



## IRRIGATION DISTRICTS IN AN URBANIZING LANDSCAPE

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When cities in California's Central Valley expand, they usually encroach on the service area of some neighboring irrigation district. The responses of irrigation districts to this encroachment may go a long way toward determining the character of the local landscape. An example can be found in Solano County, midway between the Bay Area and Sacramento.

Suisun Valley, an 8000-acre orchard area adjacent to Fairfield, remains in agriculture today in part because of efforts made fifteen years ago by the Solano Irrigation District (SID) to resist urbanization of its service area. Yet very little about the origin of SID suggests that it would ever play this role, and the story of how it came about may be of interest to geographers.

### **Growth of Two Orchard Districts**

Solano County, like the rest of the Sacramento Valley, receives enough rain to sustain some kinds of agriculture; but the land is more productive under irrigation. The history of Solano in the American period shows a familiar California pattern: an initial phase of cattle ranching, which was replaced by wheat farming, which gave ground to rowcrops and orchards, which in turn have begun to retreat in the face of urbanization pressures.

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American settlers in the 1850's discovered an area from which cold air readily drains, a "thermal belt," on the foothills between Vacaville and Putah Creek (Figure 1). This microclimate gave them a two-week edge on other fruit districts in northern California, and gave rise to the Vacaville Early Fruit District, which reached its maximum extent of 15,000 acres by 1895, and was well-known by name as far as the produce markets of the east coast.<sup>1</sup>

Suisun Valley, an embayment of the Sacramento Valley in the east side of the coast range, was also productive ground for orchard crops, but unable to compete in the early fruit market because intrusions of cool ocean air through the Carquinez Straits delay ripening. There may be a thermal belt on the hills around this valley, but the soils there are of different parent material and have not

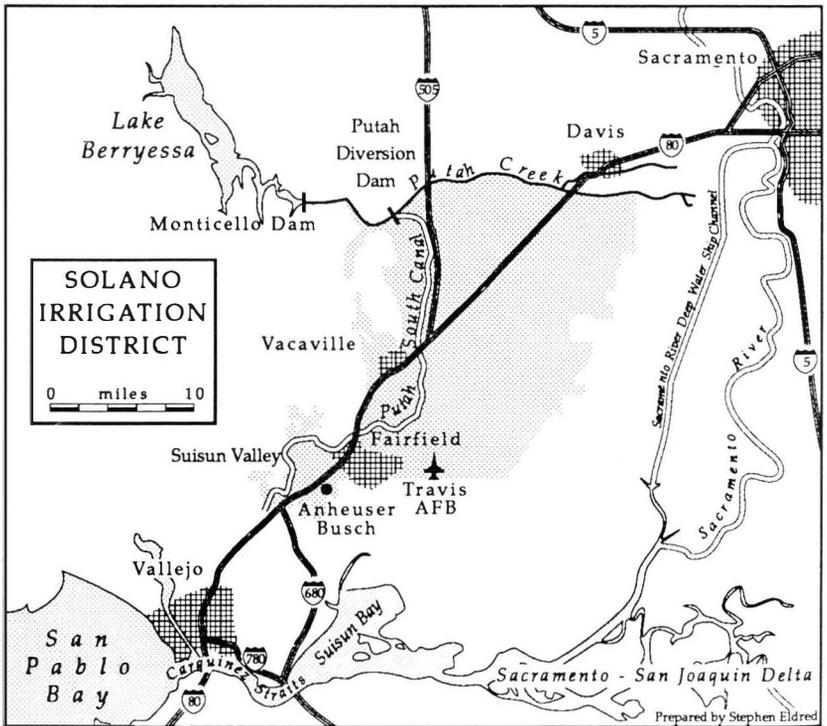


Figure 1. The Solano Project.

weathered to a depth sufficient for orchard crops. Pears, peaches, apricots, grapes, and walnuts all do well on the valley floor, yet Suisun Valley produce never enjoyed any particular marketing cachet, and much of it was used for canning and drying.

