007 | 120,089 | 83,669 | 10,092 | 61,261 | 38,541 | 9,155 | 322,807 |
| 2008 | 119,432 | 84,193 | 10,052 | 53,608 | 41,301 | 9,941 | 318,527 |
| 2009 | 117,747 | 80,825 | 12,877 | 48,654 | 43,340 | 11,448 | 314,891 |
| **Natural Gas (therms)** | | | | | | | |
| 2007 | 6,865,349 | 1,566,177 | 9,430 | 6,024,777 | 472,246 | 86,179 | 15,024,158 |
| 2008 | 6,729,063 | 1,434,841 | 11,174 | 4,547,381 | 571,274 | 76,429 | 13,370,162 |
| 2009 | 6,631,060 | 1,351,367 | 7,699 | 4,562,679 | 409,175 | 107,184 | 13,069,164 |

*Transportation, Communication, and Utility (does not include gas burned for electric generation)

*Source: Salazar, Irene, Electricity Supply Analysis Division. California Energy Commission. July 13, 2010. Personal communications between Andrea Gough Irene Salazar, and Juliana Prosperi regarding detailed electricity and natural gas usage in San Benito County by use type.*

### *Natural Gas Use*

Natural gas consumption in the county decreased from 18,837,799 therms in 2006 to 13,069,164 therms in 2009. Approximately 6,806,104 therms (36 percent) were consumed by residential uses and 12,031,695 therms (64 percent) were consumed by non-residential uses in 2006. There were 6,729,063 therms (51 percent) consumed in 2009 by residential uses and 6,438,104 therms (49 percent) by non-residential uses. This results in approximately 115 therms per capita for residential uses.

### *Retail Fuel Use*

Based on 2008 retail gasoline sales, which does not include non-retail sales (such as commercial fleets, governmental entities, and rental facilities); 21 million gallons of gasoline were sold in San Benito, or approximately 1 percent of the statewide total of 14,633 million gallons of gasoline sold. Similarly, residents and businesses in the county purchased roughly 1.47 million gallons of diesel fuel in 2008, one of the lowest levels of diesel fuel sales among counties.

While only a few known petroleum reserves exist within the county, such as the oil and gas fields around Hollister, Bitterwater, and Vallecitos in the eastern portion of the county, the state as a whole currently has about 2,705 million gallons of proven reserves, with a production of approximately 207,429 thousand barrels of crude oil in 2009, not including off-shore production. Therefore, the majority of fuels consumed in the county are obtained from out-of-county resources. More information on oil and natural gas resources is provided in Section 8.4, Oil and Gas Resources, at the end of this section.

## Renewable Energy Resources

The county receives energy from power generating facilities located outside of San Benito County, including: thermal power plants using natural gas, coal, fuel oil, and tires as fuel; wind turbines;

hydroelectric facilities; biomass plants; and an increasing number of solar panels on individual homes and businesses. There are currently (2010) no renewable energy production facilities within the county.

### *Energy Efficiency*

In the broadest terms, energy efficiency involves using less energy to provide the same level of service. Energy efficiency strategies range from weatherization programs for better home insulation, the installation of compact fluorescent (CFL) or LED lights instead of incandescent lights, and the installation of double-pane windows, to creating more innovative power systems that enhance energy productivity through industrial processes. While the intent is to use less energy, the strategy also addresses pollution issues, climate change, energy security, and dependency on fossil fuels.

## Mineral Resources

The County, and the cities of Hollister and San Juan Bautista, have developed mineral resource management policies that incorporate SMARA mineral classification information. Policies have been created to support mining operations, including dredging and quarrying, and are intended to ensure that mineral resources will be available for development. For instance, in order to sell sand, gravel, aggregates or other mined minerals under SMARA, each mining operation must meet provisions set forth under Public Resources Code Section 2717(b), also known as AB 3098. Table 8-4 lists current (2006) AB 3098 operations in San Benito County.

**TABLE 8-4**
**AB 3098 LIST OPERATIONS**
**San Benito County**
**2006**

| Mine ID | Mine Name | Operator | Lead Agency |
|---|---|---|---|
| 91-35-0003 | San Juan Pit | Hillsdale Rock Company, Inc. | San Benito County |
| 91-35-0004 | Plant 25 | The Don Chapin Company, Inc. | San Benito County |
| 91-35-0006 | Paicines Quarry | Renewable Resources, LLC. | San Benito County |
| 91-35-0008 | Williams Quarry Plant 2 | Stevens Creek Quarry, LLC. | San Benito County |
| 91-35-0009 | Southside Sand and Gravel | Granite Rock Company #22349 | San Benito County |
| 91-35-0010 | Harris Gravel | Granite Rock Company #22349 | San Benito County |
| 91-35-0011 | San Benito Sand | Granite Rock Company #22349 | San Benito County |
| 91-35-0012 | A.R. Wilson Quarry | Granite Rock Company #22349 | San Benito County |
| 91-35-0013 | Dolomite Quarry | David P. Grimsley | San Benito County |
| 91-35-0016 | Lomerias Muertas | Hillsdale Rock Company, LLC. | San Benito County |
| 91-35-0019 | Mule Shoe Shine | Buffalo Gypsum, Inc. | San Benito County |
| 91-35-0020 | Benitoite Gem Mine | California State Gem Mine | San Benito County |
| 91-35-0021 | Enz Vineyards | Enz Vineyards | San Benito County |

*Source: OMR AB 3098 List April 12, 2006.*

## Aggregate Resources

Aggregate is a mixture of sand, gravel, and crushed stone that is used to give bulk and strength to Portland Cement Concrete (PCC), asphaltic concrete (AC), plaster, and stucco. These materials are used extensively in road and building construction. Aggregate valued at $1.15 billion accounts for nearly 40 percent of California's non-fuel mineral economy. Transportation costs account for a significant percentage of aggregate cost. For example, transporting aggregate 35 miles will generally double the cost of aggregate to the end user. More than half of construction grade aggregate used in the state is for public works projects funded with taxpayer money. Aggregate deposits are typically formed in channel, floodplain, and alluvial fan deposits. The following is a summary of aggregate resources in San Benito County.

### *Monterey Bay Production – Consumption Region (P-C)*

Mineral land classification studies completed before 1989 used Production-Consumption (P-C) regions as the study area boundaries. The Monterey Bay P-C Region, which is made up of one or more aggregate production districts, includes portions of Monterey, San Benito, Santa Clara, San Mateo, and Santa Cruz Counties. As such, the estimated quantitative calculations of both permitted and non-permitted aggregate resources cover the entire Monterey P-C region and the amount of resources that may occur in San Benito County are limited to the north part of the County that falls within the production district. In 1989, the State Mining and Geology Board (SMGB) changed the scope of the mineral classification studies from P-C regions to countywide studies because the counties were one of the primary users of the reports. However, the counties within the Monterey Bay P-C Region still rely on the data derived from the aggregate production district.

The California Department of Conservation, Division of Mines and Geology (DMG), last published information regarding aggregate resources for the Monterey Bay Production-Consumption Region (P-C), which includes all or parts of Monterey, Santa Cruz, Santa Clara, and San Benito Counties, in 1987. DMG then completed an updated assessment of aggregate resources for the Monterey Bay P-C in Open File Report 99-01 in 2000 and in 2006 the California Geology Survey compiled and updated this information in the Aggregate Availability in California Report (Map Sheet 52). In SP 146 Part IV, DMG estimated aggregate consumption in the Monterey Bay P-C region through 2030 to be 347 million tons. Nearly 24 percent or 90 million tons of the estimated total should be of Portland cement concrete (PCC) grade quality. The report also identified 786 million tons of permitted reserves in the P-C region, an amount that exceeded the 50-year demand within the region by a factor of two. However, at the time of the 1986/1987 report, the surplus from the Monterey Bay P-C region was insufficient to offset the shortfall of the South San Francisco Bay P-C region. The combined Monterey Bay/South San Francisco Bay P-C regions' expected demand through 2030 was 1,874 million tons. The combined reserves from the two regions total 1,338 million tons, or 71 percent of demand through 2030 (*note: this amount relates to total reserves, not to what is actually permitted for extraction*).

SP 146 Part IV identifies two Mineral Resources Zones Sectors in San Benito County: Sectors E and F. Sector E (Holocene Stream Channel and Terrace Deposits, San Benito River and Tres Pinos Creek) is located along the channel of the San Benito River from Tres Pinos to the county line in the northwest. Total resources in Sector E are calculated as 226 million tons. All resources are considered PCC grade. Resources in Sector E are classified as MRZ-2. Sector F (Cretaceous Hornblende Gabbro–Aromas Deposit) extends nearly five miles from Chittenden Pass to Pajaro Gap and is classified as MRZ-2 (SP 146

Part IV). Resources in Sector F are considered PCC grade, and the total resources are estimated as 395 million tons.

DMG Open File Report (OFR) 99-01, prepared in 2000, provides an update of SP 146 in the Monterey Bay P-C Region. The update identifies 13 newly classified aggregate resources. Eight of these additions are located within San Benito County. Table 8-5 lists these newly classified MRZ-2 areas located within the county.

Typically, the OFR 99-01 report does not provide estimates of resources within individual areas as was provided in SP 146, mainly due to confidentiality restrictions. However, totals from previous and newly classified areas are shown in the total for Monterey Bay P-C region. SMARA Designation Report No. 7 identified aggregate resources in the Monterey Bay P-C region as regionally-significant based on geologic factors. Regionally-significant resources in areas that have not already been committed to other land uses are then identified for mineral resource extraction to ensure that future development of land uses are compatible with mineral extraction. For example, areas designated as regionally-significant in SMARA Designation Report No. 7 include Sectors E and F in San Benito County.

The update of aggregate resources presented in OFR 99-01 (2000) estimated that the resources in San Benito County classified as MRZ-2 totaled 33 million tons for sand and gravel reserves, 113 million tons for sand and gravel resources, and 386 million tons for crushed rock resources. Currently, crushed rock reserves and their locations or data on specific tonnages are not published due to confidentiality restrictions to preserve company proprietary data. In total, the Monterey Bay P-C region resources classified as MRZ-2 totaled 56 million tons for sand and gravel reserves, 387 million tons for sand and gravel resources, and 213 and 823 million tons for crushed resources. For both San Benito County and the Monterey Bay P-C region, these totals include reclassified and newly classified reserves. Estimated permitted aggregate resources for the Monterey Bay P-C region totaled 269 million tons. According to the DMG, the projected 50-year consumption demand through 2047 would be 379 million tons, and permitted reserves would satisfy 71 percent of demand (OFR 99-01). According to an updated California Geological Survey 2006 Report titled, “Aggregate Availability in California,” estimated permitted aggregate resources for the Monterey Bay P-C region is 347 million tons, and the projected 50-year forecasted consumption is 383 million tons. As such, the permitted reserves equal 91 percent of projected consumption. An estimated 1,210 million tons of aggregate resources (both permitted and unpermitted, but identified) underlie the Monterey Bay P-C region (OFR 99-01).The California Geologic Survey (CGS) reviewed aggregate availability in California in 2006, including within the Monterey Bay P-C region (Map Sheet 52, 2006). For the Monterey Bay P-C region, 50-year demand was estimated as 383 million tons, and permitted aggregate resources were 347 million tons, or 91 percent of demand. The South San Francisco P-C regional permitted resources equaled 37 percent of projected 50-year demand.

| TABLE 8-5<br>OFR 99-01 NEWLY CLASSIFIED MRZ-2 AREAS<br>San Benito County<br>2002 | |
|---|---|
| **Area** | **Description** |
| Wilson Quarry | Area of nearly 52 acres three miles northwest of San Juan Bautista was reclassified from MRZ-3 and 4 to MRZ-2. |
| Williams Quarry | An area of 25 acres three miles northwest of San Juan Bautista was reclassified from MRZ-4 to MRZ-2. |
| SCL/Bolsa Deposit | Newly classified as MRZ-2, total area is 130 acres west of Hollister. |
| Lomerias Muertas | Newly classified as MRZ-2 and covers approximately 55 acres along a ridge in the Lomerias Muertas Hills. |
| Pearce Quarry | A nearly 70-acre site within the Gabilan Mountains about five miles southwest of Hollister. Classified as MRZ-2 aggregate. |
| Hollister Hills/Harris Area | The area consists of four small exposures of crystalline limestone totaling about 11 acres within the Hollister Hills State Vehicular Recreational Area was classified as MRZ-2 for aggregate. |
| Tres Pinos Creek | The area covers an 11-mile stretch along the Tres Pinos Creek from Southside Road to the confluence of Los Muetos Creek. |
| San Benito Aggregate Inc. | An area covering approximately 92 acres and located 11 miles south of Hollister was classified as MRZ-2. |
| Stonewall Canyon Quarry | The area covers approximately 50 acres along the southwest flank of the Gabilan Range. Newly classified as MRZ-2. |
| Chalone Creek Area | An 8-acre area newly classified as MRZ-2 |

*Source: DMGOFR 99-01.*

### *Instream Mining*

Instream resources are defined as resources within the area of ordinary high water flow of a stream, and the area within the 100-year floodplain. The identified resources within the high water channels of the San Benito River and Tres Pinos Creek total 88 million tons, or nearly 40 percent of the total sand and gravel identified in the Monterey Bay P-C region. The instream identified resources within the San Benito River and Tres Pinos Creek total nearly 62 million tons. There are also 71 million tons of aggregate resources in the San Benito River and Tres Pinos Creek within the 100-year floodplain. Reserves within the 100-year floodplain total 4.3 million tons, and are found within the San Benito River, Tres Pinos Creek, Chalone Creek, and San Lorenzo Creek. This represents 54 percent of the total sand and gravel reserves, and 8 percent of the total aggregate reserves (including crushed rock) lying within the Monterey Bay P-C region.

