

3

LAND USE HISTORY



Above. Henry Miller's Bloomfield Ranch, near Gilroy, ca. 1890 (Unknown ca. 1890a). Below. Label from canned peaches, Filice & Perrelli Canning Co. Inc. (ca. 1940). (Courtesy of the California Room, San José Public Library (top) and History San José (bottom)).

LAND USE HISTORY

This section reconstructs the general patterns of land and water use in south Santa Clara Valley over the past 250 years. Since human land use alters the landscape, it is essential to understand the timing and extent of major historical land uses in order to understand the region's historical ecology.

South Santa Clara Valley has experienced a series of massive cultural shifts since 1769, including Spanish colonization, American statehood, and more recently, rapid urban and suburban expansion. Each of these cultural transformations has led to dramatically different ways of using the local landscape.

Within each of these major eras, land use patterns have shifted in response to regional economic drivers (the collapse of Mission San Juan Bautista or the Gold Rush), changes in technology (electricity-driven groundwater pumping or the arrival of the railroad), and variations in climate (dry or wet series of years; fig. 3.1). Mission San Juan Bautista brought the first cattle to the region in 1797, while the 1864 drought nearly destroyed the industry. The drilling of artesian wells in the 1870s allowed for the cultivation of irrigated crops, such as orchards and alfalfa, while the railroad connection between Gilroy and San José in 1869 helped provide a market for the fruit and cheese produced.

Each shift in land use has affected different aspects of the habitats and functions of the native landscape. For example, early dairy farms (with their requirement for rich pasture and access to water) provided incentive to clear lush willow groves, but did not directly conflict with valley oak lands. Nineteenth-century orchards (planted on well-drained alluvial soils) caused the clearing of oak lands, but left most sycamore alluvial woodlands intact. Population growth often paved the way for channel modifications as bridges were built and creeks straightened to reduce flooding.

Useful information for historical ecology includes the location of historical settlement sites, the alignment of roads, agricultural trends, place-name histories, drainage efforts, and the use of water resources. In particular, regional agricultural trends help elucidate soil texture and type (e.g., seasonally wet areas tend to remain in hay or grain for longer, crops such as sugar beets and asparagus are more tolerant of salt-affected

alkali meadows and salt marshes, and alfalfa has high water requirements). Irrigation histories illuminate which creeks ran dry during the summer, and which areas seasonally flooded. Historical settlement sites often indicate areas with perennial access to water. Road alignments can reveal marshy areas circumvented by roads, creek channels where the road jogged (e.g., Lover's Lane at Pacheco Creek), and channel geometry through bridge placements. Place names such as Soap Lake, Uvas Creek, El Roble School, and Terentak also offer clues to the nature of the native landscape.

"The whole valley was densely timbered, but the gigantic oaks had to make way for the plow, to be succeeded by fields of grain, and these were followed quickly by vines and fruit trees..."

— HARRISON CA. 1888, DESCRIBING UVAS VALLEY

South Valley's position as both the southern end of Santa Clara Valley and as an inland portion of the Monterey Bay watershed has been a key influence on the region's history. It also encompasses a major prehistoric and historical route, Pacheco Pass, connecting the Bay Area and coast to the Central Valley, and has long been a corridor between these areas. Trends in development often followed those of the northern Santa Clara Valley, but with some delay. Concurrently, indigenous villages, the Mission San Juan Bautista, and, later, the towns of Morgan Hill, Gilroy, and Hollister established local spheres of influence.

The history of south Santa Clara Valley can be divided conceptually into six general eras, each characterized by differing cultural contexts and land management approaches. These eras are described in detail in this chapter.

NATIVE LAND MANAGEMENT ERA (PRE-1769)

South Santa Clara Valley has probably been inhabited for over 13,500 years (Goebel et al. 2008). Yet the earliest direct evidence for human presence dates only to 4,200 years ago, due to the ongoing obliteration of soil surfaces through geomorphic processes (Hildebrandt and Mikkelsen 1993, Rosenthal and Meyer 2004). Until about 2,500 years ago, populations were non-permanent, and seasonally moved out of South Valley to take advantage of resources in coastal and inland California (Milliken et al. 1993).

At the time of Spanish contact (1769), the area was home to speakers of dialects of the Ohlone (also called Costanoan) language family. At least two separate groups, the Ausaimas and the Uñijaimas, held the valley portions of the Pajaro River. The Ausaimas occupied the Bolsa, including the San Felipe Lake area, Tequisquita Slough, and lower Pacheco Creek. The Uñijaimas lived along the western edge of south Santa Clara Valley and foothills north from the Pajaro River up toward modern Gilroy. Exact territorial boundaries between the two tribes are

unknown. Neighbors included the Mutsun to the south (at modern San Juan Bautista), the Tomoi to the east (probably sharing a boundary around Bell's Station/Cedar Creek), and the Matalan to the north (Milliken et al. 1993).

Early explorers in the area described an extensive trail network over much of the study area, and noted the locations of large villages (e.g., Palou 1774 in Bolton et al. 1930, Crespí 1772 in Crespí and Bolton 1927). In 1774, Palou affirmed the strong cultural presence in these newly "discovered" lands, writing that the explorers encountered "at every step their [indigenous] trails very well worn" in the San Benito Valley and on the hills around it.

While historical sources such as Spanish explorers' journals, San Juan Bautista mission records, and ethnographic information do not provide a comprehensive picture of pre-Mission life, they do offer some details on population distribution and cultural practices in the region. They reveal the variety of ways native populations engaged with the landscape, including fishing in riverine, groundwater-fed pools, fishing from rafts and boats in large ponds or lakes, hunting and collecting acorns, seeds, and other plants.

In 1770, Fages observed that the Ohlone hunted waterfowl on San Felipe Lake: "[They] went about with two little rafts, hunting ducks on the pool."

These sources also provide a general picture of where Ausaima, Uñijaima, and Mutsun villages and other sites with significant seasonal use may have been. The names of these sites can supply information about the local ecology. Sites were located on the valley alluvial plain, in the foothills, along creeks, and on the shore of San Felipe Lake (Hildebrandt and Mikkelsen 1993). Just to the south of the study area was the Mutsun village of Terentak ("place of small waters" or "the spring"), now San Juan Bautista (Harrington 1929, Ketchum