Thus by the end of the nineteenth century, two distinct fruit districts had developed in Solano, one near Vacaville and the other in Suisun Valley. Both flourished without benefit of irrigation. Vacaville growers employed Chinese laborers to terrace their hillsides and keep the ground under the trees cleared of competing vegetation, so the average annual rainfall of 20-25 inches was adequate. Suisun Valley had a high water table and much of it was seasonally swampy. Far from needing irrigation, pioneer Suisun Valley growers had to dig drainage ditches for trees that "like dry feet," such as peaches, apricots and almonds. Because of their tolerance for wet ground, pears were popular from the beginning.

By the 1920's, the Vacaville district had begun to live on its capital. Terraces were crumbling because of deferred maintenance, and clean cultivation was causing soil erosion. Then came the Depression. Vacaville's early fruit and deluxe varieties were easily cut from family budgets in hard times. New Deal agricultural legislation to reduce and stabilize production allowed growers of large, irrigated fruit in the San Joaquin Valley — who dominated the business by this time — to influence grading standards; and Vacaville's smaller, non-irrigated fruit became difficult to market. Under these pressures, the Vacaville Early Fruit District went into terminal decline. The Depression was not a boon to Suisun Valley either, but its dried and canned fruit remained affordable to more people. During World War II, government contracts to provision the troops stimulated demand.

### **The Solano Project**

At mid-twentieth century, Solano agriculture was still largely dependent on rainfall. The Bureau of Reclamation estimated in 1948 that 86,000 acres would be irrigated

under a projected Solano Project.<sup>2</sup> At the time the area supplied by private pumping of groundwater was no more than 15 or 20 percent of that figure. Though the gorge of Putah Creek through Blue Ridge had long attracted attention as an ideal dam site, agricultural interests in Solano County did not organize themselves to lobby for canal water until 1940. That year the Board of Supervisors formed the Solano County Water Council, "a representative group of county citizens who served on a volunteer basis to study the possible sources of a stable water supply for the area."<sup>3</sup>

There were three reasons for pro-irrigation forces to organize themselves at this time. (1) Groundwater pumping in Suisun Valley had caused salt water intrusion, which threatened the municipal supplies of Fairfield and Suisun City as well as agriculture. (2) The prospect of interest-free federal funding through the Bureau of Reclamation's Central Valley Project offered a way around the difficult task of raising capital locally. (3) Finally, by the 1940's some growers and businessmen were starting to foresee opportunities in industrial and urban development, which would require a more plentiful supply of water.

The Solano County Water Council evidently went dormant for the duration of World War II. In October, 1947, a formation petition to create an irrigation district was presented to the Board of Supervisors, and in February, 1948, the measure was approved by the voters within the proposed district, 915 votes to 77. The next month, Solano Project bills were introduced in Congress and were duly passed.

Construction began only after further delays due to the Korean War and lawsuits by users of groundwater along Putah Creek below the dam, not the least of which was the University of California at Davis. Money was finally appropriated in 1954. The Bureau of Reclamation dammed Putah Creek at Devil's Gate and created a 1,600,000 acre-foot reservoir in Berryessa Valley. A small diversion dam six miles downstream deflected water from the creek into

the Putah South Canal, a lined, gravity-flow canal running south and then southwest along the base of the hills (Figure 1). Laterals led water off to the east and southeast towards the Sacramento River. Pumps moved water into areas at the base of the hills, above the projected line of the canal, such as upper Suisun Valley.