## Other Mineral Resources

Based on consultation with the San Benito County Environmental Health Department, there are no significant mining operations currently being conducted in the county, other than aggregate mining operations. Other economically valuable mineral resources and extraction operations are discussed below.

### *Limestone*

Limestone resources are known to exist in the Coastal Range Mountains and are found along a ten-mile wide area covering San Benito and Monterey Counties. This resource is known as the Gabilan Range District and extends 45 miles southeast from US 101 to Topo Valley. The District is bounded by the Salinas Valley on the west and the San Andreas Fault on the east. A total of 34 deposits are documented in Bulletin 197. These deposits are in remote locations and transportation costs limit the development of these deposits. Several kiln plants operated in the county before 1910, but due to lack of transportation to markets, were not further developed.

### *Gems*

San Benito County has the world's only known deposit of gem-quality Benitoite, a rare blue barium titanium gemstone found in altered serpentinite. The Benitoite mine is located in the southwest corner of the county near the Fresno County line, within the New Idria Mining District. Benitoite was designated the official gemstone of California in 1985. Benitoite deposits were mined as early as 1915.

### *Mercury*

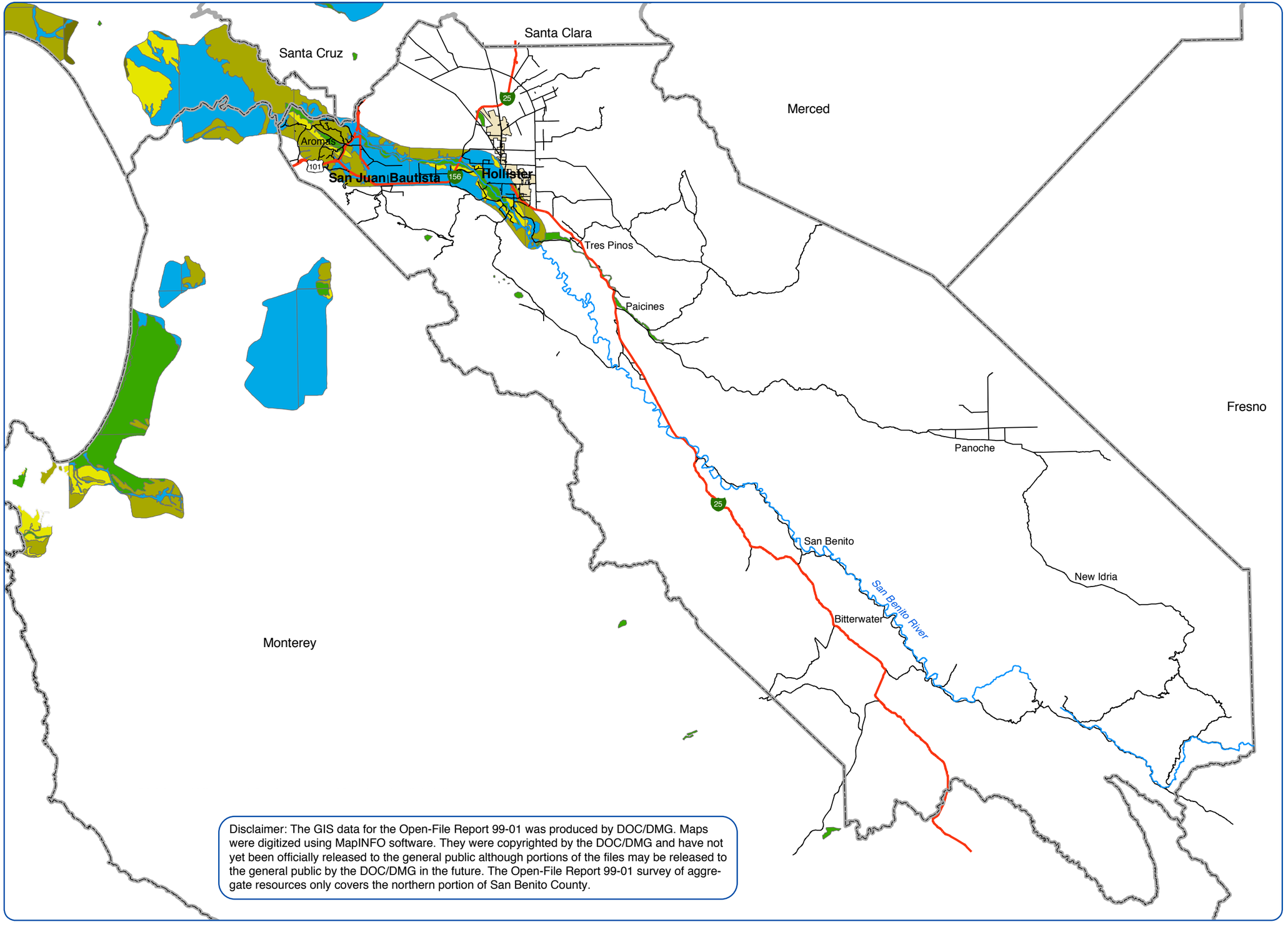
San Benito County was the largest producer of mercury in the United States during the early 20$^{th}$ century. This included the second largest mercury mine in the United States, the New Idria Mine, which operated from 1854 to 1974.

### *Asbestos*

Asbestos is currently (2010) being mined by King City Asbestos Company at their Joe Pit in the southern part of the county. This resource is located in Sections 23 through 25 of Township 18 South and Range 12 East. The Joe Pit was listed as an AB 3098-regulated mining operation as recently as 2004.

### *Gypsum*

There are deposits of gypsum between the Topo Valley west to the San Benito River and south to Lewis Creek, which were mined as early as 1915. A deposit has been mined in the Bitterwater area over the last decade (2000-2010).




Disclaimer: The GIS data for the Open-File Report 99-01 was produced by DOC/DMG. Maps were digitized using MapINFO software. They were copyrighted by the DOC/DMG and have not yet been officially released to the general public although portions of the files may be released to the general public by the DOC/DMG in the future. The Open-File Report 99-01 survey of aggregate resources only covers the northern portion of San Benito County.

# FIGURE 8-1-1
# SAN BENITO COUNTY AGGREGATE RESOURCES

## *Legend*

- Rivers
- San Juan Bautista City Limits
- Hollister City Limits
- County Limits

**Roadways**

- State Highways
- County Roads

**Mineral Resource Zones**

MRZ-1: Areas where available geologic information indicates that little likelihood exists for the presence of significant mineral resources.

MRZ-2: Areas underlain by mineral deposits where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood exists for their presence.

MRZ-3: Areas containing mineral deposits, the significance of which cannot be evaluated from available data.

MRZ-4: Areas where available information is inadequate for assignment to any other category.

N

0 1.5 3 6 Miles

*Source: California Department of Conservation, Division of Mines and Geology, 1999.*
*Metadata for digital files were originally created in 1999 in MapINFO for the Open-File Report 99-01, Update of Mineral Land Classification: Aggregate Materials in the Monterey Bay Production-Consumption Region.*

# SECTION 8.3 BIOLOGICAL RESOURCES

## Introduction

This section describes existing (2010) biological resources within San Benito County. There are a variety of wildlife habitats and vegetation types in the county, including both rare and common wildlife and plant species.

## Key Terms

**CDFG.** California Department of Fish and Game

**CESA.** California Endangered Species Act of 1984 (14 CCR 670.5)

**CEQA.** California Environmental Quality Act (Public Resources Code, § 21000 et seq.)

**CNPS.** California Native Plant Society

**Critical Habitat**. Specific areas designated by the U.S. Fish and Wildlife Service (USFWS) as essential to the conservation of a Federally-listed species and which may require special management considerations or protection. On city, county, state, or private land where there is no Federal involvement, a critical habitat designation *has no regulatory impact.* In other words, designation of critical habitat generally does not affect non-Federal land unless and until the property owner needs a Federal permit or requests Federal funding for a project.

**Endangered (also abbreviated "E").** A species whose survival and reproduction in the wild is in immediate jeopardy from one or more causes: including loss of habitat, change in habitat, over exploration, predation, competition, disease, or other factors.

**FESA.** Federal Endangered Species Act of 1973 (50 CFR 17.12)

**HCP.** Habitat Conservation Plan

**NMFS.** National Marine Fisheries Service

**Rare**. A plant species that, although not presently threatened with extinction, is present in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens.

**Riparian.** Of, on, or pertaining to the bank of a natural course of water. For example, riparian vegetation is composed of plant species normally found near streams, lakes, and other freshwater bodies, such as lakes, ponds, and reservoirs.

**Riparian Corridors.** A corridor of riparian vegetation adjacent to perennial and intermittent streams or other freshwater bodies.

**Special-Status Species:** Rare, threatened, or endangered plant or animal species protected by Federal, State, or other agencies in accordance with any of the following:

- FESA
- CESA
- State Species of Concern list or Special Animals list (case-by-case basis)
- CDFG Fully Protected Species List [Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the California Fish and Game Code]
- California Native Plant Protection Act (plants listed as rare, threatened or endangered by the California Native Plant Society (CNPS); or
- Section 15380 of the CEQA guidelines.

**Take.** To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (emphasis added).

**Threatened (also abbreviated "T").** A species that is abundant in parts of its range, but declining in overall numbers and likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

**USACE.** United States Army Corps of Engineers

**USEPA.** United States Environmental Protection Agency

**USFWS.** United States Fish and Wildlife Service

**USFS.** United States Forest Service

**Vernal pools.** Seasonally flooded landscape depressions underlain by a subsurface that limits drainage. A type of ephemeral wetland, vernal pools result from an unusual combination of soil conditions, summer-dry Mediterranean climate, topography, and hydrology. Vernal pools support a specialized biota, including a relatively large number of threatened and endangered species.

**Waters of the United States.** A body of water with a defined bed and bank and an ordinary high water mark. Also defined in Section 404 of the Clean Water Act as hydric features regulated by the Clean Water Act that are not defined as wetlands. Waters of the U.S. include lakes, rivers, and intermittent streams.

**Wetlands.** Areas that are inundated or saturated by surface or groundwater to support a prevalence of vegetation typically adapted for life in saturated soil conditions. This definition of wetlands requires three wetland identification parameters to be present: wetland hydrology, hydric soils, and hydrophytic vegetation. Wetlands can be areas that are consistently inundated or seasonally inundated. Wetlands are delineated according to the USACE 1987 Wetlands Delineation Manual, and are a subset of Waters of the United States.

## Regulatory Setting

### Federal Laws and Regulations

**Federal Endangered Species Act.** The U. S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) administer the Federal Endangered Species Act (FESA). The FESA requires each

agency to maintain lists of imperiled native species and affords substantial protections to these "listed" species. NMFS' jurisdiction under the FESA is limited to the protection of marine mammals, marine fishes, and anadromous fishes; all other species are subject to USFWS jurisdiction.

The USFWS and NMFS may "list" a species if it is endangered (at risk of extinction throughout all or a significant portion of its range) or threatened (likely to become endangered within the foreseeable future). Section 9 of the FESA prohibits the "take" of any wildlife species listed as endangered and most species listed as threatened. Take, as defined by the FESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Harm is defined as "any act that kills or injures the species, including significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering" (50 CFR 17.3).