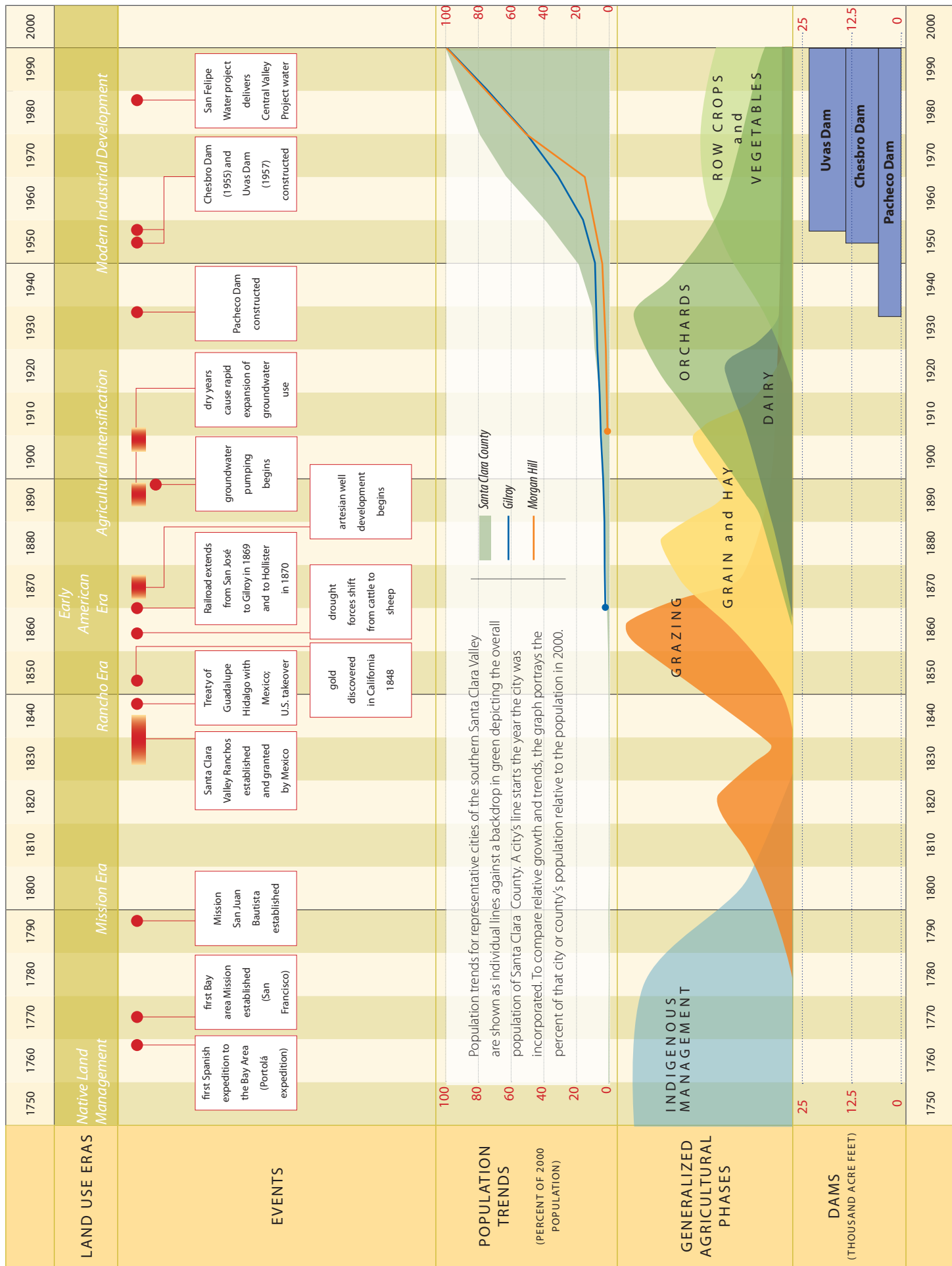


Figure 3.1. Timeline depicting land use trends in south Santa Clara Valley over the past 250 years, including population growth, agricultural phases, major water storage development, and other significant events affecting land use.

pers. comm.). An important Mustun site (possibly also used by Uñijaima) was located at the boundary between Mutsun and Uñijaima territories, just above the confluence of the San Benito and Pajaro rivers. Mutsun dancing ceremonies took place here, and for this reason it was called Juristak, or “place of the big head...what the dancers are called with their large feather head dresses” (Ketchum pers. comm.).

In the Bolsa/Pacheco Creek area was a large Ausaima village, Poitoquix, located in the general vicinity of Dunneville (possibly on south bank of Pacheco Creek or north bank of Tequisquita Slough; Milliken et al. 1993). The Bolsa south of San Felipe Lake was known as Welelismo (“place of the salamanders”; Ketchum pers.

comm), suggesting the presence of seasonal freshwater ponds. Another Ausaima village was noted by Fages in 1770 (Fages and Bolton 1911) at the head of San Felipe Lake, on the edge of the tule:

At the place where they [reed patches] end there was a very large pool, and at the head of this a village of heathen, in which we saw about fifty souls...two of them hastened off across the plain to inform two very large villages of our passing; these villages were in sight, midway of our march...

The head of this “very large pool” was possibly around the entrance of Tequisquita Slough into San Felipe Lake, or to the northwest of the lake around what was to become the location of the Sanchez soap house (cf. Hildebrandt

SOUTH SANTA CLARA VALLEY LAND USE TIMELINE

- 1769:** First Spanish explorers enter Santa Clara Valley as part of Portolá expedition
- 1797:** Mission San Juan Bautista founded
- 1834:** Secularization of the Mission system; rapid decline of Mission San Juan Bautista
- 1848:** Start of the Gold Rush
- 1862-1864:** Drought, plus wet season of 1861-1862, facilitates transformation of valley from open cattle grazing to wheat and cattle
- 1868:** Hollister founded
- 1869:** Railroad expands to Gilroy from San José, opens new markets for perishable products (fruit, dairy)
- 1870:** Railroad expands to Hollister
- 1870:** Gilroy incorporated
- 1870s:** Artesian wells begin to be dug in great numbers
- 1874:** Millers Canal completed, connecting San Felipe Lake to the Pajaro River
- 1874:** San Benito County established from inland portion of Monterey County
- 1906:** Morgan Hill incorporated
- 1938:** South Santa Clara Valley Water Conservation District organized
- 1939:** Pacheco Lake built by the Pacheco Pass Water District (6,150 ac-ft)
- 1955:** Chesbro Dam (8,090 ac-ft) built by South Santa Clara Valley Water Conservation District
- 1957:** Uvas Dam built (9,950 ac-ft) built by South Santa Clara Valley Water Conservation District
- 1970s:** Caltrans Llagas Creek gravel removal and flood channel project
- 1987:** San Felipe Water Project delivers first Central Valley Project water to area

and Mikkelsen 1993, Ketchum pers. comm.). The other “two very large villages” mentioned – possibly Ausaima, possibly Uñijaima – were located in the lower Gilroy/Bolsa area. At least two additional Ausaima villages are mentioned in Mission records, but their locations are unknown (Milliken et al. 1993). In 1772, Crespí (Crespí and Bolton 1927) also recorded small villages in the Bolsa area using the area’s resources: “the land is very good, with abundant pasturage, and it has innumerable large lagoons of fresh water and three or four villages of heathen, who, by means of rafts, catch a great deal of fish in the lagoons...on the plains not a tree is to be seen, though they are all covered with grass.”

A number of Uñijaima villages were located north of the Pajaro River (Milliken et al. 1993, Ketchum pers. comm.). They included Tipisastac (likely in the La Brea area north of the confluence of the Pajaro and San Benito Rivers), Thithirii (in the Carnadero area south of Gilroy), Kululistak (just north of Gilroy), and Chitactac (fig. 3.2; along Uvas Creek west of Gilroy). Anza passed one of these villages in 1776, possibly Thithirii or another village in the Old Gilroy area: “we saw a village of seventeen huts...” (Bolton et al. 1930).

The largest recorded site was a village of thirty thatched houses and an estimated 300 people, located near a stream, a grove, and a large pool (Crespí and Bolton 1927; Palou 1774, in Bolton et al. 1930):

...we came to a large grove, heavily grown with cottonwoods, sycamores, willows, and briars, and within it there was a large village...near the village we saw a large pool or water, and judging from the course of growth of trees there might be a running arroyo there. (Palou 1774, in Bolton et al. 1930)

The exact location of this village is unknown. It may have been the Ausaima village of Poitoquix around Dunneville, or another village located west of Tequisquita Slough in the lowlands just north or south of the Pajaro River near its confluence with Llagas and Carnadero creeks.

The Spanish explorers, as well as subsequent early travelers in South Valley, noted abundant evidence of fire management in the area, where controlled burning was used to manipulate vegetation patterns and maintain or increase productivity. Surveyors and explorers remarked on hazy skies and burns in the Santa Clara Valley: Costansó, traveling with Portolá in 1769, records that the whole of the valley was “impassible on account of the absence of pasture, which the natives had burned” (Costansó and Browning 1992). These fires were often mistaken for accidental blazes by early travelers.

Given the ubiquity of fire in early descriptions, it is clear that tribes in this region employed fire with great regularity and over enormous geographic areas. Based on local knowledge and studies of other regions, it is likely that fire intensity and frequency varied for different habitats and objectives (e.g., Stephens and Fry 2005). However, in general these activities likely contributed to more open woodland and savanna patterns, encouraging increased seed yields and clearing brush land for acorn harvest (Lewis 1973, Anderson 2005). Coppicing and selective harvesting likely affected the growth patterns of valued species such as willows (Anderson 1999).

The intensity of native management underwent a rapid decline in the early 19th century. The combined effect of epidemics and relocation led to the end of native management practices across the region. As the local Mutsun Ohlone population became increasingly incorporated into the life and livelihood of the San Juan Bautista Mission (established 1797), native land management practically ceased.

MISSION ERA (1769-1834)

The first group of Spanish explorers to enter the Santa Clara Valley arrived under the direction of Don Gaspar de Portolá in November 1769. The San Juan Bautista mission was founded in 1797, twenty years after the Mission Santa Clara de Asís and the Pueblo of San José were founded in upper Santa Clara Valley, about 55 km



Figure 3.2. Bedrock mortars along the perennial portion of Uvas-Carnadero Creek are evidence of Ohlone use of the Chitactac site, now part of Chitactac-Adams County Park. (Photograph by Ed Ketchum)

(35 mi) to the northwest. Mission San Juan Bautista (fig. 3.3) provided the last link along the trail (the precursor of El Camino Real) connecting San Francisco and Monterey. With the founding of the mission, livestock were introduced into the lower Santa Clara Valley, most notably cattle and sheep.