Work was completed in time to provide water for the 1959 growing season. Much of the irrigable land in the service area was not actually levelled and brought into production until well into the 1960's. In other words, before the Solano Project was fully built, its service area was already under pressure from urban growth. There must have been fields and orchards near Vacaville and Fairfield that did not receive their first drop of Berryessa water until the housing tracts were already on the horizon.<sup>4</sup>

### **Agendas of the Solano Project**

The fact that the Solano Project was built by the Bureau of Reclamation may suggest that its primary purpose was irrigation, but official statements and unofficial publicity from the time of the 1948 congressional hearings show that many Project backers had other ideas. They were already thinking of Solano County as a part of the greater San Francisco metropolitan area. Their arguments in favor of the project emphasized urban growth and national defense much more than agriculture. Only a few Solano County residents whose testimony appears in the Congressional Record were identified as farmers, and even they testified mostly about nonagricultural water needs.

The Bureau of Reclamation itself saw the project this way. In transmitting its findings to the Secretary of the Interior, the Bureau report stated that:

The Solano Project . . . is needed urgently to provide a dependable water supply for important national defense establishments in Solano County and to provide irrigation, municipal, and industrial water, without which the rapidly growing economy of the county cannot be sustained."<sup>5</sup>

Governor Earl Warren agreed. In a supporting letter, he first devoted a long paragraph to urban and military needs

for water. When he got around to agricultural benefits, it was only to justify the agricultural losses that would result from flooding Berryessa Valley.<sup>6</sup>

The Solano County Water Council published a pamphlet with the following remarks:

It is evident that Solano County, which is located so favorably to take part in the industrial expansion of the west, is hampered and, in part almost restricted from taking part in this expansion; and further that the County's population of 121,000, together with its industrial plants, are threatened with a serious curtailment of water supply . . . The SCP is the only water source available which can meet the combined requirements of this area over a period of years in the foreseeable future.<sup>7</sup>

and further:

. . . agriculture water, within the ability to pay, is available only by joint use of the SCP with Municipal and Military water users.<sup>8</sup>

In retrospect it appears that hardly anyone expected agriculture alone to pay the expense of a major diversion from Putah Creek. Irrigation was promoted in order to get Bureau financing, and in the expectation that irrigation would be an interim use for the water during a transition from a rural to an urban economy.<sup>9</sup>

It may be tempting to see the references to military needs as the real agenda in all this; but as it turned out, both Travis Air Force Base and Mare Island Naval Ship Yard, the intended recipients, got their water via a pipeline from the Sacramento River long before the Solano Project finally went into service.

A Solano County Flood Control and Water Conservation District was created to act as the local contractor with the Bureau of Reclamation. The Solano Irrigation District then subcontracted with that entity to buy 75 percent of the water. Local governments and agencies took the rest. This arrangement, which is unusual for Bureau of Reclamation projects, seems to provide an administrative framework in which the irrigation function of the Solano Project could be phased out in favor of non-farm uses.

So here is a situation in which what is ostensibly an irrigation project turns out to be at least as much a plan to lay the infrastructure for expected urbanization and industrial development. In light of this, SID's actions in the 1970's are all the more surprising.

### Urban and Industrial Growth

The Vacaville Early Fruit District was gone by the time canal water began to flow. Suisun Valley, however, had survived hard times and now benefitted from the new project. Through the 1960's and into the 1970's, canning fruit—especially pears—was a good business in the Valley.

Meanwhile, nearby Fairfield had been growing rapidly. In 1940, the year the Solano Water Council was formed, Fairfield was still a rural county seat town of 1312 people. Subsequent growth can be seen in the following census statistics:

1950	3,118
1960	14,968
1970	44,146
1980	58,100
1985	64,400

This rapid population growth came about through the extension of the built-up area rather than any rebuilding or densification. The little farm town of 1940 is now only the nucleus for great tracts of housing and miles of commercial strips. Fairfield has become a major growth center on the northern fringe of the greater San Francisco Bay urban region.