The FESA includes exceptions to this general take prohibition that allow an action to be carried out, despite the fact that the action may result in the take of listed species, where conservation measures are included for the species. Section 7 of the FESA provides an exception for actions authorized (e.g., under a Section 404 permit), funded, or carried out by a Federal agency and Section 10 provides an exception for actions that do not involve a Federal agency.

To receive a Section 10(a)(1)(B) incidental take permit (ITP) for a take of Federally-listed fish and wildlife species "that is incidental to, but not the purpose of, otherwise lawful activities," the permit applicant is required to provide:

- A complete description of the activity sought to be authorized;
- A Habitat Conservation Plan (HCP) that specifies:
    - The impact that will likely result from such taking;
    - What steps the applicant will take to monitor, minimize, and mitigate such impacts to the maximum extent practicable; the funding that will be available to implement such steps; and the procedures to be used to deal with unforeseen circumstances;
    - What alternative actions to such taking the applicant considered and the reasons why such alternatives are not proposed to be used; and,
    - Such other measures that the Interior Secretary or Commerce Secretary may require as being necessary or appropriate for purposes of the plan (16 U.S.C.A. Section 1539(a)(2)(A)).

The USFWS or NMFS will issue an ITP if the Interior Secretary or Commerce Secretary, as the case may be, finds with respect to the ITP application and HCP that:

- The taking will be incidental;
- The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;
- The applicant will ensure that adequate funding for the plan will be provided;
- The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and,

- The measures, if any, required by the Secretary of Interior or Commerce Secretary, will be met (16 U.S.C.A. § 1539(a)(2)(B)).

Section 9 also prohibits the "removal or reduction to possession" of any listed plant species "under Federal jurisdiction" (i.e., on Federal land, where Federal funding is provided, or where Federal authorization is required). The FESA does not prohibit take of listed plants on non-federal land, other than prohibiting the removal, damage, or destruction of such species in violation of state law. Consistent with section 7 (a)(2) of the FESA, however, Section 10 prohibits the issuance of an ITP that would appreciably reduce the likelihood of the survival and recovery in the wild (i.e., "jeopardize") of any endangered or threatened species, including plants.

**Federal Clean Water Act, Section 404—Programmatic General Permit for Wetland Fill.** The Clean Water Act (CWA) is the primary Federal law that protects the quality of the nation's waters, including wetlands, lakes, rivers, and coastal areas. Section 404 of the CWA regulates the discharge of dredged or fill material into the waters of the United States, including wetlands. The CWA holds that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; issuance of such permits constitutes its principal regulatory tool.

The U.S. Army Corps of Engineers (USACE) is authorized to issue Section 404 permits, which allow the placement of dredged or fill materials into jurisdictional waters of the United States under certain circumstances. The USACE issues two types of permits under Section 404: general permits (either nationwide permits or regional permits) and standard permits (either letters of permission or individual permits). General permits are issued by the USACE to streamline the Section 404 permitting process for nationwide, statewide, or regional activities that have minimal direct or cumulative environmental impacts on the aquatic environment. Standard permits are issued for activities that do not qualify for a general permit (i.e., that may have more than a minimal adverse environmental impact).

**Federal Clean Water Act, Section 401—Programmatic Water Quality Certification**. Under the CWA Section 401, applicants for a Federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate. Therefore, all projects that have a Federal component and may affect state water quality (including projects that require Federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401 and the State's Porter-Cologne Water Quality Control Act. In California Section 401 certification is handled by the Regional Water Quality Control Boards. San Benito County falls under the jurisdiction of the Central Coast Regional Water Quality Control Board (CCRWQCB). The CCRWQCB must certify that the discharge will comply with State water quality standards and other requirements of the CWA.

**Migratory Bird Treaty Act.** The Migratory Bird Treaty Act of 1918, as amended (MBTA), implements various treaties and conventions between the U.S. and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Under the MBTA, taking, killing, or possessing migratory birds is unlawful, as is taking of any parts, nests, or eggs of such birds (16 U.S. Government Code [USC] 703). Take is defined more narrowly under the MBTA than under FESA and includes only the death or injury of individuals of a migratory bird species or their eggs. As such, take under the MBTA does not include the concepts of harm and harassment as defined under FESA.

**Bald and Golden Eagle Protection Act.** The Bald and Golden Eagle Protection Act prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions. Under the Act it is a

violation to "…take, possess, sell, purchase, barter, offer to sell, transport, export or import, at any time or in any manner, any bald eagle commonly known as the American eagle, or golden eagle, alive or dead, or any part, nest, or egg, thereof...". Take is defined to include pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, and disturb. Disturb is further defined in 50 CFR Part 22.3 as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

**National Environmental Policy Act.** The National Environmental Policy Act (NEPA) requires Federal agencies to include in their decision-making process appropriate and careful consideration of all environmental effects of a proposed action and of possible alternatives. Documentation of the environmental impact analysis and efforts to avoid or minimize the adverse effects of proposed actions must be made available for public notice and review. This analysis is documented in either an Environmental Assessment (EA) or an Environmental Impact Statement (EIS). Project proponents must disclose in these documents whether their proposed action will adversely affect the human or natural environment. NEPA's requirements are primarily procedural rather than substantive in that NEPA requires disclosure of environmental effects and mitigation possibilities, but includes no requirement to mitigate.

## State Laws and Regulations

**California Endangered Species Act.** Administered by the California Department of Fish and Game (CDFG), California ESA prohibits the take of listed species and also species formally under consideration for listing ("candidate" species) in California. Under CESA take means "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." (Fish and Game Code § 86.) Under this definition, and in contrast to the ESA, CESA does not prohibit "harm" to a listed species. Furthermore, take under the CESA does not include "the taking of habitat alone or the impacts of the taking"[2]. However, the killing of a listed species that is incidental to an otherwise lawful activity and not the primary purpose of the activity constitutes a take under CESA. CESA does not protect insects, but with certain exceptions prohibits the take of plants on private land.

**Natural Community Conservation Planning Act.** The NCCP Act was enacted to implement broad-based planning to provide for effective protection and conservation of California's wildlife heritage while continuing to allow appropriate development and growth. The NCCP Act does not focus only on listed species and is broader in its orientation and objectives than are the ESA or CESA. The NCCP Act encourages local, State, and Federal agencies to prepare comprehensive conservation plans that maintain the continued viability of species and biological communities impacted by human changes to the landscape. The NCCP Act provides for incidental take authorization, such that covered activities resulting in incidental take of listed species may be carried out without violating CESA[3]. Permits issued under the NCCP Act can also be broad and may include both listed species and non-listed species.

**State Fish and Game Code Section 1600-1616—Master Streambed Alteration Agreement for Streambed Modifications.** CDFG has jurisdictional authority over streams, lakes, and wetland resources

[2] Environmental Council of Sacramento v. City of Sacramento, 142 Cal. App. 4th 1018 (2006).
[3] The NCCP Act states that CDFG "may authorize by permit the taking of any covered species whose conservation and management is provided for in a natural community conservation plan approved by [CDFG]." (Fish and Game Code § 2.835.)

associated with these aquatic systems under California Fish and Game Code Section 1600 et seq. CDFG has the authority to regulate work that will "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris waste or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake" (Fish and Game Code § 1602.). An entity that proposes to carry out such an activity must first inform CDFG. Where CDFG concludes that the activity will "substantially adversely affect an existing fish or wildlife resource," the entity proposing the activity must negotiate an agreement[4] with CDFG that specifies terms under which the activity may be carried out in a way that protects the affected wildlife resource.

CDFG can enter into programmatic agreements that cover recurring operation and maintenance activities or regional plans. These agreements are sometimes referred to as "master streambed alteration agreements."

**California Fully Protected Species.** In the 1960s, before CESA was enacted, the California Legislature identified specific species for protection under the California Fish and Game Code. These fully protected species may not be taken or possessed at any time, and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of bird species for the protection of livestock. Fully protected species are described in Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the California Fish and Game Code. These protections state that "…no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected [bird], [mammal], [reptile or amphibian], [fish]."

**California Fish and Game Code 3503 (Bird Nests).** Section 3503 of the California Fish and Game Code makes it "unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto." Therefore, CDFG may issue permits authorizing take.

**California Fish and Game Code 3503.5 (Birds of Prey).** Section 3503.5 of the California Fish and Game Code prohibits the take, possession, or destruction of any birds of prey or their nests or eggs "except as otherwise provided by this code or any regulation adopted pursuant thereto." CDFG may issue permits authorizing take of birds of prey or their nests or eggs pursuant to CESA or the NCCP Act.

**California Environmental Quality Act.** CEQA is similar to, but more extensive than NEPA in that it requires significant environmental impacts of proposed projects be reduced to a less-than-significant level through adoption of feasible avoidance, minimization, or mitigation measures unless overriding considerations are identified and documented that make the mitigation measures or alternative infeasible. CEQA applies to certain activities in California undertaken by either a public agency or a private entity that must receive some discretionary approval from a California government agency.

## Local Laws and Regulations

**San Benito County General Plan Open Space and Conservation Element.**

[4] "Lake or streambed alteration agreements" are not permits, but rather a mutual agreement between the CDFG and the entity proposing the action. If an agreement cannot be reached, the matter is referred to arbitration.

1. *Major subdivisions or intense development shall not be allowed within potential habitat:* of federal or State-listed rare, threatened, or endangered plant or animal species until said development(s) prepares habitat plans for the species unless an interim measure has been taken to mitigate the effect of development.

2. *Maintain corridors for habitat:* In rural areas, road and development sites shall be designed to maintain habitat connectivity with a system of corridors for wildlife or plant species and avoiding fragmentation of open space areas.

3. *Mitigation for wetland development:* Development shall be sited to avoid encroachment on wetlands. Mitigation shall be required for any development proposals that have the potential to reduce wetland habitat from primary or secondary effects of the development.

4. *Avoid loss of habitat from other mitigation measures:* Mitigation measures to reduce other environmental hazards (e.g., fire hazard, flood hazard, soil erosion) shall not be acceptable if they will significantly degrade existing habitat, riparian areas, or isolate habitat.

5. *Stimulate regeneration of oak woodland communities:* Through a combination of the habitat conservation plan, interagency coordination, and development review procedures, the County will promote the restoration, restocking, and protection of oak woodland habitat on public and private lands in the county.

6. *Exotic plants and animals:* It is the policy of the County to work with State, Federal, and local agencies and land owners to develop programs to reduce the destruction of plant and animal life and habitat caused by invasive plants and animals.

**San Benito County Ordinance No. 541**

In 1988 the County adopted Ordinance No. 541 to allow for the collection of "interim mitigation fees" from development projects and rangeland conversion occurring in the unincorporated areas of San Benito County. The purpose of Ordinance No. 541 "is to provide a method for financing development and implementation of a Habitat Conservation Plan and a Section 10(a) permit under the Endangered Species Act of 1973 for the San Benito County HCP plan study area." As stated in Ordinance No. 541, mitigation fees are to be held in a trust for future use in payment of HCP development costs and habitat mitigation as identified in an HCP, once developed.

## Major Findings

- Annual grasslands are the largest habitat in San Benito County. These areas include rangeland, pastures, and tree-dominated habitats.

- Grasslands, riparian woodlands, and aquatic habitats are home to most of the special-status plant and animal species in the county. As such, these habitat types have the highest conservation value for preservation of rare species.

- California Red-Legged Frog, California Tiger Salamander, San Joaquin Kit Fox, Burrowing Owl, and Bell's Vireo are all special status species that occur in the county. Their habitats also tend to be located near existing developed areas.

- Critical habitat in the county includes areas suitable for California Red-Legged Frog, California Tiger Salamander, and vernal pool Fairy Shrimp.

# Existing Conditions

## Environmental Setting

San Benito County is topographically diverse, with mountains, rich agricultural valleys, and urban areas. Located in the Coastal Range, the westernmost tip of the county is within ten miles of the Monterey Bay, while its easternmost tip is approximately the same distance from the San Joaquin Valley. The San Andreas and Calaveras earthquake faults traverse the county from northwest to southeast and have helped define the valleys between the mountain ranges. Elevations range from 80 feet near Aromas in the northern part of the County to 5,241 feet at the Peak of San Benito Mountain (within the Diablo Range) in the south. The region is subject to various natural hazards including earthquakes, landslides, flooding, and wildfires.