Though the San Juan Bautista mission cultivated orchards, including olive, apple, and peach trees in the uplands above the Mission, the main livelihood of the Mission was cattle- and sheep-raising. While Beechey ([1831]1941) describes the orchards, vegetable gardens, and cattle of the Santa Clara Mission in some detail, his only observation of agriculture and ranching around



Figure 3.3. An early view of Mission San Juan Bautista taken by Carleton Watkins. (Watkins ca. 1876, courtesy of the Franciscan Missions of California Photographs Collection, The Bancroft Library, UC Berkeley)

San Juan Bautista is that “in the neighboring meadows there were several large herds of cattle; and the geese settled there in flocks, as at the mission of Santa Clara.”

Rangeland needed to provide both ample forage and a water source in order to be viable cattle grazing land. Many of the low-lying areas in South Valley (which would later become dairies, for similar reasons) offered both. Lush wet meadows (and later wetland areas with artesian resources) provided abundant food and water for Mission cattle.

“In the neighboring meadows there were several large herds of cattle; and the geese settled there in flocks, as at the mission of Santa Clara.”

– BEECHEY, NOVEMBER 1826

Mission San Juan Bautista’s stock were pastured on their holdings which included much of the southern portion of the Santa Clara Valley (south of the current Santa Clara county line) as well as upland holdings around the upper Pajaro River and Pacheco Creek (Broek 1932). Records from 1816-1825 show that the Mission owned about 10,000-11,000 cattle and between 9,500-15,000 sheep (though this included Mission lands not in the study area; Engelhardt 1931). In 1825, for example, nearly 7,000 sheep were raised on the ranches San Felipe, Brea (around Sargent), and Carneros alone (Milliken n.d.). In 1816, Mission San Juan Bautista’s peak year of stock holdings, the Mission had a stocking density of approximately one head per every 1.8 ha (4.5 ac; Bowman 1947). (Moderate stocking density is considered to be one cow in 4 ha/10 ac; Bancroft [1890]1970.)

RANCHING AND THE RANCHO ERA (1834-1864)

The secularization of the mission system in 1834 changed landholding patterns across the Santa Clara Valley as lands held by missions were granted to prominent Mexican residents as land grants. The first land grant in the valley taken from Mission San Juan Bautista was Ausaymas y San Felipe (from Tequisquita Slough up to Pacheco Creek) in 1833. Presumably because of alkali deposits and sparse vegetation, this land was considered marginal anyway, and residents of the area noted that “the Mission had granted said lands to your petitioner because said Mission did not want them” (Unknown 1852). Over the next nine years, however, the Mission was gradually stripped of most of its holdings, including the most lucrative, leaving it only some valley land directly surrounding the Mission (Broek 1932; table 3.1).

Stripped of land and thus livelihood, the Mission system collapsed nearly overnight. Where travelers Beechey ([1831]1941) and Robinson ([1846]1947) were served chocolate for breakfast in 1826 and 1829, a visitor in 1840 found that the Mission was in such disrepair that

it was “as though [it] had ceased to exist” (Rubio 1840, in Engelhardt 1931). Wise (1850) found “a detestable spot... more than half in ruins, and rapidly crumbling to the ground.” In 1836, the Mission recorded holdings of only 869 cattle and 4,120 sheep (Engelhardt 1931). By 1842, they had none (Bancroft 1888, Broek 1932).

“An immense plain, quite level, that measures 16 leagues long by 6 or 7 wide, separates San Juan from the pueblo of San José. This country is almost uninhabited, only four small ranchos being found along the route...[Gilroy] has about 100 occupants and a large amount of live stock and seems destined to become an important center with its abundance of water, plains, and excellent farming lands.”

— DE MOFRAS, 1844

As the Mission’s stock dwindled, private stock holdings swelled, and cattle density (in many places) likely increased. Land no longer held by the Mission went into the hands of a few large landowners, who used their

Table 3.1. Lands granted from San Juan Bautista Mission territory (from Broek 1932).

Date of Grant	Name of grant	Area granted (Mexican square leagues)	Acreage confirmed in U.S. District courts
1802 (early private holdings)	Las Animas	6	24,066
1833	Ausaymas y San Felipe	3	11,744
1835	Llano del Tequisquita	4	16,016
1835	Juristac	1	4,482
1836	San Joaquin	2	7,425
1839	Santa Ana y Quien Sabe	11	48,822
1839	San Justo	8	34,619
1840	Bolsa de San Felipe	1.5	6,795
1842	Lomerías Muertas	1.5	6,660

vast holdings to graze cattle and cultivate small home gardens. De Mofras ([1844]1937a) observed that the land between San Juan and the northern Valley was “almost uninhabited,” the only settlement of note being that of John Gilroy (now Old Gilroy, located on the Yolo silt loam deposited by Llagas Creek), which then contained about 100 inhabitants and “a large amount of livestock.” In 1852, Pacheco kept between 8,000-10,000 cattle and horses on ranchos Bolsa de San Felipe and Ausaymas y San Felipe (Taboas 1852). Mariano Castro kept about 15,000 cattle on the Las Animas rancho, more cattle than were kept on all the Mission’s holdings before secularization (Pico 1852). This suggests a minimum stocking density on the Las Animas rancho of 0.6 ha (1.6 ac) per cow, a dramatic increase in density from the Mission era. Similar increases have been noted in northern Santa Clara Valley (Grossinger et al. 2006).

California’s transition from a Mexican to an American territory, and the start of the Gold Rush in 1848, signaled the end of the relatively brief Rancho era. It marked the beginning of fragmentation of the large Mexican land grant system as gold-seekers-turned-settlers challenged rancheros’ large land holdings. While most new American settlers at first maintained the Mexican land use pattern of stock raising and subsistence farming, the vast cattle ranching operations of the 1830s and 1840s soon began to disintegrate.

Still, the initial extent of fragmentation of these large tracts of land was not nearly as acute in South Valley as in the northern Valley, where rich land, proximity to markets, and San José’s location on a main route to the Gold Country drew more settlers and thus brought more challenges to the Mexican land grant system. Whereas in the northern and central Santa Clara Valley only 48,500 ha (120,000 ac) out of 90,200 ha (223,000 ac) claimed were confirmed to Mexican claimants rather than Americans (a little more than half), nearly all of the claims of South Valley rancheros were confirmed in the

Mexican claimants’ favor (about 53,400 ha/132,000 ac out of 55,200 ha/136,500 ac; Broek 1932).

This disparity in settling patterns between North and South Valley provided impetus for an earlier transition away from stock-raising into agriculture in North Valley, exacerbating the divergence in land use patterns between the two areas that continues today. Brewer, traveling in what is now the Morgan Hill area in 1861, observed:

... it is here all covered with Spanish grants, so is not cultivated, but near San Jose, where it is divided into farms, it is in high cultivation; farmhouses have sprung up and rich fields of grain and growing orchards everywhere abound. But near our camp [at 21 mile house, in present Morgan Hill] it lies in a state of nature, and only supports a few cattle. One ranch there [San Francisco de las Llagas] covers twenty-two thousand acres of the best land in the valley—all valuable. (Brewer [1930]1974)

This pattern was even more pronounced in the southernmost part of Santa Clara Valley (then Monterey County), where the 1850 Census described “ranches of unknown extent, even to their owners...covered with vast herds of cattle and horses, whose number also is generally unknown to the proprietors. The extent of agriculture is the raising of a small patch of beans” (U.S. Census Bureau 1850, in Roddy 1995). This slower rate of agricultural intensification in South Valley limited the pace of habitat modification.

AGRICULTURE AND THE EARLY AMERICAN ERA (1864-1874)

Climatic factors and advances in infrastructure brought about the end of the open range cattle era in much of South Valley in the 1860s. The drought of 1862-1864 decimated cattle ranches all over California, and over one million cattle starved or were slaughtered in the state (MacGraw 1961). Meanwhile, the connection of Gilroy (1869) and Hollister (1870) to big-city markets through the Southern Pacific railroad opened up new markets for South Valley farmers.

