

Water to Wine

Industrial Agriculture and Groundwater Regulation in California

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Highway 101 between Santa Barbara and Salinas is a pretty stretch of road. This is the typical Central California landscape of rolling hills, grasslands and oaks, with occasional sandstone formations and quaint towns such as Solvang, Los Alamos, San Luis Obispo, and Paso Robles, that has attracted tourism for a century. During the last thirty years this region has become known as "wine country," as more and more of the land is dedicated to grape production and dozens of wineries have opened tasting rooms built in Tuscan-style architecture or some modality of the California ranch. Since about 1980, ever-larger patches of the hills and valleys of the Central Coast have been converted from golden brown grasslands to dark green vineyards. This landscape is nice to look at, and thousands of tourists come to the region each year; millions of bottles of wine flow out to consumers around the world.

This expansion of the wine economy in the Central Coast has been fueled by groundwater. Groundwater in California is governed by the "correlative rights doctrine," which recognizes the right of beneficial use (not ownership) of a "reasonable" amount of the substance. This right, and amount, can only be defined in relation to other uses and amounts. In practice, California landowners have been free in most cases to drill wells and extract groundwater

for agriculture with just a ministerial building permit for the well emitted by a county government. There were no requirements to conduct an environmental impact report or register the quantity of water extracted, nor was there any cost assessed by any level of government for the use of this water. California was, in the words of one wine grower in Paso Robles, “the Wild West”—one of the least restrictive places in the United States to use groundwater.

Until the passage of the Sustainable Groundwater Management Act (SGMA) in 2014, groundwater use in California was only regulated when property owners brought lawsuits against neighbors overlying the same groundwater basin or aquifer, alleging that “their” water use rights were infringed on by the other’s use. These lawsuits forced a process of adjudication by the state court that established limits to extraction and mechanisms to monitor it. Adjudication, however, is a notoriously lengthy and costly process that most overlying property owners are loath to embark upon, and only a tiny fraction of groundwater basins in California have been adjudicated, most of them in the urban areas of Los Angeles and the San Francisco Bay area (Landgridge et al. 2016).

In the Paso Robles region, the relentless extraction of groundwater to fuel the wine economy generated great prosperity, but also dry wells, protest, and conflict. There were contradictory responses: individual and collective. On the one hand, groundwater users squared off to protect their individual interests. As groundwater levels fell, those with deeper wells gained an advantage in access that favored the larger grape growers with deeper pockets. Shallow wells of rural residents ran dry during the hot summer irrigation season, forcing the deepening of wells or the construction of costly new ones, and putting property values in jeopardy. Small- and medium-size grape growers saw proportionally more of their profits erode as they dug deeper for

water. At the same time, regardless of their own fortunes, most overlayers recognized that everyone in the groundwater basin would eventually lose the race to the bottom of the aquifer. A number of people told me they reasoned that either costs of water extraction would get too high for even large growers to turn a profit, or the water would simply run out for everybody. Residents and growers certainly had their own private economic interests in mind, but in most cases, they also recognized that the only way to protect their individual interests was to create institutions to manage groundwater as a shared resource, a resource held in common by all users.¹

Groundwater depletion and social conflict led to efforts among residents, agricultural users, and urban purveyors in Paso Robles to create a management plan to bring the groundwater basin into a sustainable balance between extraction and recharge. Despite the recognition by some that groundwater is a commonly held resource (and that correlative rights to groundwater are relational use rights), many others rejected any interference in the continued unlimited extraction of groundwater by individual overlying property owners. The rejection of the effort to create a plan to manage groundwater use was undergirded by a popular assumption that water rights are individual property rights, and by a libertarian distrust of government regulation and taxation. Distrust of collective management was also motivated by the idea that collective water management was a disguised water grab by corporate and financial capital. It was a response that harmonized at that moment with a nationwide insurgency most clearly represented by the Tea Party. However, both proponents and detractors of a hydro-commons in Paso Robles portrayed themselves as defenders of the region against outside forces.

In this chapter, I first discuss the wine industry and its effects on groundwater. Wine grapes are not a thirsty crop,

but in Central California vines have been planted on grazing lands that were never previously farmed, leading to a large net increase in water use. Wine production is linked of course to consumption, and during the last thirty years there has been a restructuring and reconceptualization of social class (Roseberry 1996), in which consumers are encouraged to define themselves as sophisticated and elegant by quaffing one or another varietal or label that has an air of "prestige."