Approximately 98 percent of the county is unincorporated land, with 95 percent of that land designated as agricultural land. Included in this designation are farmland, rangeland, forest, and protected open space. Approximately 79 percent of unincorporated land is in some form of public or private open space. The majority of the open space lands are in private ownership under Williamson Act Contract (64.5 percent), with the remainder in government ownership (13.2 percent). About 91 percent of government land in the county is Federally-owned, the majority of which is located in the south and held by the Bureau of Land Management or Pinnacles National Monument.

Major parks and open space within San Benito County include Pinnacles National Monument, which is managed by the National Park Service, Clear Creek Recreation Area, which is managed by the Bureau of Land Management, and Hollister Hills State Vehicular Recreation Area, which is managed by California State Parks (Figure 8-6). In addition, the San Benito Agricultural Land Trust currently (2010) protects 5,454 acres of working ranches and farms within four parcels. The Land Trust offers conservation easements to landowners to protect the agricultural use of the land.

Unique within the county is the Panoche Valley (Figure 8-7). This area of the county contains habitat characteristic of the San Joaquin Valley and supports the suite of special-status species know from the Valley including San Joaquin kit fox (*Vulpes macrotis mutica*), giant kangaroo rat (*Dipodomys ingens*), blunt-nosed leopard lizard (*Gambelia silus*), and San Joaquin wooly-threads (*Monolopia congdonii*). Land prices are relatively low due to lack of urban services (water, sewer) and development is minimal.

## Wildlife Habitats

Wildlife habitats provide food, shelter, movement corridors, and breeding opportunities for wildlife species. They are classified in general terms with an emphasis on vegetation structure, vegetation species composition, soil structure, and water availability. Some wildlife species are generalists that use a variety of habitats, while other species are adapted to very specific habitats. Species that are limited to a single habitat type are more vulnerable to habitat loss and disturbance than are generalists and, therefore, may be more at risk to experience population declines. Figure 8-8 identifies the various types of habitats found throughout the county.

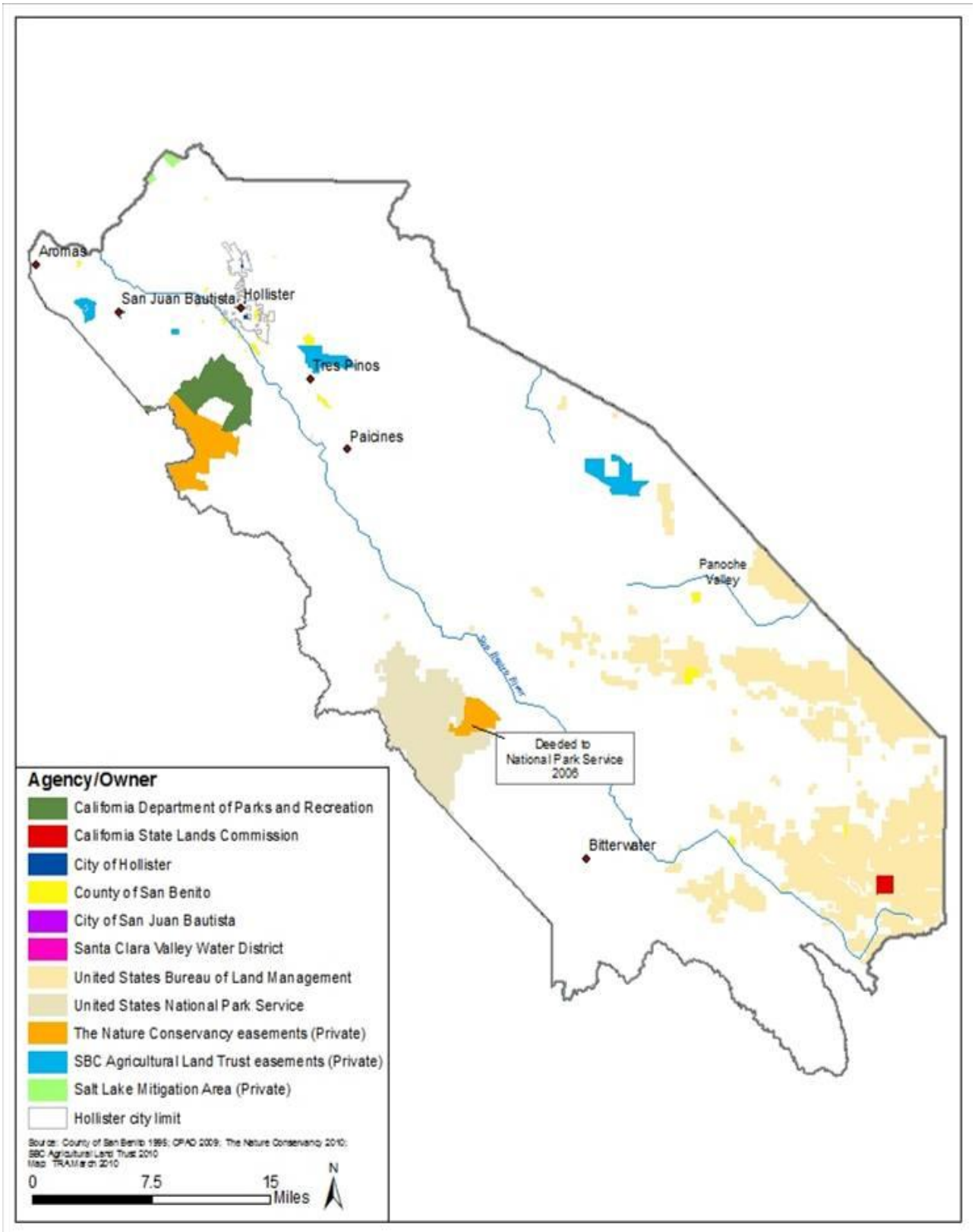



**Figure 8-6 - Protected Lands in San Benito County**

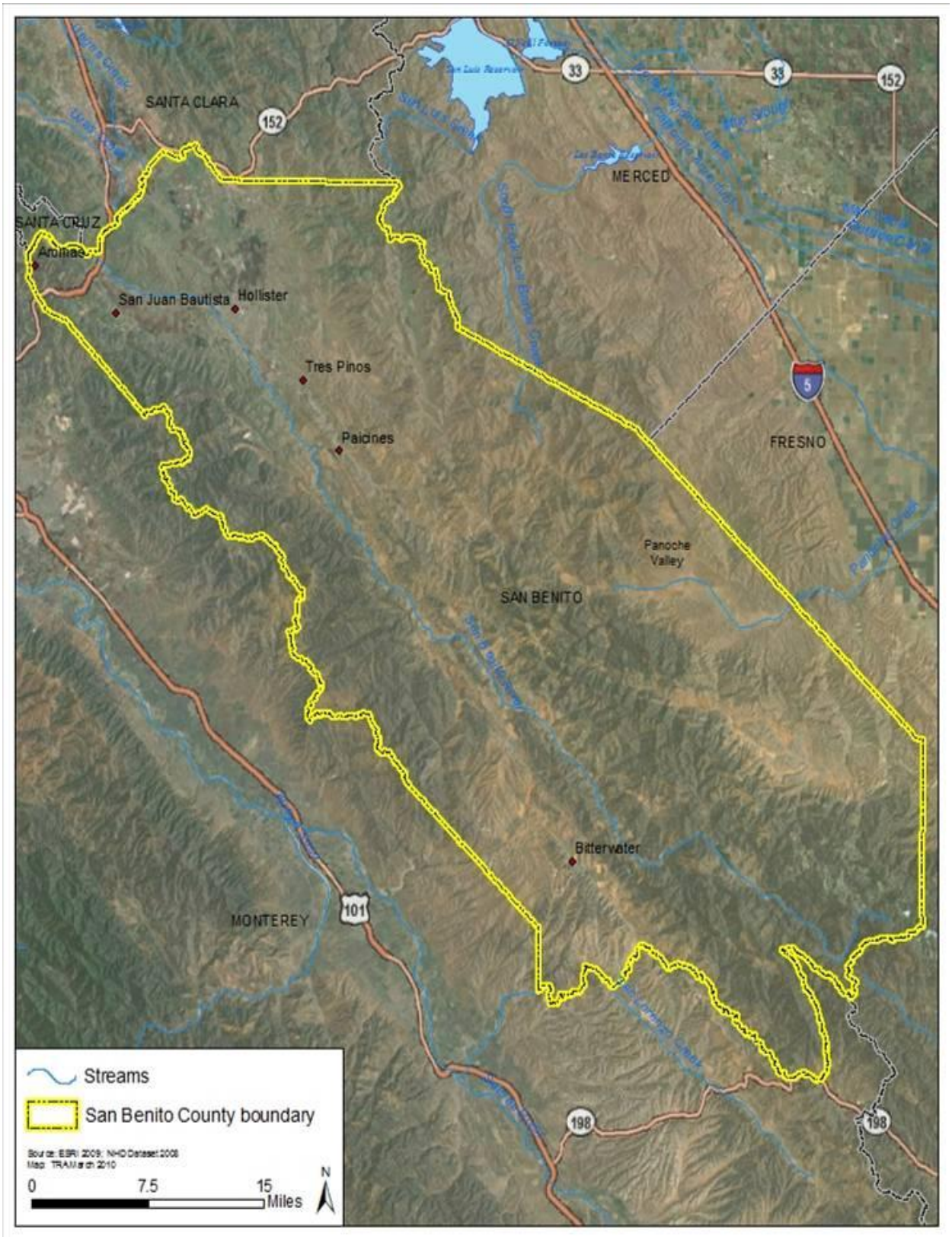



**Figure 8-7 - San Benito County**

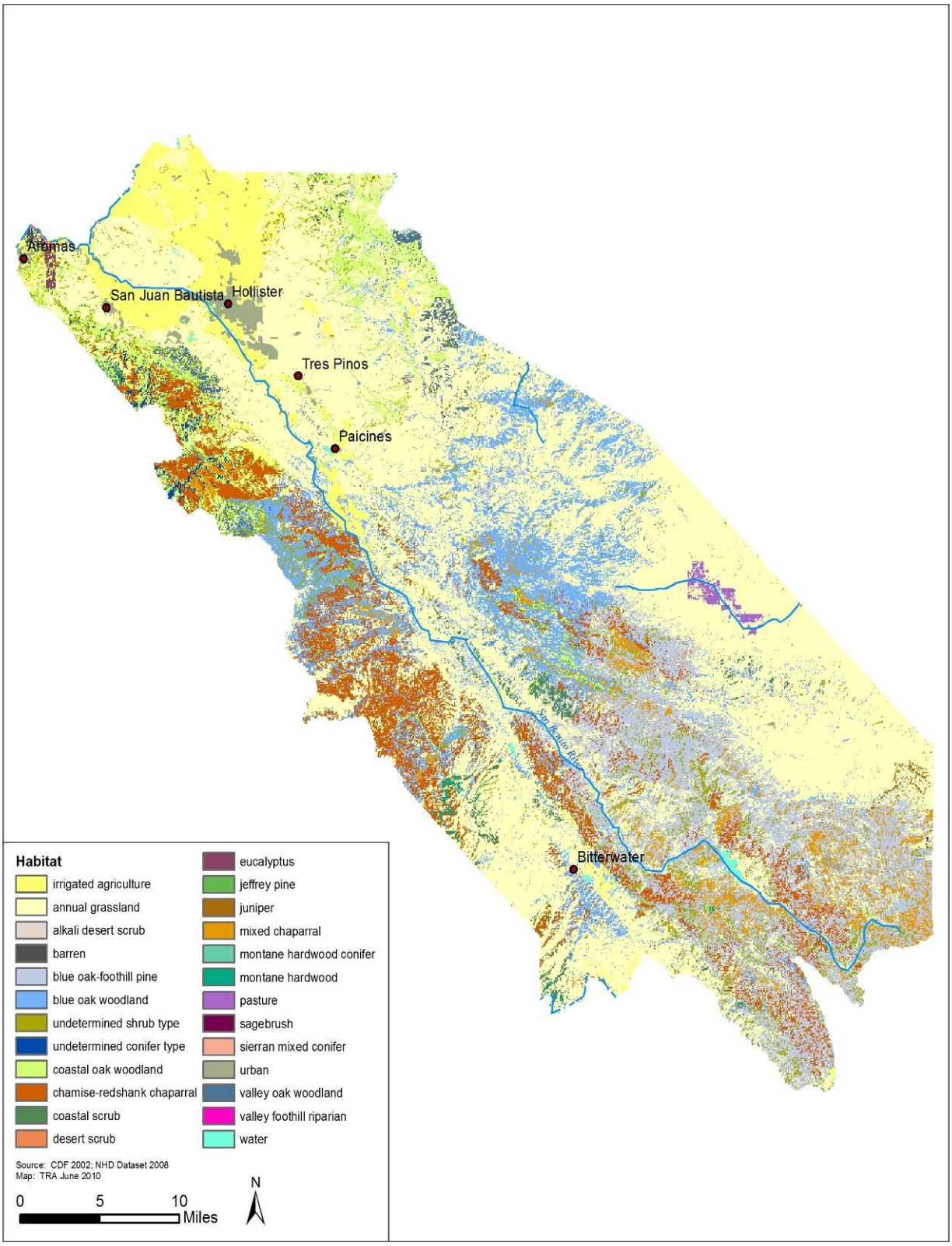



**Figure 8-8 - Habitat Types in San Benito County**

Habitat for many wildlife species includes a mosaic of habitat types. More common wildlife species, such as red-shouldered hawk (*Buteo lineatus*), great-horned owl (*Bubo virginianus*), northern flicker (*Colaptes auratus*), raccoon (*Procyon lotor*), and western toad (*Bufo boreas*) frequently use more than one habitat type. They may use riparian habitat for breeding sites, resting sites, cover while moving from one area to another, or thermal cover, and range into open upland grasslands, scrub, or over open water to forage. Frequently the greatest number of these more common wildlife species will be found at edges, where habitats convert from one type or another.