Drought and the cattle industry

Southern Santa Clara Valley was hit hard by the droughts of 1862-1864, and thousands of cattle starved or were killed. The change was so abrupt that by 1868, only a few years later, one observer noted that “there are very few cattle raised in the county, it being so generally under cultivation with grain and fruit” (Cronise 1868). While this was undoubtedly more true for North Valley than South Valley, it is indicative of the sweeping changes that had occurred.

The drought did not eliminate cattle ranching from South Valley (fig. 3.4). But it did mark the beginning

of the end of the dominance of open-range, beef cattle-raising in many parts of South Valley as ranchers in areas with richer soils turned to sheep, wheat, and dairy cattle. It changed the dynamic of cattle-ranching and shifted the balance of land use types in the region. Whereas before 1864 cattle were raised mainly for beef and hides, after the drought most valley-floor cattle were dairy cattle, raised in areas with naturally wet meadows and artesian flow. And while before 1864 stock raising was the single significant land use on ranchos including the productive valley floor land, after the drought larger cattle operations were mainly relegated to upland areas, while more lucrative uses such as dairies and wheat



Figure 3.4. “Dunne Ranch, Gilroy.” This image, taken by photographer Andrew Hill (ca. 1890) shows cattle standing on a creek on the Dunne Ranch (Llagas Creek watershed). It was likely taken not long before the area’s subdivision in the early 1890s. Because of its late subdivision, the area remained grazing land far later than similar land in northern Santa Clara Valley or on alluvial soils around Gilroy. (Courtesy of the California Room, San José Public Library)

became prominent in valley floor areas with richer soils. Those places on the valley floor that remained grazing land were more marginal lands with poor soil, poor drainage, or both – most notably, the Bolsa. Cattle that remained were often grazed in the uplands for the winter, then pastured in the Bolsa during the dry season (Broek 1932).

In 1929, long-time resident Isaac Mylar recalled the devastation to cattle in the Bolsa during the 1864 drought: “...there was a slough [Tequisquita] that lead [sic] into Soap Lake. This slough would be lined with the decaying carcasses of cattle who, too weak to pull themselves out of the mud, died there. They died by the hundreds, whilst striving to reach some tule, or some wisp of grass, that they saw growing on the banks of the slough.”

For a brief period from around 1864 until the 1880s, intensive sheep raising overtook cattle raising as the dominant land use throughout northern San Benito and southern Santa Clara counties, in part because of their greater tolerance of drought. This was consistent with a wider statewide trend: while the 1850 California census recorded under 20,000 sheep, by 1876 (the peak of the industry) there were over 6,400,000 sheep in the state being raised for meat and wool (Johnston and McCalla 2004). Near Madrone (now northern Morgan Hill) in 1874, one traveler saw such a large flock of sheep that from a distance she mistook them for a crop, asking her companion “what that was growing off to the left” until she saw them moving (Likins 1874). Further south, a resident of the Soap Lake area recalled that at the time his mother was born in 1885, the perimeter of Soap Lake was all sheep country (Fought 2000). In the Hollister area, the largest sheep herd owners, W.W. Hollister and Flint Bixby & Co., herded around 70,000 sheep in the area (San Jose Mercury 1864). By the end of the 1880s,

however, references to large flocks of sheep in south Santa Clara Valley seem to disappear.

“[The Gilroy Valley] produces a great many sheep. I saw more thousands than I should like to state. It is enough to say that mutton is not scarce about the town of Gilroy...”

– PHILLIPS 1877

“A large flock of sheep said to embrace from 1500 to 3000 sheep, belonging to Dunn [sic] & Donnelly and which had been driven within an enclosure for protection, were all drowned by the rising of the Pacheco.”

– SAN BENITO ADVANCE, NOVEMBER 20, 1875

Railroads and wheat

In addition to the drought of the early 1860s, the second factor that facilitated the transition from cattle grazing to agriculture was the coming of the Southern Pacific railroad, which reached Gilroy in 1869 and Hollister in 1870. The railroad opened up new markets for South Valley farmers, who before had no timely way to transfer perishable goods to markets around San José and San Francisco. Cronise (1868) reported that “[productive] land extends beyond Gilroy, thirty miles south of San José, but it is not generally cultivated, as it does not prove remunerative to haul produce to market by teams from that point. When the railroad to Watsonville is constructed, many thousands of acres in this district will be cultivated, which are now used for grazing.”

By around the 1860s, wheat had begun to be planted on a large scale on productive valley floor lands (MacGraw 1961). Cronise (1868) notes, perhaps somewhat hyperbolically, “from San José to Gilroy...the valley in the summer forms an almost unbroken wheat field.” The formation of the city of Hollister in 1868 further spurred the transformation of productive valley land in South Valley, especially around the Gilroy and Hollister areas, from largely grazing land to largely wheat fields.

Wheat fell out of favor nearly as abruptly as it had fallen into it, and production peaked around 1874 or 1875 (Guinn 1910, Broek 1932). By the mid-1870s, waning crop yields coupled with low profits for wheat relative to potential revenues with other crops (e.g., hay and, increasingly, fruit) and steep shipping prices generated a sharp drop in wheat production on both sides of the county line (McCallum 1974). This change relegated wheat to the valley periphery, away from high-yield soils around Hollister and north of Gilroy.

Though it ceased to be the dominant crop, wheat continued to be grown in large quantities even into the 1890s. As late as 1888, wheat and barley were the principal products of the Gilroy area, though the fruit industry was more profitable and was rapidly superseding wheat (Harrison ca. 1888).

“A stranger visiting Hollister, especially during haying season, is struck with the sight of railroad trains of hay-loaded cars, hay-loaded wagons and the loading and unloading, by block and tackle, of endless bales of hay, hay, hay.”

— LILIENCRANTZ 1956

In Hollister, hay took over as the preferred crop, with the Bolsa providing a particularly important source. Hollister soon became known as “Hay City” (Unknown 1975(?)). Until the end of World War I, hay was a primary crop in Hollister (McCallum 1974). But as cars and tractors replaced horses for transport and farm use, the hay market began to decline (Broek 1932).

ORCHARDS, DAIRIES, AND WELLS: AGRICULTURAL INTENSIFICATION (1874-1930)

Artesian wells

By the early 1870s, farmers, ranchers, and dairymen with land in the artesian belt generally defined by the Bolsa

floodplain began to drill artesian wells – lots of them.

The most notable section of the artesian belt was located in the San Felipe district northeast of the Bolsa, where, as a member of the San Benito Well Boring Company bragged in 1889, they could “strike artesian water anywhere between San Felipe and Poverty Hill [near the Hillcrest/Sunnyslope area of Hollister]” (Hollister Free Lance 1889). By 1886, there were over 75 artesian wells in the small San Felipe district alone (Hollister Free Lance 1886b). By 1888, there were at least 150 artesian wells in the Gilroy area and another 119 in northern San Benito County (fig. 3.5; Harrison ca. 1888; U.S. Census Bureau 1894, in Kilburn 1972).

Free-flowing artesian wells provided ample water for crop irrigation. The small but well-positioned San Felipe region, formerly dominated by willow groves, was quickly made into the favorite region of the area: “San Felipe is a conspicuous spot, because it is evergreen, and during the dry seasons presents a marked and pleasing contrast to the brown and dusty fields and hills which one sees everywhere else” (Harrison ca. 1888).

Since wheat was dry-farmed, and “never irrigated, as more profitable crops may be grown with the same amount of labor” (Shortridge [1896]1986), the development of groundwater supplies and irrigation quickly made wheat a less lucrative option on the valley floor alluvium. Wheat production peaked in the mid-1870s, just as the number of artesian wells in South Valley began to swell. Wheat and other grains became largely relegated to the valley margins and foothills. In its place came two crops largely dependent on irrigation from artesian wells: alfalfa (to feed dairy cows) and orchards.

The railroad had made new markets for fruits and dairy products more accessible to the previously more remote Gilroy and Hollister areas. Dairying and horticulture thrived in places where the presence of artesian water intersected with access to quality soils, such as the San Felipe district, around Hollister, and around Old Gilroy (east of present-day Gilroy near Llagas Creek).



Figure 3.5. "Artesian wells on the Ausaymas Ranch, drilled June 1912." Since the 1870s, groundwater has been an important source of water for crop irrigation in South Valley. (Unknown ca. 1912c, courtesy of the San Benito County Historical Society)

Dairies

Beginning in the 1860s, the gradual draining of lowland areas in South Valley and development of an artesian water supply facilitated the growth of thriving dairy regions in the Gilroy and San Felipe districts. The low-lying land south of Gilroy, around the confluences of the Llagas and Carnadero with the Pajaro, was called "willow land" (Coffin 1873). Occupying lands with relatively high groundwater but without excessive clay content, the willow lands were particularly valued for agricultural production. Artesian wells, lush vegetation, and seasonal flooding were hallmarks of these swampy areas (Coffin 1873, Harrison ca. 1888),

covering large swaths of the region around lower Llagas Creek, Carnadero Creek, and the Pajaro River.