I then describe how wine production, groundwater depletion, and social conflict led the county government of San Luis Obispo to declare an emergency moratorium on new groundwater extraction in the Paso Robles groundwater basin in order to protect the resource while a more permanent management solution was devised. A new water district was proposed that rejected the "one-acre, one-vote" representational structure of water districts in California in favor of a complicated system that defined social groups by parcel size, and that balanced voting power among the groups. This "hybrid" water district was overwhelmingly voted down in a county election, and in the following section of the chapter I explain why. The chapter ends with a brief review of the California Sustainable Groundwater Management Act (SGMA), which emerged in parallel to the failed Paso Robles Hybrid Water District, and which is now in effect in all groundwater basins throughout the state. SGMA requires local actors overlying groundwater basins to form agencies and then to create and carry out, by 2040, sustainable management plans for groundwater. SGMA is thus also an effort to create a commons.

This research was conducted between 2013 and 2017 in the Paso Robles area of San Luis Obispo County, in the Central Coast region of California, as part of a comparative project on the production of high-value agricultural commodities, climate change, and groundwater manage-

ment in California and Mexico.² To date, twenty-four formal interviews have been conducted with an array of people involved in groundwater politics in the region. Many dozens of informal conversations also produced information. Initial interviews and conversations were held with public figures who had been quoted in newspapers and whose contact information was available on the internet. Those I spoke with suggested further contacts, a standard procedure of "snowball sampling" that is not random, but in cases such as this one eventually leads to thorough coverage of the actors most relevant to the research problem. All those spoken with were provided with information about the research project and most consented to being part of the study. Given the highly politicized nature of groundwater management in Paso Robles, a few people refused to be interviewed. The personal names in this chapter are pseudonyms, an almost universal practice in anthropology that helps to ensure the anonymity and security of those involved with the research. Only a few quotations from those interviews were used in this chapter, but the information presented on the case reflects the cumulative knowledge offered by the informants.

Globalized Agriculture: The Wrath of Grapes

Growth in the market for "nontraditional" or "luxury" commodities such as berries, wine, exotic salad greens, and gourmet coffees has been spurred by increasing social inequality over the last thirty years and the re-imagining of social class among consumers (Bourdieu 1984; Harvey 1989; Klein 2002; Roseberry 1996; Schneider 1994; Stiglitz 2012; Watson and Caldwell 2005). The wine sections of Trader Joe's, Vons, Costco, or almost any other large supermarket chain in Southern California dazzle consumers with dozens of labels from the Central Coast and demand from them a decision about the kind of wine drinker they are: a fan of Califor-

nia zins, maybe a pinot lover, more of a white wine person, perhaps—chardonnay, reisling, viognier? Wine enables—requires, really—the consumer to make these sorts of distinctions no matter where they live.

Central Coast wines play a part in the identification of new consumers around the globe. One Paso Robles winemaker, Gary, when I asked him about the market for the record 2013 grape crush, said, “There are always more buyers for our wine in China” (pers. communication, October 17, 2014). And while some wine really is a luxury to purchase at fifty dollars or more a bottle, there is no shortage of labels that sell at five dollars. The enormous spread of price points in the wine industry enables virtually everybody in the developed world to identify as a sophisticated luxury consumer through the purchase of a bottle of wine at between ten and twenty dollars, what the wine industry calls “masstige” labels (mass + prestige).

Since the 1980s, individual and institutional investors have looked favorably upon vineyards and the possibilities for profit that are driven by the luxury drive among consumers. Wine production has soared; Paso Robles has been an important locus of interest. As John, one long-time small-scale farmer in the region explained to me, the region saw a huge influx of money when the federal tax laws were changed in the 1980s, enabling Wall Street investors to sell their holdings and reinvest in vineyards and houses, with very little lost to taxes (pers. communication, October 15, 2014). This led to a proliferation of small and large wineries and built the reputation of the Central Coast as an emerging premier vinicultural area. Large agribusinesses and institutional investors followed close on their heels, cashing in on the Central Coast reputation while producing larger volumes of low-cost wine.

Paso Robles wine production was soon part of a global market. Since the 1980s, free trade agreements and the glo-

balization of agricultural commodity markets have stimulated the production of high-value commodities for distant consumption—part of a new “food regime” characterized by the mobility of capital, technology and labor, increasingly intensive manipulation of ecologies, and the impermanence of productive agricultural assemblages (McMichael 2009). In this context, agribusinesses have expanded operations globally. For example, Meridian Wines refocused operations from Napa and Sonoma Counties into the Central Coast in the 1980s, later expanding operations to Chile. In 2016 Australian wine giant Treasury Wine Estates bought Meridian’s installations in Paso Robles (Buffalo 2016). Treasury Wine Estates, for its part, became a world player in the wine business when it bought most of the wine labels held by the UK alcoholic beverages giant Diageo. Although Paso Robles wines are produced in the region and convey a regional image, they are caught up in global markets.