San Benito County contains mostly natural habitats with limited urban areas (Figure 8-9 and Table 8-6). The majority of the county is annual grassland, which includes rangeland and pasture, or tree-dominated habitats. All of the habitat types found within the county, as classified in California Wildlife Habitats, are listed and briefly described below. The habitat spatial data are from the California Department of Forestry and Fire Protection's Multi-source Land Cover Data v2.

**TABLE 8-6**
**HABITAT SIZES**
**San Benito County**
**2002**

| Land Use/Habitat | Acres | Percent of Total Acreage |
|---|---|---|
| Agriculture | 52,651 | 5.92% |
| Annual Grassland | 443,731 | 49.89% |
| Alkali Desert Scrub | 47 | 0.01% |
| Barren | 536 | 0.06% |
| Blue Oak-Foothill Pine | 119,147 | 13.40% |
| Blue Oak Woodland | 89,057 | 10.01% |
| Coastal Oak Woodland | 34,548 | 3.88% |
| Chamise-Redshank Chaparral | 64,803 | 7.29% |
| Coastal Scrub | 7,702 | 0.87% |
| Desert Scrub | 213 | 0.02% |
| Jeffrey Pine | 7 | 0.00% |
| Juniper | 853 | 0.10% |
| Mixed Chaparral | 22,766 | 2.56% |
| Montane Hardwood-Conifer | 282 | 0.03% |
| Montane Hardwood | 1,549 | 0.17% |
| Sagebrush | 20 | 0.00% |
| Sierran Mixed Conifer | 210 | 0.02% |
| Urban | 9,533 | 1.07% |
| Valley Oak Woodland | 5,043 | 0.57% |
| Valley Foothill Riparian | 151 | 0.02% |
| Water | 1,475 | 0.17% |
| Unknown Shrub Type | 28,874 | 3.25% |
| Unknown Conifer Type | 3,032 | 0.34% |
| Pasture | 2,456 | 0.28% |
| Eucalyptus | 734 | 0.08% |
| Total | 889,420 | 100.00% |

Source: California Department of Forestry and Fire Protection, 2002

### *Tree-Dominated Habitats*

**Blue Oak-Foothill Pine.** Blue oak-foothill pine woodland habitat covers approximately 119,147 acres of the county and is a diverse assemblage of hardwoods, conifers, and shrubs. Blue oak (Quercus douglasii) and foothill pine (Pinus sabiniana) comprise the majority of the overstory along with coast live oak (Quercus agrifolia), valley oak (Quercus lobata), and California buckeye (Aesculus californica). Annual grasses and forbs typically comprise the understory. The blue oak-foothill pine woodland community is characteristic of sheltered valleys and north-facing sides of canyons and is found predominantly in the western and southern regions of San Benito County. With temperatures lower than in the surrounding grasslands and chaparral, a wide variety of plant and animal species find shelter under this community's canopy. Shrubs commonly associated with this habitat are poison oak (Toxicodendron diversilobum), California laurel (Umbellularia californica), Pacific madrone (Arbutus menziesii), Ceanothus spp., and manzanita (Arctostaphylos spp.). Blue oak-foothill pine woodlands provide breeding habitats for a large variety of wildlife species. Many birds, including bewick's wren (Thryomanes bewickii), acorn woodpecker (Melanerpes formicivorus), American kestrel (Falco sparverius), California quail (Callipepla californica), red-shouldered hawk, and red-tailed hawk (Buteo jamaicensis) use oak communities for nesting, foraging, and shelter. Other wildlife species that depend on oak woodlands for food and shelter include common gartersnake (Thamnophis sirtalis), western fence lizard (Sceloporus occidentalis), Virginia opossum (Didelphus virginiana), coyote (Canis latrans), mule deer (Odocoileus hemionus), and mountain lion (Puma concolor) among many others.

**Coastal Oak Woodland.** Coastal oak woodland, which is extremely variable in species composition, covers approximately 34,548 acres of the county. Typically, the overstory consists of deciduous and evergreen hardwoods mixed with scattered conifers. Coast live oak dominates the overstory with understory shrubs in the county such as California blackberry (Rubus ursinus), common snowberry (Symphoricarpos albus), toyon (Heteromeles arbutifolia), and herbaceous plants such as California polypody (Polypodium californicum), bracken fern (Pteridium aquilinum var. pubescens), and miner's lettuce (Claytonia perfoliata). In drier areas with the oaks more widely spaced, the understory may consist entirely of grassland species with a few shrubs. Where coast live oak woodlands intergrade with chaparral, species such as chamise (Adenostoma fasciculatum), chaparral currant (Ribes malvaceum), and ceanothus form the understory. When coast live oak intergrades with coastal scrub, sticky monkeyflower (Mimulus aurantiacus), coyote brush (Baccharis pilularis), and California sagebrush (Artemisia californica), among other species, forms the understory. A wide variety of birds, including Western scrub-jay (Aphelocoma californica), oak titmouse (Baeolophus inornatus), white-breasted nuthatch (Sitta carolinensis), western bluebird (Sialia mexicana) and black-headed grosbeak (Pheucticus melanocephalus) use oak communities for nesting, foraging, and shelter. Other wildlife species that use oak woodlands include common garter snake, big brown bat (Eptesicus fuscus), deer mouse (Peromyscus maniculatus), striped skunk (Mephitis mephitis), bobcat (Lynx rufus), coyote, and mule deer, among many others.

**Valley Oak Woodland.** Valley oak woodlands cover 5,043 acres of the county. The overstory is made up of almost exclusively valley oaks. Other trees associated with valley oak woodland include California sycamore (Platanus racemosa), coast live oak, foothill pine, and blue oak. Typical shrubs found in this habitat include poison oak, blue elderberry (Sambucus mexicana), toyon, California coffeeberry, and California blackberry. The ground cover consists typically of wild oats, bromes, barley (Hordeum spp.), perennial ryegrass (Lolium perenne), and needlegrasses. Valley oak woodlands provide breeding habitat for a large variety of wildlife species, with common species similar to that described for coastal oak woodland habitat.

**Blue Oak Woodland.** Blue oak woodlands cover approximately 89,057 acres of the county. Within these woodlands, blue oak is the dominant species, making up 85 to 100 percent of the trees present. Coast live oak is a common associate in the canopy. Typically, blue oak woodlands are made up of scattered trees although sometimes the canopy may be closed. The understory habitat generally is associated with California juniper (Juniperus californica), poison oak, California coffeeberry (Rhamnus californica), California buckeye, and manzanita species. Ground cover is made up mainly of annuals, including bromes (Bromus spp.), wild oats (Avena spp.), purple needlegrass (Nassella pulchra), filaree (Erodium spp.), and others associated. Wildlife is similar to that found in coastal oak woodland habitat.

**Montane Hardwood.** Montane hardwood, including montane hardwood-conifer and eucalyptus, covers approximately 2,565 acres of the county. Common associates found in the county include coast live oak, big leaf maple (Acer macrophyllum), Pacific madrone, tanoak (Lithocarpus densiflorus), canyon live oak (Quercus chrysolepis), foothill pine, coastal redwood (Sequoia sempervirens), and eucalyptus (Eucalyptus globulus). Characteristic species of montane hardwood and montane hardwood-conifer habitats include western scrub and Steller's (Cyanocitta stelleri) jays, acorn woodpecker, wild turkey (Meleagris gallopavo), dusky-footed woodrat (Neotoma fuscipes), mule deer, and California ground squirrel. Eucalyptus forms almost pure stands with little native overstory associates. Characteristic species of eucalyptus stands include American crow (Corvus brachychynchos), common raven (Corvus corax), barn owl (Tyto alba), and red-tailed and red-shouldered hawks. Small vertebrate species found within these habitats include gopher snake (Pituophis catenifer) and dusky-footed woodrat.

**Conifer.** Conifer groups include Jeffrey pine, juniper, and sierran mixed conifer habitats. Dominant conifer overstory habitats cover approximately 4,102 acres of the county. A portion of the conifer habitat is unique in the county as it contains the only known coexistence of the Coulter pine (Pinus coulteri), Jeffery pine (Pinus jeffreyi), and incense cedar (Calocedrus decurrens) in the world. Typical conifers found in these habitats include these species as well as coastal redwood and ponderosa pine (Pinus ponderosa). Associated with these habitats are California black oak (Quercus kelloggii), black cottonwood (Populus balsamifera ssp. trichocarpa), manzanita, tanoak, big sagebrush (Artemisia tridentate), California buckwheat (Eriogonum fasciculatum), California wild rose (Rosa californica), ceanothus, lupines (Lupinus spp.), and needlegrass. The variety in plant species composition provides diversity in food and cover for a large number of species. Jeffrey pine seeds are included in the diet of more wildlife species than any other tree genus excluding oaks. The bark and foliage are important food sources for squirrels and mule deer.

**Valley Foothill Riparian.** Valley foothill riparian habitat covers approximately 151 acres of the county. Dominant species in the canopy layer are cottonwood, California sycamore, and valley oak. Subcanopy trees include white alder (Alnus rhombifolia), boxelder (Acer negundo), and red willow (Salix laevigata). Typical understory shrubs include wild rose, California blackberry, blue elderberry, poison oak, and willows (Salix spp.). The herbaceous layer, typically comprising only one percent of the overall cover, primarily consists of sedges (Carex spp.), rushes (Juncus spp), miner's lettuce, poison hemlock (Conium maculatum), and stinging nettle (Urtica dioica). Valley foothill riparian habitats provide food, water, migration and dispersal corridors, and escape, nesting, and thermal cover for an abundance of wildlife. Several rare frog species including California red-legged frog (Rana draytonii) and foothill yellow-legged frog (Rana boylii) use this habitat.

### *Shrub-Dominated Habitats*

**Chamise-Redshank Chaparral.** Chamise-redshank chaparral covers approximately 64,803 acres of the county. This habitat is dominated by nearly pure stands of chamise or red shank (*Adenostoma sparsifolium*), or a mixture of both. Common associates include toyon, sugar sumac (*Rhus ovate*), ceanothus, and California buckthorn (*Frangula californica*). This habitat is generally surrounded by mixed chaparral, annual grassland, blue oak-foothill pine, or ponderosa pine habitats. Wildlife species found in this habitat type also frequently occur in mixed chaparral and montane chaparral habitats. These species include black-tailed jackrabbit (*Lepus californicus*), California thrasher (*Toxostoma redivivum*), California towhee (*Pipilo crissalis*), and gopher snake.

**Mixed Chaparral.** Mixed chaparral covers approximately 22,766 acres of the county. This habitat type supports a wide variety of plant species. Composition changes with precipitation, aspect, and soil type. Species that are common in this habitat include several species of ceanothus and manzanita, chamise, ashy silk tassel (*Garrya flavescens*), toyon, yerba santa (*Eriodictyon californicum*), sumac, hollyleaf cherry (*Prunus ilicifolia*), and California fremontia (*Fremontodendron californicum*). Mixed chaparral habitats are formed in a matrix with chamise-redshank chaparral, annual grassland, and blue oak-foothill pine. Many wildlife species use this habitat including Anna's hummingbird (*Calypte anna*), California quail, ring-necked snake (*Diadophis punctatus*), sage sparrow (*Amphispiza belli*), spotted towhee (*Pipilo maculatus*), and wrentit (*Chamaea fasciata*). The habitat type designated as undetermined shrub type typically intergrades between mixed chaparral and chamise-redshank chaparral.