"In the great district where these various streams converge, within a radius of several miles, there is a great artesian basin."

- SHORTRIDGE 1896

The rapid and early "transformation of the willow patches... into veritable gardens" (Shortridge [1896]1986) beginning in the early 1860s was considered a major

accomplishment. One of the main uses of this land was to pasture dairy cattle: “Some of the land is low and in the rainy season partially covered with water. This is used for pasturing dairy stock” (Harrison ca. 1888).

One of the first dairies in South Valley was founded south of Gilroy in 1863, on drained willow land on Carnadero Creek just north of where Tar Creek enters it (Shortridge [1896]1986, Broek 1932). Shortridge describes how Samuel Rea reclaimed “the rich Delta land at the mouth of Carnadero Creek” in 1863, taking advantage of the low-lying grassland abundant in the area: “The land was at that time covered with a dense growth of willows. Mr. Rea cleared the land and opened a channel for Carnadero Creek...As Mr. Rea’s land was moist, and furnished with an abundant supply of native meadow grasses, he went into the dairy business...”

By 1870, Rea’s dairy was one of many in the Gilroy area to produce cheese and butter from excess milk. In 1881, there were approximately 3,000 dairy cows in the Gilroy district (Broek 1932; fig. 3.6). By 1896, Shortridge writes: “Gilroy’s principal product is cheese, the succulent grasses which flourish along the creeks and in the low lands at the confluence of the several streams in the center of the valley, having early brought about the development of the industry. Gilroy now produces 1,300,000 pounds of cheese per annum, which is about one-fifth of the entire product of the State.”

On the San Benito County side of the valley, dairy production began slightly later, around the mid-1870s. By 1879 San Benito County had significant dairy production centered around the San Felipe district northeast of the Bolsa, where alluvial Yolo silt loam deposits from the



Figure 3.6. Furlong Ranch, east of Gilroy (ca. 1890). Harrison (ca. 1888) described the Furlong Ranch around the same era: “A short distance west of Old Gilroy and on the road to San Felipe, is one of the prettiest farms in the State...Nearly all of the low land is covered with rye grass, which is well adapted to wet land, growing even in the water. It is nutritious, stock like it, and it makes good hay...The leading feature of this farm is dairying, the dairy consisting of 135 cows...Twenty acres are planted in fruit. There are six artesian wells on the farms, five of which are under 80 feet in depth...The green fields of rye grass, upon which sleek horses and cattle are grazing, the handsome residence and numerous out buildings, the cottages of the dairymen, all combine to form a picture which it would be impossible to fully represent in a wood engraving.” (Unknown ca. 1890b, courtesy of the Gilroy Museum)

Pacheco Creek watershed provided rich, moist, alkali-free soil (Cosby and Watson 1927b; fig. 3.7). Well established as a dairy region by 1881 (cf. Pacific Coast 1881b), peak cheese production was reached in 1889 and peak butter production in 1899 (Unknown 1975(?)). By the turn of the century there were six large dairy factories simultaneously in operation in the tiny San Felipe district (including one owned by a man nicknamed “Butter” Brown who lived “in the swamp”; Williams 1968a,b).

Orchards

Some of the first fruit trees in San Benito County (cherries) were planted in the San Felipe district, likely in the late 1860s (Anderson n.d.). As artesian water use developed, the prevalence of fruit trees began to increase in South

Valley on productive, well-drained soils around Gilroy and Hollister where wheat (and earlier, cattle ranching) had once dominated (Jacobson 1984). This land use conflicted more directly with oak savannas and woodlands than cattle grazing and grain culture had, as orchards were typically planted at a density of 267 trees/ha (108 trees/ac; or as much as 474 trees per hectare/192 trees per acre; Shortridge [1896]1986).

In 1873, the area east of Gilroy near Llagas Creek was described as predominantly grain fields, with orchards planted near the houses: “A most charming section of country, with neat farm houses scattered here and there, surrounded with orchards, vineyards, and shade trees, and large fields of waving grain extending as far as the eye can reach” (Coffin 1873). By 1888, while wheat was

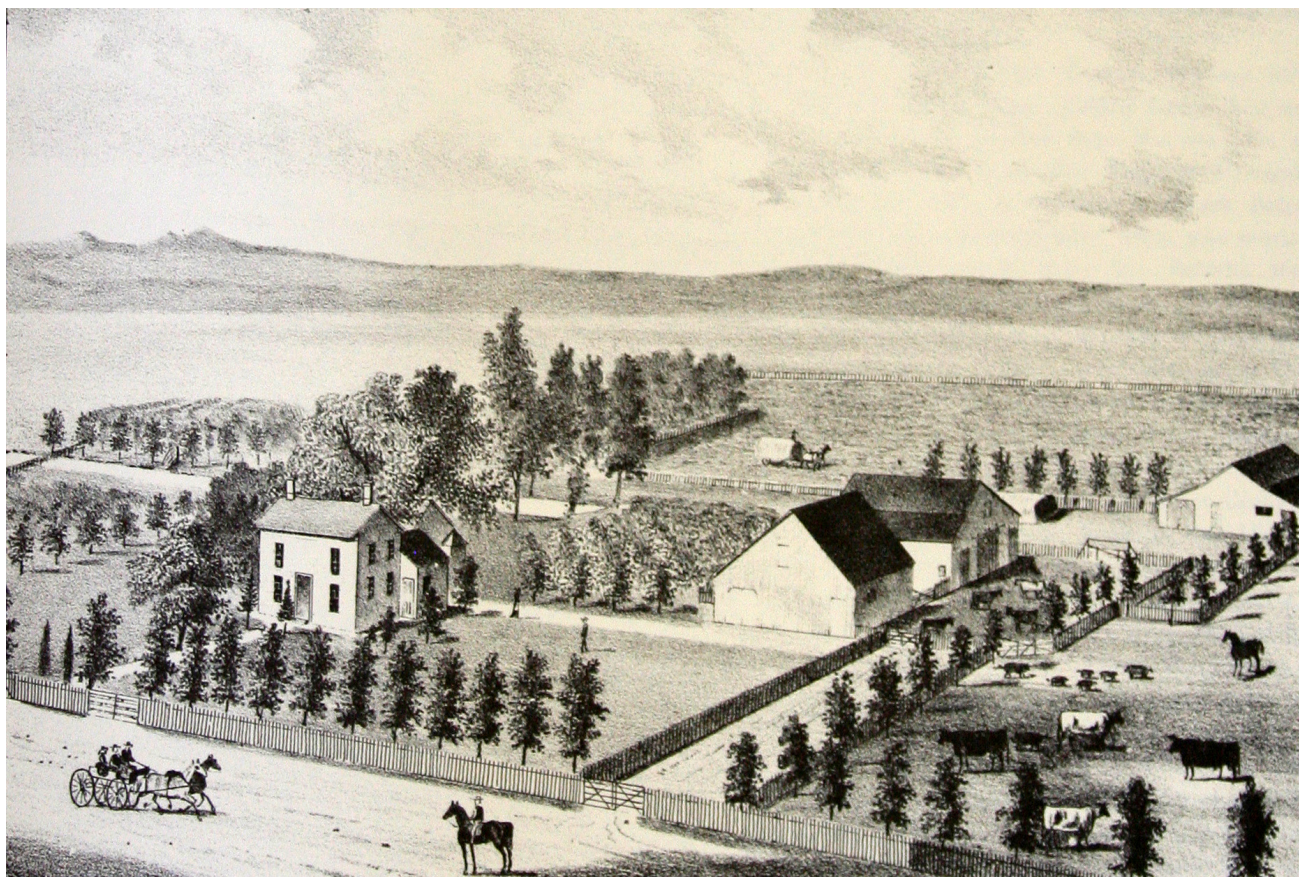


Figure 3.7. “Dairy & residence of E. Nason, San Felipe, San Benito Co., Cal.” This 1881 sketch shows one of the many dairies in the San Felipe district in the 19th and early 20th century (cows at right). Lovers Lane is seen in foreground. (Elliot and Moore 1881)

still described as the principal crop of the southernmost portion of the valley, fruit had become the most profitable. Harrison (ca. 1888) describes the changing agricultural landscape around Gilroy:

Farming has been and is the leading industry of this portion of the valley, the principal products being wheat and barley...Most of the country south-east of Gilroy, and notably a portion of it too wet for cultivation is useful to pasture dairy stock...But the profits of the fruit industry have eclipsed all others, and the adaptability of Gilroy soil and climate to this...is causing the rapid planting of vines and trees. Sufficient has already been done in this line to place it beyond an experiment.