Suisun Marsh on the south and Travis Air Force Base on the east limited Fairfield's expansion in those directions, so the post World War II developers' frontier was to the north and west, that is, towards the hills and thus towards the orchard areas that lay between the city and the hills. Much growth was by accretion of new tracts at the edge of existing residential areas, but leapfrog development had started. In the mid-1960's an isolated tract of up-scale housing took out some fifty acres of orchard in the very center of Suisun Valley. Then in 1971, Solano Com-

munity College, a sprawling campus of single-story buildings and vast parking lots, replaced 192 acres of orchard land on the west side of the valley. In 1972 the City of Fairfield engineered a 3500-acre cherry-stem annexation far to the southwest of the previous city limits. This "Cordelia annexation" was mostly rangeland and not orchards, but it seemed to put Suisun Valley into a vice between two segments of Fairfield.

Having reviewed the origins of SID, we might expect to find the district cheerfully retooling to become a municipal and industrial provider, a kind of North Bay Municipal Utility District. On the contrary, though, the management of the district took an active role in the 1970's in preserving its irrigation service area, of which the seven or eight thousand Class I acres of Suisun Valley formed a substantial piece. The district did so by taking advantage of Fairfield's ambitions to become a real city with its own industrial base, not just a bedroom community for the inner Bay Area.<sup>10</sup>

### **The Budweiser Factor and a Reprieve for Agriculture**

In the early 1970's, the Anheuser-Busch Company was seeking a good location for a new brewery. Fairfield officials were very keen on getting this 600-job plant, but the company was worried about its prospects for securing a long-term supply of high-quality water. The time was ripe for a deal. In 1974, Fairfield and SID came to an understanding by which SID guaranteed the water supply for the brewery, and for other industries the city might entice to its Cordelia industrial zone. These industrial sites would remain within SID's revenue area. In return, the city agreed not to carry out any annexations before the year 2006 in a demarcated area that included most of Suisun Valley. With other laws creating major obstacles to tract development outside incorporated areas, Suisun Valley had gained significant protection.

Actually it might be more correct to say that this arrangement preserved the possibility of Suisun Valley's remaining an agricultural area for thirty years. For awhile,

agribusiness trends seemed to be running in the opposite direction. Canned fruit was losing popularity in the national diet. Total pear acreage in Suisun Valley began to decline after 1975. In 1983, a major canner, Cal Can, declared bankruptcy; and 9000 tons of Suisun Valley pears—about a third of the total—were suddenly “without a home.” Expedients were found: it was a bad pear year in the Pacific Northwest, and the burgeoning wine cooler market took some of the rest. Still, the long range forecast for canning fruit in Suisun Valley is not promising.

Other agricultural possibilities began to appear, however. A wine grape boom is on; several hundred acres of varieties were planted in Suisun Valley in the past year. The valley is becoming a kind of back forty for Napa County, which is right over the hills. Investment money from all over the world has been pouring into Napa, driving up land prices. Land in Suisun Valley is not only much cheaper, but it can produce up to twice the tonnage of grapes per acre. At least one rancher has pulled a pear orchard for which he had a current contract, in order to plant grapes.

There has also been a revival in the direct marketing of produce. The number of produce stands along valley roads has increased, and owners have organized a Suisun Valley Harvest Trails to seek publicity and generate more business. The San Francisco metropolitan area, with its profusion of organic food stores and “California cuisine” restaurants, is arguably the biggest market in the United States for top quality fresh produce. From this point of view, the preservation, only a one-hour truck trip away, of a seven or eight thousand acre block of top class agricultural soil, with an irrigation system in place, seems all the more feasible.

Another development, which looked bad for agriculture at first, may turn out to provide some unexpected benefits. In 1984, developers proposed a development of “executive homes” on the hills north of Suisun Valley, to be called Rancho Solano. The city government backed the project as an aid in attracting office park development.

Even so, there was vigorous opposition, based on widespread sentiment that the city had grown enough and was only squandering its semi-rural charm without any guarantee of getting the desired development. Under the leadership of a former county assessor, among others, the opposition sued the city to block the annexations that would be necessary for the projects to go ahead. The suits fueled much public discussion of growth issues, and the matter was front-page local news for two years.