The economic meltdown of 2008 has accentuated the presence of transnational capital in the wine industry. Finance firms, such as large insurance and investment banking companies, are buying agricultural land in a play to reduce portfolio risk through diversification and to increase returns. As Madeleine Fairbairn (2014) puts it in the title of a recent article, in the eyes of capital, agricultural land is “like gold with yield” because it is a physical asset (“like gold”) that both appreciates in value and generates profits from agricultural products (“yield”). Capital is attracted to exceptionally profitable luxury commodities, and in particular wine, the value of which is often accentuated by prestige, *terroir*, and other sometimes mystical factors of branding (Klein 2002).

Water and Agriculture in California

Despite these important global and consumer dynamics, the production of luxury agricultural commodities such

as wine takes place in specifically local environmental conditions and principle among these in California is aridity. Irrigated capitalist agriculture was pioneered in California, and since the nineteenth century the river valleys of the state have been the site of the massification and technification of agricultural production based on complex water systems. In the early twentieth century, California's irrigation systems made the scalar jump from river to region, and consolidated landscapes and social formations controlled by agribusiness and the state. (Arax and Wartzman 2003; Worster 1985). State and federal government agencies built huge dams and thousands of miles of canals to capture, store, and distribute the water of the rivers that descend from the mountains to the valleys (Hundley Jr. 2001; Pisani 1984).

In addition, thousands of wells allow even more, and more flexible, access to the water of these regional drainages, especially in times of scarcity. California's water systems have given rise to complex social formations that include large and small producers, as well as a migrant agricultural working class in constant renewal (Goldschmidt 1978; Haley 1989; Holmes 2013). These infrastructures facilitate dramatic urban growth as well, and California's cities draw an ever-larger share of the water used by the rural sector (Hundley Jr. 2001; Zetland 2009).

In the 2000s and 2010s, California's irrigation infrastructure strained to confront a prolonged drought. Limits to the availability of surface water in California, as well as other arid and semi-arid areas around the world, led to the mining of aquifers and groundwater depletion for urban use and agriculture (Famiglietti 2014; Scanlon, Longuevergne, and Long 2012; Taylor et al. 2013; Voss et al. 2013). Evidence suggests that climate change is already affecting precipitation, with wet areas of the world foreseen to get wetter, and dry areas such as the Western United States and

Central-Northern Mexico to get drier (Durack, Wijffels, and Matear 2012). California straddles the line between relatively wet and dry areas, and so while wet and dry extremes will become more pronounced, overall precipitation in the state will likely remain somewhat steady (Berg et al. 2015). However, the southern end of California, including Santa Barbara County, is predicted to receive less precipitation, and increased temperatures will increase evaporation and reduce soil moisture, leading to more irrigation. For all these reasons, the drought that hit California between 2000 and 2015, and which still lingers in the Central Coast California wine region, seems to be a harbinger of a "new normal."

Groundwater is especially important to agribusiness as it seeks out favorable conditions of production (Budds 2004; Woodhouse 2012; Zolniski 2011). Experts agree that groundwater extraction is a global problem for the sustainability of agriculture and society, but that it is largely unregulated and poorly understood (Giordano 2009; Glennon 2004; UC Center for Hydrologic Modeling 2014). By 2013, the lack of regulation, together with years of drought and a simultaneous expansion of certain high-value agricultural commodities—notably almonds and grapes—combined to provoke a grave over-extraction of groundwater resources in California: some thirty cubic kilometers between 2003 and 2009 (Famiglietti et al. 2011). Almonds, for example, use an extraordinary amount of water: one gallon for each almond. In 2014, more water in California was dedicated to almond trees, which are concentrated in the southern San Joaquin Valley, than to the urban and domestic use by humans in the entire state. Eighty percent of those almonds are exported, mostly to China, representing a huge loss of "virtual water" for the state (Fulton, Cooley, and Gleick 2014; Philpott 2015). The social effects of this overuse include the drying of the shallower wells of rural residents, and diminishing

water quality as deeper, older, and more heavily mineralized water is brought to the surface.