**Coastal Scrub.** Coastal scrub habitat covers approximately 7,702 acres of the county. Coyote brush tends to dominate the overstory and is commonly associated with ceanothus, coffeeberry, sticky monkeyflower, blackberry, California sagebrush, California buckwheat, and poison-oak. Bracken fern and sword fern (*Polystichum munitum*) are dominant in the understory alongside common parsnip (Heracleum maximum), paintbrush (*Castilleja* spp.), yerba buena (*Saturja douglasii*), and California oatgrass (*Danthonia californica*). Although vegetation productivity is lower in coastal scrub than in adjacent chaparral habitats, coastal scrub supports a wide variety of vertebrate species.

**Desert Scrub.** Desert scrub habitats, which include alkali desert scrub and sagebrush, cover approximately 280 acres of the county. Creosote bush (*Larrea tridentata*) is often considered a dominant species within desert scrub communities. Alkali desert scrub is typically dominated by shrubby saltbushes. Sagebrush stands are typically large, open, discontinuous stands of big sagebrush of fairly uniform height. Species that can be found within desert scrub habitats include a variety of lizards and snakes including rare blunt-nosed leopard lizard (*Gambelia silus*) and San Joaquin whipsnake (*Masticophis flagellum ruddocki*), various pocket mice and kangaroo rats, San Joaquin kit fox (*Vulpes macroitis mutica*), coyote, and bobcat (*Lynx rufus*).

### *Herbaceous-Dominated Habitats*

**Agriculture (including pasture).** Agricultural habitat covers approximately 960 acres of the county. Vegetation composition and structure in agricultural habitats are variable, depending on the type of crops grown and the time of year. For these reasons habitat value for wildlife is also variable. In addition, the types and timing of operational activities of agricultural lands affects habitat suitability for wildlife. Tall and maintained crops such as vineyards provide different habitat value and likely support different wildlife species than short crops with a lot of exposed bare ground between rows or pasture land. Refer to the "Agricultural Resources" section for more information regarding agricultural land.

Typical wildlife species that use agricultural habitat include a variety of rodents, such as California ground squirrel and California vole (*Microtus californicus*), and birds, such as red-winged blackbird (*Agelaius phoeniceus*), northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), and yellow-billed magpie (*Pica nuttalli*). Croplands provide food and water for these species, but do not generally provide long-term shelter due to the frequency of disturbance.

**Annual Grassland (including vernal pools).** Annual grassland habitats are open grasslands composed primarily of annual plant species and which occupy what was once pristine native grassland. This habitat type occurs mostly on flat plains to gently rolling foothills. Many grassland species also occur as understory plants in oak woodland and other habitats. Structure in annual grassland depends largely on weather patterns and livestock grazing. Dramatic differences in physiognomy, both between seasons and between years, are characteristic of this habitat. Introduced annual grasses are the dominant plant species in this habitat. These include wild oats, soft chess, ripgut brome, red brome, wild barley, and foxtail fescue. Common forbs include broadleaf filaree, redstem filaree, turkey mullein, true clovers, bur clover, popcorn flower, and many others. Perennial grasses, found in moist, lightly grazed, or relic prairie areas, include purple needlegrass and Idaho fescue. Vernal pools, found in small depressions with a hardpan soil layer, support downingia, meadowfoam, and other species. Many wildlife species use annual grasslands for foraging, but some require special habitat features such as cliffs, caves, ponds, or habitats with woody plants for breeding, resting, and escape cover. Characteristic reptiles that breed in grassland habitats include the western fence lizard, common garter snake, and western rattlesnake. Mammals typically found in this habitat include the black-tailed jackrabbit, California ground squirrel, Botta's pocket gopher, western harvest mouse, California vole, badger, and coyote. The endangered San Joaquin kit fox and threatened California tiger salamander are also found in and adjacent to this habitat. Common birds known to breed in annual grasslands include the burrowing owl, short-eared owl, horned lark, and western meadowlark. This habitat also provides important foraging habitat for the turkey vulture, American kestrel, black-shouldered kite, and prairie falcon.

### *Aquatic Habitats*

**Water and Wetlands**. Water comprises approximately 16,020 acres of the county. Water habitat includes both lacustrine and riverine habitats. Lacustrine includes lakes, reservoirs, ponds, and ponded areas along streams, while riverine includes rivers, canals, and streams. Water habitats typically support fish species and also provide foraging, cover, and breeding habitat for other aquatic species such as pond turtle (*Actinemys marmorata*), amphibians, various waterfowl and fish-eating species such as belted kingfisher (*Ceryle alcyon*) and great blue heron (*Ardea herodias*). Wetland areas are important resources for the County. These areas include freshwater sloughs, swamps, vernal pools, wet meadows, wet pastures, springs and seeps, portions of lakes, ponds, rivers and streams, and all other areas which are periodically or permanently covered by shallow water, or dominated by hydrophic vegetation, or in which the soils are predominantly hydric in nature. Notable lakes and reservoirs in the county are San Felipe Lake (Soap Lake), Tequisquita Slough, Anzar Lake, and San Justo, Paicines, and Hernandez Reservoirs.

### *Developed Habitats*

**Urban.** Land classified as urban areas covers approximately 9,533 acres of the county. The urban landscape consists of developed land, quarries, strip mines, and gravel pits. This classification also includes golf courses, urban parks, and landfills. Wildlife species that use urban habitat vary depending on the density of development, the surrounding land use, and the types and availability of vegetation

and other habitat features available for foraging, nesting, and cover. In general, however, wildlife habitat in urban areas consists of landscaped areas with a mix of both native and exotic ornamental plant species. Species using these areas are conditioned to a greater level of human activity than those in natural and less developed areas. Generally, the more developed an urban area is (e.g., downtown), the less diverse the species will be. Wildlife species typically found in urban habitat include American crow, rock dove (*Columba livia*), American robin (*Turdus americana*), Brewer's blackbird (*Euphagus cyanocephalus*), house finch (*Carpodacus mexicanus*), house sparrow (*Passer domesticus*), northern mockingbird (*Mimus polyglottos*), mourning dove (*Zenaida macrocoura*), raccoon, Virginia opossum, and striped skunk.

### *Non-Vegetated Habitats*

**Barren.** Landscape classified as barren comprises 536 acres of the county. Barren habitat is defined by the absence of vegetation. Any habitat with <2 percent total vegetation cover by herbaceous, desert, or non-wildland species and <10 percent cover by tree or shrub species is defined this way. The physical settings for permanently barren habitat represent extreme environments for vegetation. An extremely hot or cold climate, a near-vertical slope, an impermeable substrate, constant disturbance by either human or natural forces, or a soil either lacking in organic matter or excessively saline can each contribute to a habitat being inhospitable to plants. This habitat typically includes areas of exposed rock, talus slopes, and bare ground/dirt that do not support vegetation. Barren habitat does have value for wildlife. Many hawks and falcons nest on rock ledges. Numerous shorebirds rely on open ground covered with sand or gravel for constructing small scrape nests. Bank swallows use barren vertical cliffs of friable soils along river corridors to dig holes for nesting and cover. Rocky river canyon walls above open water are preferred foraging habitat for many bats. In the desert open sandy soil is critical as burrowing and egg-laying substrate for horned lizards and fringe-toed lizards.

## Special Status Species

Special-status species are plants and animals that are legally-protected under the Federal and State Endangered Species Acts, or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such listing. Table 8-7 lists special-status species with potential to occur in San Benito County organized by their: Federal, State, CDFG, and CNPS designation; known occurrence in the county; and landscape group association. This list is comprehensive and includes all species from existing Federal and State lists, although some species may be of very low distribution or abundance or may no longer exist within the county.

Some special status species are not officially Federally- or State-listed, but are listed on the tables for one of several reasons: (1) they are considered important and sensitive in California and are being tracked in San Benito County by CNDDB, (2) they have recently been delisted, (3) they are considered sensitive and are tracked on Federal land by a Federal agency such as BLM or USFS, or (4) are considered sensitive by a special scientific group. These species may not show any listing status in Table 8-7.

Grasslands, riparian woodlands, and aquatic habitats are home to most of the county's special-status plant and animal species. These habitat types have the highest conservation value for preservation of rare species.

**TABLE 8-7**
**SPECIAL-STATUS SPECIES**
**San Benito County**
**2010**

| Species | Listing | | | Landscape Cover Group |
|---|---|---|---|---|
| | Federal | State | CDFG or CNPS | |
| **Invertebrates** | | | | |
| Conservancy fairy shrimp (*Branchinecta conservation*) | E | | | G |
| Longhorn fairy shrimp (*Branchinecta longiantenna*) | E, CH | | | G |
| Vernal pool fairy shrimp (*Branchinecta lynchi*) | T | | | G |
| Vernal pool tadpole shrimp (*Lepidurus packardi*) | E, CH | | | G |
| California linderiella (*Linderiella occidentalis*) | | | | G |
| Idria short-tailed whipscorpion (*Hubbardia idria*) | | | | G |
| San Benito harvestman (*Calicina arida*) | | | | G |
| San Joaquin dune beetle (*Coelus gracilis*) | | | | G, C |
| Pinnacles shieldback katydid (*Idiostatus kathleenae*) | | | | no habitat info. in CNDDB |
| Morrison's blister beetle (*Lytta morrisoni*) | | | | G |
| Pinnacles optioservus riffle beetle (*Optioservus canus*) | | | | S |
| Wasbauer's protodufourea bee (*Protodufourea wasbaueri*) | | | | C |
| **Amphibians** | | | | |
| California tiger salamander (*Ambystoma californiense*) | T | T | SC | G, C, O, R, S |
| California red-legged frog (*Rana draytonii*) | T, CH | | SC | G, C, O, R, S |
| Western spadefoot (*Spea hammondii*) | | | SC | G, C, O |
| Foothill yellow-legged frog (*Rana boylii*) | | | SC | R, S |
| Coast Range newt (*Taricha torosa torosa*) | | | SC | G, C, O, R, S |

**TABLE 8-7**
**SPECIAL-STATUS SPECIES**
**San Benito County**
**2010**

| Species | Listing | | | Landscape Cover Group |
|---|---|---|---|---|
| | Federal | State | CDFG or CNPS | |
| **Reptiles** | | | | |
| Blunt-nosed leopard lizard (*Gambelia silus*) | E | E | FP | G, C |
| Western pond turtle (*Actinemys marmorata*) | | | SC | G, C, O, R, S |
| San Joaquin whipsnake (*Masticophis flagellum ruddocki*) | | | SC | G, C |
| Coast (California) horned lizard (*Phrynosoma coronatum (frontale population)*) | | | SC | G, C |
| Two-striped garter snake (*Thamnophis hammondii*) | | | SC | R, S |
| Silvery legless lizard (*Anniella pulchra pulchra*) | | | SC | G, C |
| **Fish** | | | | |
| Sucker/Roach River North Central Coast Drainage Sacramento | | | | S |
| **Birds** | | | | |
| Least Bell's vireo (*Vireo bellii pusilus*) | E | E | | R |
| Tri-colored blackbird (*Agelaius tricolor*) | | | SC | G, O, R, S, U |
| Burrowing owl (*Athene cunicularia*) | | | SC | G |
| Yellow-breasted chat (*Icteria virens*) | | | SC | R |
| American peregrine falcon (*Falco peregrinus anatum*) | | E | FP | G, C, O, R, U |
| Golden eagle (*Aquila chrysaetos*) | | FP, WL | | G, C, O, R, S, U |
| Bald eagle (*Haliaeetus leucocephalus*) | | E | | G, C, R, S |
| Long-eared owl (*Asio otus*) | | | SC | O, R |
| Yellow-billed cuckoo *Coccyzus americanus* | C | E | | R |
| Bank swallow (*Riparia riparia*) | | T | | G, C, O, R |