Many of the orchards and vineyards detailed in the piece were planted 4-6 years earlier, around 1882-1884. The first orchards in the Pacheco valley area were introduced around 1910 (Cosby and Watson 1927b).

"Five miles from the city [Gilroy] is a tract of land containing 5,500 acres, the property of Messrs. Lion and Buckley of San Jose. This property was bought by these gentlemen a year or so ago, and when the demand for Gilroy land justifies, it will be cut up and put on the market. It is splendid fruit land. Beyond this tract, and on the eastern side of the valley, is a large area of virgin soil, beautiful level valley land, covered with wide-reaching oaks, ably fine vine land, and is the least populous of all the Gilroy section of country. There are 40,000 acres of land here upon which there are less than a dozen residences."

- HARRISON CA. 1888

The area between Morgan Hill and Gilroy continued to be held by a few large landowners until nearly the turn of the century (1892-3), and thus developed into orchards slightly later than the country around Gilroy, resulting in more documentation of the natural patterns of oak lands in this area (see fig. 6.6). Orchardists took advantage of

intermittent stream conditions to plant occasionally on the less frequently flooded stream terraces along Uvas-Carnadero Creek, and at least one enterprising family on Carnadero Creek dried fruit in the sand in the dry river bed: "[w]ater is nicer than sand for scenery, but for fruit-drying the last is better" (Kenderdine 1898).

The extent of orchards in South Valley continued to expand exponentially in the late 19th and early 20th centuries. In 1889, there were 5,381 prune and plum trees in San Benito County; by 1899 there were 143,455 (Cosby and Watson 1927b). While in 1890 orchards covered only 10% of the agricultural land in the Santa Clara Valley (Broek 1932), by 1905 Gilroy was boasted to have "half the prune and apricot trees of America" (Unknown 1904). By the 1930s, south Santa Clara Valley orchards (mostly prunes) covered about 65% of total cropland and "nearly three-quarters" of the irrigable land (Blackie and Wood 1939). The alluvial valley floor between Morgan Hill and Gilroy was "almost solidly planted to deciduous fruits and grapes" (Blackie and Wood 1939; fig. 3.8).

The notable exceptions to this horticultural expansion were the lower Llagas Creek and Soap Lake areas, poorly drained areas which were used for grains and pasture even into the 1940s (Stimson 1944). Wetland soils immediately surrounding and east of Gilroy, and to the east of the Bolsa, remained alfalfa and dairy farms. Poorly drained or unirrigable land in the Bolsa and on the valley periphery remained grazing land.

Irrigation

Little evidence of ditching, either for irrigation or for drainage purposes, existed in South Valley until the 1870s. Drainage ditches seem to have been more prevalent than irrigation ditches in most parts of South Valley, reflecting the early prevalence of dry farming and challenges presented by floods. Since much of the southern part of the study area (including between Old Gilroy to the north and around Fallon Road in Hollister to the south and encompassing nearly the entire width of the valley) was historically an area of artesian flow,

A - ca. 1930



B - 1939

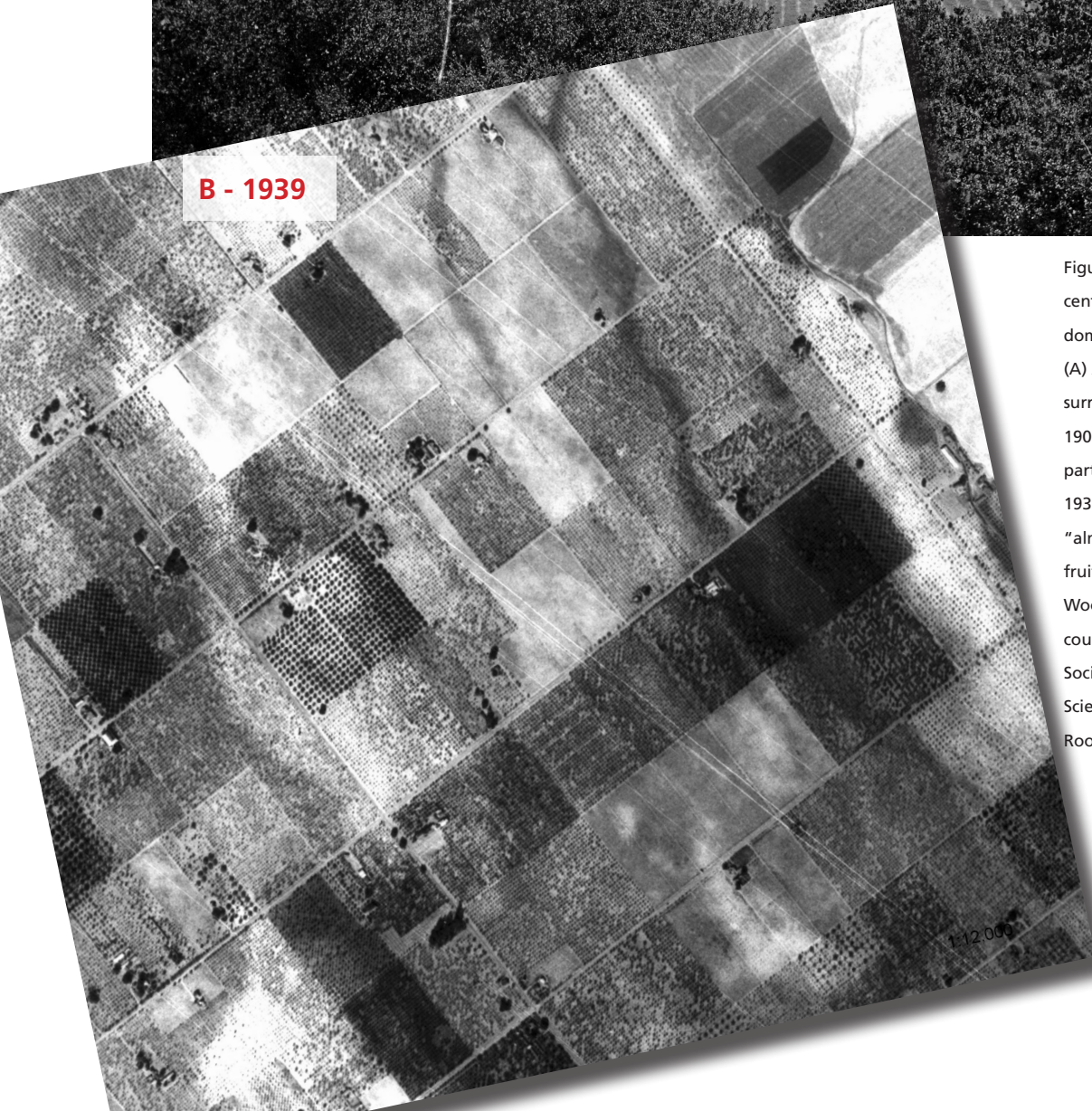


Figure 3.8. By the turn of the 20th century, orchards had begun to dominate South Valley agriculture. (A) An oblique view of Morgan Hill surrounded by orchards in bloom, ca. 1900. (B) An aerial view of a different part of the Morgan Hill region, ca. 1939. The alluvial valley floor is "almost solidly planted to deciduous fruits and grapes" (Blackie and Wood 1939). (A: Unknown ca. 1900a, courtesy of the Morgan Hill Historical Society; B: USDA 1939, courtesy of the Science & Engineering Library Map Room, UC Santa Cruz)

there was little need or incentive for stream diversions for irrigation. Further, South Valley creek flows were considered erratic and unreliable, limiting their utility for irrigation (Clark 1924, Burch 1924(?)). The few surface diversions that did exist were mainly used for winter irrigation, supplementing summer use of well water. The predominant form of irrigation in South Valley has always been groundwater, not surface water: Clark (1924) explains that “[a] small area is irrigated by spreading the winter floods of streams, but a considerable part of this area is later irrigated with water pumped from wells, the winter flooding being only supplementary to the summer irrigation. It is perhaps safe to say that from 80 to 90 per cent of the irrigated land in the valley is irrigated with water pumped from wells.”