In April of 1986, these suits were settled out of court. The plaintiffs agreed to the annexations in return for the creation of an entity to be called the Solano County Farmland and Open Space Foundation. The Foundation would be funded initially by grants from the developers and the city, and on a continuing basis by annual assessments against the houses in the new developments. The money is to be used for the acquisition of farmland in the vicinity of Fairfield, either in fee simple or through the purchase of development rights. The Foundation has since been set up, hired a full-time director, and acquired land.

Meanwhile, the proposed 1200 houses of Rancho Solano are being constructed. Farmers express satisfaction with the plan because the building is on the hills, rather than on the Class I agricultural land of the valley floor. There is a grazing land buffer around the entire project, so that individual lots will not be immediately adjacent to agricultural land. It seems possible that the residents of this development, with their pleasant views down onto a vineyard- and orchard-covered Suisun Valley, will become a major source of support for keeping the valley in agriculture.

If there is any general lesson that can be drawn from this specific case it is a reminder that—despite the inevitability of urban growth—the future is not after all predictable, especially at the local level. Even though the population of California shows every sign of continuing to grow, it is clear that there can be delays and even complete halts that preserve agricultural or open land for

a time. When and if pressure for conversion builds up again, it will likely be under changed circumstances (for example, stricter zoning laws, higher prices for gasoline, or changing public attitudes towards open space) and may thus take very different forms.



## NOTES

1. William Adrian Bowen, "The Evolution of a Cultural Landscape: the Valley Fruit District of Solano County, California" (University of California, Berkeley: unpublished M.A. Thesis, 1964). See especially, pp. 98-122.
2. United States Bureau of Reclamation, "Solano County Project, Central Valley Basin, California," 1948 (mimeographed document in Water Resources Center Archive, University of California, Berkeley).
3. Solano County Water Council, "Presentation on Solano County Project, Monticello Dam," 1948 (mimeographed document in Water Resources Center Archive, University of California, Berkeley).
4. State of California Department of Public Works, Division of Water Resources, "Some Economic and Agricultural Aspects of the Proposed Solano Unit, Central Valley Irrigation Unit," 1948 (mimeographed document in Water Resources Center Archive, University of California, Berkeley). In this analysis Frank Adams—agricultural economist and an old hand at evaluating irrigation projects—predicted "moderate expansion" of orchards at best. In an oral interview eleven years later, he asserted that the Bureau of Reclamation had been too optimistic with regard to the income to be derived from irrigated lands in the project. See: Frank Adams, "Frank Adams on Irrigation, Reclamation, and Water Administration" (University of California, Berkeley: U.C. Berkeley Regional Cultural History Project, 1959; oral interview conducted by Willa Klug Baum; transcript in Water Resources Center Archive).
5. United States Bureau of Reclamation, op. cit., note 2.
6. Warren's letter was cited in a report—*The Solano Project, California*—prepared by the House of Representatives Committee on Public Lands and presented to the Second Session of the 80th United States Congress (Washington, D.C.: Government Printing Office, 1948).

7. Solano County Water Council, April, 1948, "Presentation on Solano Project, Monticillo Dam," section IV, pp. 5-6 (mimeographed submission to Bureau of Reclamation, in Water Resources Center Archive, University of California, Berkeley).
8. Ibid. introduction, p. 2.
9. Richard A. Walker and William J. Matthews, "Water from Power: Water Supply and Regional Growth in the Santa Clara Valley" *Economic Geography*, 58:2 (1982), pp. 95-119. The authors point out how many of the political leaders in Santa Clara County, during its transition from prune capital of the world to Silicon Valley, started as farmers but became ardent boosters of industrial development.
10. For an account of Fairfield's aggressive growth strategy written by the man who served as the city's manager from 1956 to 1987 see: Gale B. Wilson (and Donald D. Brown), "The Entrepreneurial Municipal Strategy," *Public Management*, Vol. 65 (April, 1983), pp. 10-12.