**TABLE 8-7**
**SPECIAL-STATUS SPECIES**
**San Benito County**
**2010**

| Species | Listing | | | Landscape Cover Group |
|---|---|---|---|---|
| | Federal | State | CDFG or CNPS | |
| Cooper's hawk (*Accipiter cooperii*) | | | WL | G, C, O, R, U |
| Sharp-shinned hawk (*Accipiter striatus*) | | | WL | G, C, O, R |
| White-tailed kite (*Elanus leucurus*) | | | FP | G, O, R, S |
| California horned lark (*Eremophila alpestris actia*) | | | WL | G, A |
| Mountain plover (*Charadrius montanus*) | | | SC | G, A |
| Merlin (*Falco columbarius*) | | | WL | G, C, O |
| California condor *Gymnogyps californianus* | E | E | | G, C, O |
| Prairie falcon (*Falco mexicanus*) | | | WL | G, C, O |
| **Mammals** | | | | |
| San Joaquin kit fox (*Vulpes macrotis mutica*) | E | T | | G, O, R |
| Giant kangaroo rat (*Dipodomys ingens*) | E | E | | G, C |
| Nelson's antelope squirrel (*Ammospermophilus nelsoni*) | | T | | G, C |
| San Joaquin woodrat (*Neotoma fuscipes riparia*) | E | | SC | G, C |
| Townsend's big-eared bat (*Corynorhinus townsendii*) | | | SC | G, C, O, R, U |
| American badger (*Taxidea taxus*) | | | SC | G, C, O |
| Pallid bat (*Antrozous pallidus*) | | | SC | G, C, O, R |
| Western mastiff bat (*Eumops perotis californicus*) | | | SC | G, C, O, R |
| Western red bat (*Lasiurus blossevillii*) | | | SC | O, R |
| Big-eared kangaroo rat (*Dipodomys venustus elephantinus*) | | | SC | G, C |

**TABLE 8-7**
**SPECIAL-STATUS SPECIES**
**San Benito County**
**2010**

| Species | Listing | | | Landscape Cover Group |
|---|---|---|---|---|
| | Federal | State | CDFG or CNPS | |
| Monterey dusky-footed woodrat (*Neotoma macrotis Luciana*) | | | SC | C, O |
| Tulare grasshopper mouse (*Onychomys torridus tularensis*) | | | SC | G, C |
| Hoary bat (*Lasiurus cinereus*) | | | | O, R |
| Western small-footed myotis (*Myotis ciliolabrum*) | | | | G, C, O, R |
| Long-eared myotis (*Myotis evotis*) | | | | G, C, O, R |
| Fringed myotis (*Myotis thysanodes*) | | | | G, C, O, R |
| Yuma myotis (*Myotis yumanensis*) | | | | G, C, O, R |
| **Plants** | | | | |
| San Benito evening primrose (*Camissonia benitensis*) | T | | | C, O |
| San Joaquin wooly-threads (*Monolopia congdonii*) | E | | | G, C |
| San Joaquin spearscale (*Atriplex joaquiniana*) | | | 1B.2 | G, C |
| Round-leaved filaree (*California macrophylla*) | | | 1B.1 | G, O |
| Gabilan Mountains manzanita (*Arctostaphylos gabilanensis*) | | | 1B.2 | C, O |
| Pajaro manzanita (*Arctostaphylos pajaroensis*) | | | 1B.1 | C |
| Fragrant fritillary (*Fritillaria liliacea*) | | | 1B.2 | G, C |
| Saline clover (*Trifolium depauperatum* var. *hydrophilum*) | | | 1B.2 | G, S |
| Bent-flowered fiddleneck (*Amsinckia lunaris*) | | | 1B.2 | G, O |
| Chaparral harebell (*Campanula exigua*) | | | 1B.2 | C |
| Hernandez spineflower (*Chorizanthe biloba* var. *immemora*) | | | 1B.2 | C, O |

**TABLE 8-7**
**SPECIAL-STATUS SPECIES**
**San Benito County**
**2010**

| Species | Listing | | | Landscape Cover Group |
|---|---|---|---|---|
| | Federal | State | CDFG or CNPS | |
| | | | | |
| Hall's tarplant (*Deinandra halliana*) | | | 1B.1 | G, C, O |
| Hospital Canyon larkspur (*Delphinium californicum* ssp. *interius*) | | | 1B.2 | C, O |
| Pinnacles buckwheat (*Eriogonum nortonii*) | | | 1B.3 | G, C |
| Hoover's button-celery (*Eryngium aristulatum* var. *hooveri*) | | | 1B.1 | G |
| Talus fritillary (*Fritillaria falcate*) | | | 1B.2 | C, O |
| San Benito fritillary (*Fritillaria viridea*) | | | 1B.2 | C |
| Santa Lucia dwarf rush (*Juncus luciensis*) | | | 1B.2 | G, C, S, O |
| Rayless layia (*Layia discoidea*) | | | 1B.1 | C, O |
| Panoche pepper-grass (*Lepidium jaredii* ssp. *album*) | | | 1B.2 | G |
| Showy golden madia (*Madia radiata*) | | | 1B.1 | G, C, O |
| Indian Valley bush-mallow (*Malacothamnus aboriginum*) | | | 1B.2 | C, O |
| Shining navarretia (*Navarretia nigelliformis* ssp. *radians*) | | | 1B.2 | G, O |
| San Benito pentachaeta (*Pentachaeta exilis* ssp. *aeolica*) | | | 1B.2 | G, O |
| Mt. Diablo phacelia (*Phacelia phacelioides*) | | | 1B.2 | C, O |
| Oval-leaved snapdragon (*Antirrhinum ovatum*) | | | 4.2 | G, C, O |
| Big Bear Valley woollypod (*Astragalus leucolobus*) | | | 1B.2 | O |
| Alkali milk-vetch (*Astragalus tener var. tener*) | | | 1B.2 | G |
| Lemmon's jewelflower (*Caulanthus coulteri* var. *lemmonii*) | | | 1B.2 | G, O |

**TABLE 8-7**
**SPECIAL-STATUS SPECIES**
**San Benito County**
**2010**

| Species | Listing | | | Landscape Cover Group |
|---|---|---|---|---|
| | Federal | State | CDFG or CNPS | |
| | | | | |
| Recurved larkspur (*Delphinium recurvatum*) | | | 1B.2 | G, C, O |
| Norris' beard moss (*Didymodon norrisii*) | | | 2.2 | O |
| Pale-yellow layia (*Layia heterotricha*) | | | 1B.1 | G, O |
| Carmel Valley malacothrix (*Malacothrix saxatilis* var. *arachnoidea*) | | | 1B.2 | C |
| Marsh microseris (*Microseris paludosa*) | | | 1B.2 | G, C, O |
| Prostrate vernal pool navarretia (*Navarretia prostrate*) | | | 1B.1 | G, C, S (meadows/seeps) |
| Hooked popcorn-flower (*Plagiobothrys uncinatus*) | | | 1B.2 | G, C, O |
| Woven-spored lichen (*Texosporium sancti-jacobi*) | | | | C |

*E: Endangered, T: Threatened, SC: Species of Special Concern; WL: Watch List; FP: Fully Protected; C: Candidate for ESA listing. Landcover Types: G- grassland/rangeland; C- chaparral and scrub; O- woodland, hardwood and coniferous; R- riparian; S- stream systems and aquatic resources; U- urban.*
*Notes:*
*- A single CNDDB record may record the occurrence of more than one individual of the species.*
*- Animals with no State or Federal designation are included in the State's Special Animals List due to other status, such as International Union for Conservation of Nature, Bureau of Land Management Sensitive, Western Bat Working Group, etc.*
*- Bats are likely to be under-recorded due to the difficulty in survey and identification.*

Of the species in Table 8-7, those that are of the greatest conservation concern to the wildlife agencies and that tend to occur in areas that may be impacted by development include:

- **California red-legged frog**. Found in the numerous ponds (stock and others) and waterways in the northern part of the county.
- **California tiger salamander.** Found in the numerous ponds (stock and others) and waterways in the northern part of the county.
- **San Joaquin kit fox.** Found in the Panoche Valley and near Bitterwater on the west side of the County, and rarely observed in the northern part of the county.
- **Burrowing owl.** Found in agricultural fields and grassland at the lower elevations

- **Bell's vireo.** Very rare, but could possibly be found in riparian habitats throughout the county

Special-status species that are restricted to the Panoche Valley include blunt-nosed leopard lizard, Nelson's antelope squirrel, giant kangaroo rat, and San Joaquin wooly threads. Only one record of fairy shrimp has been found in the county; however, more detailed surveys for fairy shrimp and their vernal pool habitat are needed to determine species presence and range.

## Critical Habitat

The Endangered Species Act requires the Federal government to designate "critical habitat" for any species it lists under the ESA. Critical habitat is defined as:

- Specific areas within the geographical area occupied by the species at the time of listing, on which are found those physical or biological features that are essential to the conservation of the listed species and that may require special management considerations or protection;

- Specific areas outside the geographical area occupied by the species at the time of listing that are essential for the conservation of a listed species.

Critical habitat is a designation made by the U.S. Fish and Wildlife Service or by the National Marine Fisheries Service pursuant to the Federal Endangered Species Act. Critical habitat areas are specific geographic areas that may or may not be occupied by listed species or that are determined to be essential for the conservation and management of listed species, and that have been formally described and designated in the Federal Register. A critical habitat designation applies only when Federal funding, permits, or projects are involved. Critical habitat requirements do not apply to individuals engaged in activities on private land that do not involve a Federal agency. The critical habitat designation is used by the Federal government as a recovery tool with a focus on species preservation and can also be used to trigger consultation between other Federal agencies and the USFWS. if another Federal agency is issuing a permit for a project in critical habitat, it must consult with USFWS. Development of critical habitat does not always trigger the requirement for an incidental take permit.

Figures 8-9 and 8-10 show critical habitat locations for California red-legged frog, California tiger salamander, and vernal pool fairy shrimp in the county. In addition, the historic range of the Least Bell's vireo as presented in the Draft Recovery Plan for the Least Bell's Vireo and the planning area for the Recovery Plan for Upland Species of the San Joaquin Valley both fall within the county. The Recovery Plan for Upland Species of the San Joaquin Valley covers 34 species, including those listed species found within the Panoche Valley.

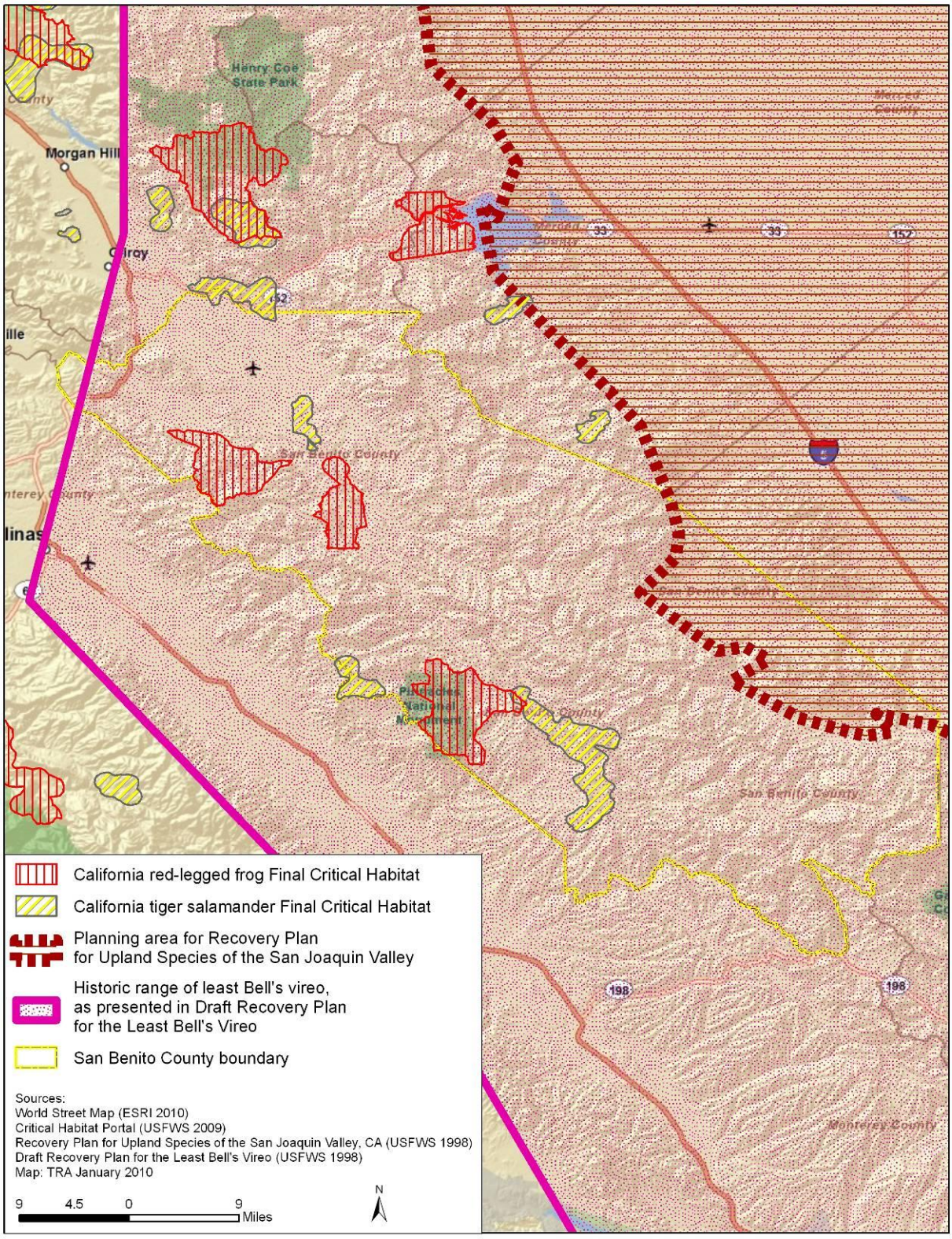



**Figure 8-9 - Critical Habitat for California Red-legged Frog, California Tiger Salamander, Historic Range for Least Bell's Vireo, and Planning Area for Upland Species Recovery Plan**