Irrigation ditches and other water supply systems were built earliest in areas without access to artesian water. The city of Gilroy had a dam on Uvas-Carnadero Creek by the early 1870s just south of the Uvas/Watsonville Road intersection. The dam was moved upstream around 1875 to what was to become the Uvas Reservoir damsite over eighty years later. Water from the dam was carried through a flume to a reservoir in the hills west of town, then distributed through pipes to residents of the city (Herrmann 1888b, Herrmann Bros. 1890). Further north, by San Martin, water was “piped from a great spring on the ranch in the hills” (Unknown 1904).

Though early mentions of the use of surface water for irrigation occur in the late 1870s (e.g., San Benito Advance 1877), substantial systems for surface water irrigation appear to not have been built until the 1890s. Even then, they were not prevalent, and were secondary to the use of groundwater. In 1891, a reservoir (out of the study area, near Paicines) and system of canals designed to irrigate the lands around Hollister with San Benito River water were built by the Hollister Irrigation Company, irrigating lands as far north as McCloskey Road and the Buena Vista district of Hollister (Burch 1924(?), McCallum 1974). This development opened the way for much more intensive horticulture in the Hollister

area (largely prunes and apricots; Cosby and Watson 1927b). This system was unreliable, however, and farmers still needed additional irrigation water from wells (Burch 1924(?), McCallum 1974). In 1912, Paicines Reservoir was added to the system (Gross 1938). This system remained in use until the connection of the San Felipe Unit to San Luis Reservoir through the San Felipe Project in 1987, which brought Central Valley Project water in over the Pacheco Pass (Harris 1989).

“Considerable grain is raised in Santa Clara Valley without irrigation, most of the vineyards are not irrigated, and even many orchards are not irrigated, especially in the Morgan Hill district and in the district around Cupertino and Los Gatos. In 1913 the grain crop was almost a complete failure, owing to the very light rainfall of that year...”

- CLARK 1924

Drainage

Most of the artesian area supported seasonal or perennial wetlands. Drainage ditching began early in many of these areas, especially in the northern Bolsa and around the mouths of the Uvas-Carnadero and Llagas creeks. Samuel Rea cleared wetland covered with willows and grasses in 1863 at the mouth of the Carnadero (near the current intersection of Bloomfield Avenue and Highway 25), then started a dairy farm on the cleared land. Ditches at the mouth of Llagas Creek were probably constructed sometime in the late 1870s or early 1880s, draining the swamp south of Old Gilroy. Additional drainage for this area was constructed in the 1920s (Cosby and Watson 1927a). Yet remnants of willow groves can be seen into the 1930s (USDA 1939; see fig. 5.16), indicating the difficulty of their complete removal.

Further south, Millers Canal, the most ambitious drainage project of the era, was completed in 1874 “with the view of draining a portion of Soap Lake.” It created

an outlet for San Felipe Lake by connecting the lake with the Pajaro River (Hollister Advance 1873). In doing so, it opened around 2,800 ha (7,000 ac) of land for farming (Hollister Advance 1874).

Millers Canal

Henry Miller, the infamous land-owner and cattle baron of the San Joaquin Valley, also played a large role in South Valley water politics. He owned about 300,000 ha (750,000 ac) of land in California (Bancroft [1890]1970), including at least 8,000 ha (20,000 ac) in the Santa Clara Valley (acquired beginning with the purchase of 700 ha/1,800 ac of the Las Animas Rancho in 1859; Milliken et al. 1993, Roddy 1995). Along with fellow cattleman Charles Lux, Miller owned land on the Las Animas rancho south of Gilroy, on the Llano de Tequisquita rancho surrounding the northern half of San Felipe Lake, and on the Juristac Rancho. The Bloomfield Ranch area was well-situated for Miller & Lux's operations: a place easily accessible from Pacheco Pass that could serve as a stopping place for cattle on their way from the pair's vast holdings in the San Joaquin Valley to San Francisco markets (see top image, p. 13). The area was ideal for these purposes because of its expansive, naturally wet meadows – Miller described it as “well watered, nice country, nice grass, and a nice place to camp” (Iglesias 2001). Included on their property was the sequence of seasonal and perennial wetland habitats connecting San Felipe Lake to the more well-defined reach of the Pajaro River.

Interested in transforming their Llano de Tequisquita ranch into viable grazing land, in 1873 Miller & Lux began to build a canal to improve drainage on their Soap Lake property (Hollister Advance 1873). The canal was completed in January 1874, as reported in The Hollister Advance: “Miller & Lux have completed their canal for draining Soap Lake. It is nearly 3 miles in length, and reclaims some 6,000 or 7,000 acres of very fine land. At the bottom it is 14 feet wide, at the top it is 26 feet wide, with a depth ranging from 3 to 7 feet” (Hollister Advance 1874). The canal became the predominant drainage feature of the western

Bolsa, conducting water directly from San Felipe Lake to a point downstream on the Pajaro River just north of Bolsa Road, bypassing the shallow, undefined section connecting the Pajaro to the lake. Broek (1932) summarized this system, and its modification: “the Millers Canal which, in place of the shallow winding beds which is the beginning of the Pajaro River, now affords an adequate outlet for the San Felipe Lake.”

By the 1940s and '50s, the capacity of Millers Canal to drain the Bolsa had become reduced by vegetation growth, siltation, and deliberate infill to allow crossing of the channel.

“According to local landowners the canal was, up until 15 years ago [1944], adequate during normal years,” said the head of the local Soil Conservation Service in 1959. “At that time the Miller Canal was kept open and had not as yet silted or had produced the terrific vegetation growth that is evident today” (Hollister Evening Free Lance, July 1959).

Though it was certainly the most prominent, Millers Canal was not the only drainage modification to the Soap Lake landscape. By the early 1900s, another canal is shown connecting Tequisquita Slough with San Felipe Lake east of the wide, shallow channel of Tequisquita Slough itself (figs. 3-9 and 3-10). The canal was built on the Emery Ranch southwest of the lake (what was to become Spreckels Sugar Company land).

The groundwater problem

With a few exceptions (for example, early dry farming on orchards near Morgan Hill; Clark 1924), orcharding on the valley floor was an irrigated enterprise (Cosby and Watson 1927a; fig. 3.11). T.S. Kenderdine, observing the ranch of a friend of his on the Carnadero near Gilroy, remarked that “without irrigation orcharding would be a poor business” (Kenderdine 1898), and Clark (1924) noted that “without

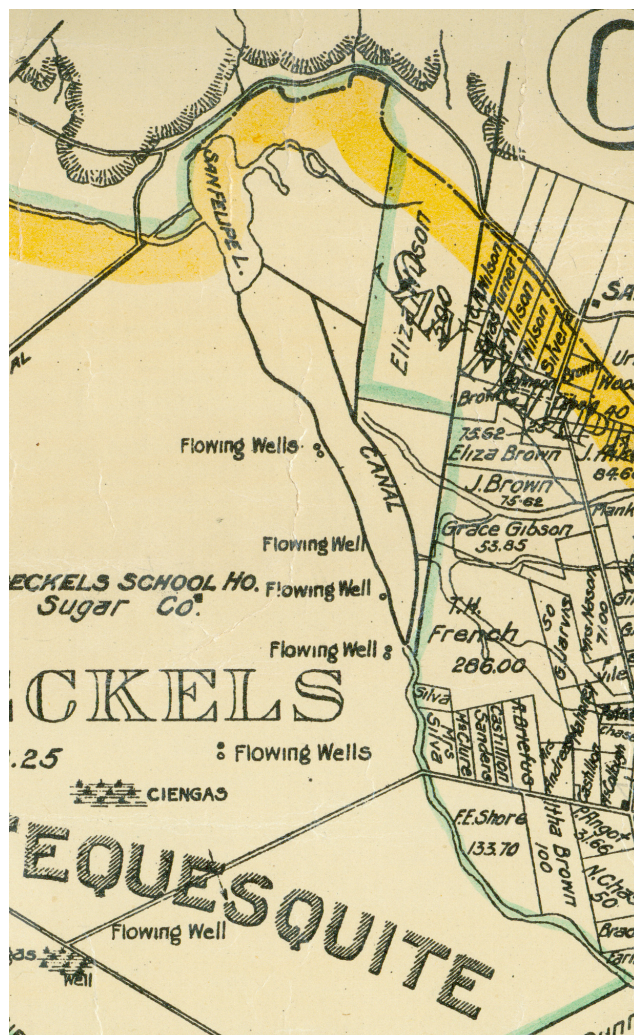


Figure 3.9. This 1907 property map of the San Felipe Lake area shows both Millers Canal (upper left) and another series of straight canals (labeled “canal”) to the right of Tequisquita Slough. The canal was built on the Emery Ranch southwest of the lake (what was to become Spreckels Sugar Company land, as it is labeled here). (McCray 1907, courtesy of the Earth Sciences and Map Library, UC Berkeley)

irrigation the valley would of necessity be given over largely to the production of oat and barley hay.” Dairying, too, required extensive irrigation. Alfalfa, the predominant feed for dairy cattle, required more than twice the quantity of water as did orchards (Clark 1924). As a result of these water needs, the number of artesian wells ballooned from 1880 to 1900.