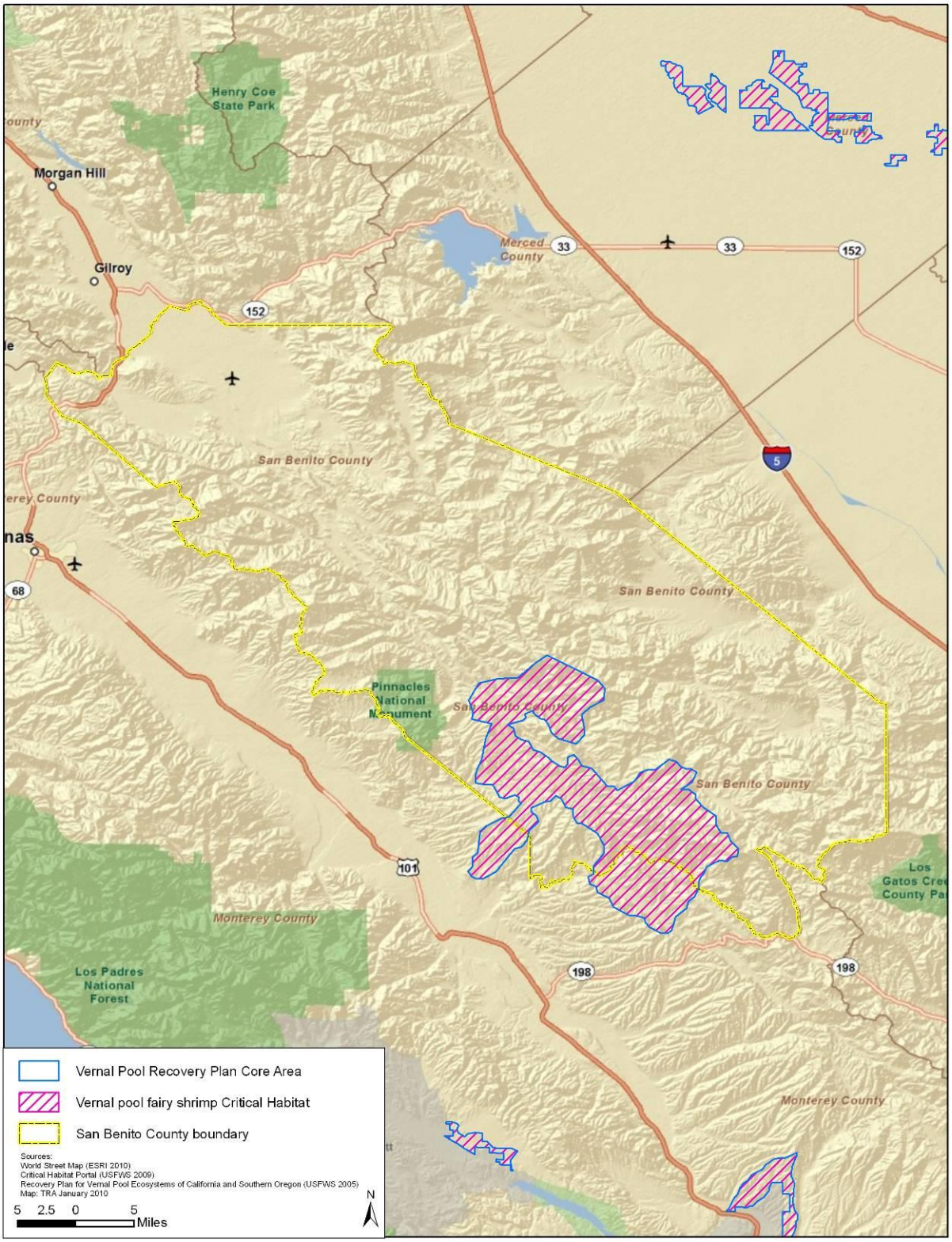



**Figure 8-10 - Vernal Pool Recovery Plan Area and Vernal Pool Fairy Shrimp Critical Habitat**

# SECTION 8.4 OIL AND GAS RESOURCES

## Introduction

This section provides an assessment of the existing (2010) oil, gas, and geothermal resources within San Benito County.

## Key Terms

**Natural Gas**. A mixture of hydrocarbon gases that occurs with petroleum deposits, principally methane together with varying quantities of ethane, propane, butane, and other gases, used as a fuel in a variety of applications from cooking stoves to heaters and industrial processes.

**Petroleum Oil**. A mixture of hydrocarbon fluids that occurs within petroleum deposits. Petroleum oil and gas are a byproduct of the burial and heating of subsurface geologic layers. Petroleum oil, when refined, is used to fuel combustion engines in vehicles and other applications.

**Geothermal**. Geothermal resources are used to generate electricity or heat by using naturally occurring geological heat sources. The use of geothermal resources is a form of renewable energy. Large scale electrical generation is possible in areas near geysers or hot springs by one of three methods: using naturally occurring steam, using superheated ground water, or using geothermal heat to heat a heat-transfer fluid.

**Oil Well Status** Cancelled, Permitted/Active, Dry, Idle or Plugged/Abandoned. This status reference indicates the activity at each well. "Cancelled" indicates that prior to drilling, the proposed drilling operation was cancelled. "Dry" conditions indicate that either the well was dry initially or became dry after a production period. Dry wells are "abandoned." "Idle" implies that the well has been capped for later use, while "plugged" or "shut-in" refers to the fact that the well has been plugged or destroyed.

**Associated and Non-Associated Gas Production**. Indicates either the presence or non-presence of oil during natural gas production.

## Regulatory Setting

### Federal

**Federal Energy Regulatory Commission (FERC).** FERC is an independent agency that regulates the interstate transmission of electricity, natural gas, and oil. FERC also reviews proposals to build liquefied natural gas (LNG) terminals and interstate natural gas pipelines, and licenses hydropower projects. Licensing of hydroelectric facilities under the authority of FERC includes input from State and Federal energy, environmental protection, fish and wildlife, and water quality agencies.

### State

**California Energy Commission's Systems Assessment and Facilities Siting Division.** This division provides coordination to ensure that needed energy facilities are authorized in an expeditious, safe, and

environmentally acceptable manner. The State also requires that applicants for natural gas extraction post a surety bond to cover the cost of potential environmental damage.

**California Department of Conservation (DOC), Division of Oil, Gas and Geothermal Resources (DOGGR).** The California laws for the conservation of oil and gas, enacted January 2005, are administered by the California Department of Conservation (DOC), Division of Oil, Gas and Geothermal Resources (DOGGR). Under the requirements of the California Public Resources Code, the California Energy Commission (CEC), in conjunction with the California Department of Conservation (DOC) Division of Oil, Gas, and Geothermal Resources, is required to assess electricity and natural gas resources on an annual basis or as necessary.

### Local

#### *San Benito County General Plan (Existing)*

The existing (1994) General Plan includes no specific goals and policies pertaining to oil and natural gas resources. However, goals and policies related to mineral resources are applicable. See Section 8-2, Energy and Mineral Resources, of this Background Report for further information.

#### *San Benito County Code*

Oil and gas exploration within San Benito County is governed by Title 19: Land Use and Environmental Regulations. Chapter 19.21 deals specifically with oil and gas wells, and establishes requirements for oil and gas well drilling.

## Major Findings

- There are currently (2010) three known oil and gas fields (Bitterwater, Hollister, and Vallecitos) and 92 production and injection oil and/or gas wells within the county. Of these wells 32 are active, 14 are idle, two are new, 40 are plugged, and four have been cancelled.
- A total of 7,142 barrels of oil and 28,559 million cubic feet of natural gas were produced in the county in 2008.
- There is an estimated 2008 reserve of 101 Mbbl of oil and 63 MMcf of natural gas in the county. San Benito County is not a major oil-producing region in California compared to other counties.
- There are currently (2010) no significant geothermal resources in the county.

## Existing Conditions

#### *Oil Wells and Fields*

There are currently (2008) three known oil and gas fields (Bitterwater, Hollister, and Vallecitos) with a total of 92 production and injection wells in the county. Of these 92 production wells, 32 are listed as active, 14 as idle, two as new, 40 as plugged, and four have been cancelled. The DOGGR 2008 annual report showed wells within the county produced 7,142 oil barrels (bbl) and 28,559 Mcf (Million cubic feet) of natural gas. Table 8-8 provides a summary of oil and gas production in the county.

The Hollister field is located northwest of Hollister and covers parts of the Hollister, the Bolsa, the Flint Hills, and the Lomerias Muertas. Oil within the Hollister field is contained in the Purisima Formation. The Purisima Formation consists of marine and non-marine sandstones. The Monterey Formation, an important reservoir rock in other oil fields throughout California, does not contain significant deposits in the Hollister area.

The Bitterwater oil play (an area where oil resources are found) is located between the Bitterwater and Peach Tree Valleys near the San Andreas Fault (USGS DDS-30) around Coalinga Road and State Route 25, in the southwestern part of the county. The Bitterwater reservoirs include Miocene aged non-marine sandstone and shallow marine sandstone. The Vallecitios field extends west from the Fresno/San Benito county line and covers over 35 square miles adjacent to the Vallecitos and Griswold hills areas.

### *Oil and Natural Gas Production*

In 2008 the cumulative oil produced within the county was 5,727 Mbbl (Million oil barrels) and cumulative gas was 12,333 MMcf. Reserves within the county are estimated to be 101 Mbbl of oil and 63 MMcf of natural gas. The county is not a major oil-producing region in California compared to other counties. The top ten largest oil fields in the state contain from 19,077 to 598,393 Mbbl of oil reserves, and the ten largest non-associated gas fields contain 1,825 to 329,109 MMcf of gas reserves (DOGGR 2008 annual report).

### *Geothermal Energy*

Based on DOGRR reports reviewed, the county does not produce significant amounts of geothermal energy (DOGGR 2008 annual report).

**TABLE 8-8**
**OIL AND GAS PRODUCTION AND RESERVES**
**San Benito County**
**2008**

| | No. of Wells | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Field Name** | **Production** | **Shut-in** | **Oil & Condensate (bbl)** | **Cumulative Oil & Condensate (Mbbl)** | **Estimated Oil Reserves (Mbbl)** | **Net Gas (Mcf)** | **Cumulative Gas (MMcf)** | **Estima-ted gas reserves (MMcf)** |
| Bitterwater | 11 | 0 | 1,953 | 334 | <0.01 | 0 | 0 | 0 |
| Hollister | 2 | 3 | | 9 | | 26,526 | 8,435 | 63 |
| Vallecitos | 12 | 15 | 5,189 | 5,384 | 101 | 2,033 | 3,898 | <0.01 |
| **TOTAL** | **25** | **18** | **7,142** | **5,727** | **101** | **28,559** | **12,333** | **63** |

*Sources: California Department of Conservation, Division of Oil, Gas & Geothermal Resources, 2008 Annual Report of the State Oil & Gas Supervisor.*