The effects of so many wells on the groundwater table was rapidly felt. Exacerbated by a dry spell during 1897-1899, by 1898 pumping was needed to extract water from previously free-flowing wells in the San Felipe district (McCallum 1974). Another dry spell from 1907 to 1910 further worsened the problem as those who relied on stream flow for irrigation turned to an already falling groundwater supply (Tibbetts and Keiffer 1921). By 1910, Wells (ca. 1910) observed that around San Felipe “some of the wells do not always flow, and the use of pumps is general.”

The dry spells of 1897-1899 and 1907-1910, coupled with intensive water use by dairies (alfalfa) and orchards, began to make artesian wells a decreasingly reliable water source. By 1910, many wells flowed only during the winter, and most required pumping (Wells ca. 1910). Increased pumping led to even further declines in groundwater levels. From 1916 to 1923, the water table for the Hollister district dropped an average of 2.5 m (8 ft; Burch 1924(?)). Cosby and Watson (1927b) described an even more severe rate of recession of 2-2.5 m (6-8 ft) per year.

By 1936, depth to groundwater had plunged in some places a further 10-12 m (35-40 ft; Gross 1938, McCallum 1974). Broek (1932) wrote that in the artesian zones, “wells had by 1924 ceased to give sufficient discharge for irrigation use, and by now have entirely stopped flowing.” The electrification of rural areas, coupled with the development of powerful turbine wells in the 1930s, further contributed to falling groundwater levels (Prince et al. 1995, Yates pers. comm.).

FLOOD CONTROL AND URBAN EXPANSION: MODERN ERA (1930-PRESENT)

Water storage

As groundwater resources diminished, interest increased in surface storage as a way to both recharge groundwater and make surface flows a more useful, reliable form of irrigation (Gross 1938). The Hollister Irrigation District



Figure 3.10. "Irrigation canal on Emery Ranch, Soap Lake, looking downstream," ca. 1900. This is likely the same canal as depicted in Figure 3.9. Interestingly, the image is labeled "Irrigation Canal," suggesting that it was not just used for drainage. (Unknown ca. 1900b, courtesy of the San Benito County Historical Society)



Figure 3.11. "Irrigating an Orchard near Hollister, California," ca. 1910. (Unknown ca. 1910a, courtesy of the San Benito County Historical Society)

was formed in 1923 to attempt to replenish groundwater supplies through percolation and dam construction (McCallum 1974). In 1931 the Pacheco Pass Water District (including land on both sides of the county line) split off from the Hollister Irrigation District, and by 1939 had completed construction of Pacheco Reservoir (6,150 ac-ft; Stimson 1944). In 1953, the San Benito County Water Conservation and Flood Control District was created in lieu of the Hollister Irrigation District (McCallum 1974). Hernandez Reservoir on the San Benito River was completed in 1962 (18,700 ac-ft; Creegan and D'Angelo-McCandless 1977). On the Santa Clara side of the county line, the South Santa Clara Valley Water District completed Chesbro Reservoir (8,090 ac-ft) in 1955

and Uvas Reservoir (9,950 ac-ft) in 1957. Central Valley Project water was imported into Santa Clara and San Benito counties via Pacheco Pass from San Luis Reservoir beginning in 1987 (McArthur and Wessling 2005), and groundwater levels began to rise in the Soap Lake area during wet years in the mid-1990s (Yates pers. comm.).

"Local interests have constructed small reservoirs for irrigation and provided irrigation wells and canals. In normal years these are inadequate to meet irrigation needs after the month of March."

— STIMSON 1944

Flood control

While significant local efforts to drain the perennial wetlands of the lowlands began in the second half of the 19th century, major efforts to reduce flooding from South Valley stream courses came relatively late. Pacheco, Chesbro, and Llagas dams, constructed in the mid-20th century for groundwater recharge, also provided some associated flood protection benefits. However, local streams continued to flood in the 1950s and 1960s, with particularly damaging overflows in 1955. The most extensive flood protection efforts took place on Llagas Creek beginning in the early 1970s, when Caltrans excavated over 16 km (10 mi) of the channel to provide fill material for the construction of Highway 101 (USDA 1982). The project was halted in 1974 to evaluate environmental impacts following the passage of the National Environmental Policy Act (USDA 1982). Since then, revised designs are being sequentially implemented (SCVWD 2007b). Levee construction and main channel excavation have been common on both the Llagas and Uvas-Carnadero, allowing development of the outer portions of the former channel area.

Gilroy Correspondence - Some of the roads have got badly washed out and some minor bridges washed away. Cole's bridge stood the water. Cole, on the following morning was seen on top of it singing, this bridge will brave a thousand years, the freshets and trustees.

— SAN BENITO ADVANCE, NOVEMBER 27, 1875

Modern agriculture

By the 1930s, South Valley agriculture began to transition into seed and row crops, often on topographically lower, heavier soils previously covered by seasonal or perennial wetlands (MacGraw 1961). By the end of the decade, orchards still dominated the area (comprising 64% of the agricultural land), but row crops (along with alfalfa and sugar beets) were a significant land use, comprising 25% of the agricultural land in South Valley (Blackie and Wood 1939).

“The vegetative cover pattern, like precipitation, varies with elevation. The general pattern is row crop farming on the lowest valley lands, orchard within the main valley area, small grain and pasture on the higher valley lands, range land in the foothills, and dense brush and some timber in the higher hills.”

— LOMA PRIETA SOIL CONSERVATION
DISTRICT ET AL. 1967

Land use varied with soil type and topography. Orchards were differentially planted on well-drained alluvial soils in the Pacheco valley and north of Gilroy, while vegetable crops dominated low-lying areas to the south and east of Gilroy. Stimson (1944) noted that “Uvas, Carnadero, and Llagas...cause flooding of areas planted to orchards and vineyards in the upper reaches and to row crops in the lower reaches.”

By 1980, orchards had ceased to define South Valley agriculture: “Farmland is devoted primarily to row crops with small areas of orchards” (USDA 1982). This trend has largely continued to the present day. Orchards are almost completely absent, while row crops such as lettuce, bell peppers, spinach, and mushrooms predominate (Santa Clara County Department of Agriculture 2005). Nursery crops are also a lucrative crop in the region.

Urban expansion

Gilroy has been the prominent American town of the study area since its incorporation in 1870. The town was originally located to the east, in what is now called “Old Gilroy,” but moved to the present-day location with the coming of the railroad in 1869. Morgan Hill developed much later, and incorporated in 1906.

In the 1880 and 1890 censuses, Gilroy was the third largest town in Santa Clara County (with a population of about 1,600-1,700; California State Department of Finance 2000), eclipsed in size only by San José and Santa Clara. (Morgan Hill did not yet exist.) By the 1900 census,

Gilroy had dropped to 4th place; by 1940, to 6th place (population 3,615). By the end of the northern Santa Clara County population boom of the 1950s and 1960s, Gilroy was only the 13th largest city in the county.

In the 1980s and 1990s, population expansion in South Valley began to outpace growth in northern Santa Clara Valley cities. Gilroy tripled in size between 1970 and

2000 (to a population of 41,464), sending it back up in the 2000 census population rankings as the 8th largest Santa Clara County city. Morgan Hill, however, grew to six times its population (population 33,556), to 10th place, and now approaches Gilroy in size. While both cities continue to expand, these two major population centers of South Valley are both still small in comparison to other Santa Clara Valley cities.