In the Central Coast region of California, wine grapes are the commodity that is drying out the aquifers, and the Paso Robles American Vitacultural Area (PRAVA), in San Luis Obispo County, is a good example of this. Paso Robles and surrounding towns such as Creston, Atascadero, and Shandon lie in sandy hills that form the headwaters of the Salinas River, which flows north through San Luis Obispo and Monterey counties, and eventually drains into the ocean south of Santa Cruz. The lower Salinas River valley, around the town of Salinas, has been producing high-value crops such as lettuce, artichokes, and strawberries for a hundred years. John Steinbeck's ethnographic novel about the region, *East of Eden*, made even more popular by James Dean in a 1955 movie, depicts life there in the first decades of the twentieth century and the emergence of vegetable production for national markets.

The upper Salinas River Valley, on the other hand, has much less water, and the hilly landscape is frequently made up of poor, rocky, and sandy soils. Until the wine boom, Paso Robles was more of a way station on Highway 101 than a destination in itself, although it did gain some fame in the late nineteenth century for hot springs baths. It is a region that is quite active geologically, with many faults, oil deposits, and thermal, mineral water that is not useful for irrigation. For all these reasons, the land around Paso Robles was primarily dedicated to ranching and oil until the rise of grapes, which are better suited to poor rocky soils and aridity. There were a few family vineyards in Paso Robles since the late nineteenth century, but until the 1950s, when high-voltage electricity was brought into rural areas of the county, there was very little pumping for irrigation. Even after the arrival of cheap electric centrifugal pumps, groundwater was generally used to nourish grains and alfalfa, which con-

solidated the existing ranching economy rather than transformed it into high-value agriculture.

Grape vines are capable of producing with very little water, and there are varieties that are well-adapted to the scant rainfall and hot summers typical of Mediterranean climates. Before groundwater pumping, "dry-farming" techniques were practiced such as spacing grape plants widely (a third of the number of plants that are found on irrigated land), training the plants into small trees that stand alone (rather than vines on a trellis), and sealing the moisture in the soil with a thin top layer of pulverized dirt (a "dust mulch") that does not conduct water to the surface through capillary action. Benito Dusi, for example, farms forty acres of "head-pruned" grapes that his father planted, some of them, like Benito himself, over eighty years old. A few other wineries, such as Tablas Creek, have planted dry-farmed vineyards more recently. Only a few such "dry-farmed" vineyards exist—two or three hundred of the more than 25,000 acres in Paso Robles that are dedicated to wine grapes—because the yield is, at best, one third of that of irrigated vineyards. This means that dry farmers either do not need to compete economically with conventional irrigated grapes because they own their land, or otherwise lower their production costs and income; or that they attract environmentally ethical, luxury consumers willing to pay three or four times the price of a bottle of conventionally produced wine—upwards of twenty-five dollars a bottle.

The explosion of wine grape production around Paso Robles since 1980 is almost entirely due to irrigation with groundwater. Between 1976 and 2006 wine grape production in the Central Coast grew from less than 20,000 tons to about 400,000 tons (Volpe et al. 2010). In the Paso Robles American Vitacultural Area, the number of wineries grew from 20 to 170 between 1990 and 2000. And the grape craze has expanded throughout the Central Coast of California.

PRO Water Equity, a citizens' group involved in the water conflict in Paso Robles, calculated the effects of grape production groundwater depletion and well-drilling this way:

2768 wells drilled in Paso basin from 1997 to 2011 = an average of 198 per year—during a period of significant residential and agricultural growth in the basin. 306 wells drilled in Paso basin from January to May 2014 = an average of 734 per year—during a time of essentially no residential growth and limited agricultural growth due to the urgency ordinance. This tells us that numerous wells have gone dry. Note that this data does not include well pumps lowered and people who can't afford to drill a new well and are trucking water. (Prowaterequity.org, n.d., italics in the original)

In 2010 the counties of Santa Barbara and San Luis Obispo produced about 1.7 billion dollars' worth of agricultural products, with wine grapes responsible for about a quarter of this number. To put this into perspective, "field crops" such as alfalfa, beans and grains—the mainstay of agriculture in the region before 1980—constituted a little more than 1 percent of the value of agriculture in 2010.

Farmers know that grape vines use far less water per acre than the alfalfa that was previously grown in the region. Bill, who farms grains and other staples, told me, "It isn't the grapes themselves, it's that so much acreage has been turned into vineyards" (pers. communication, February 24, 2015). Almost all the grape acreage in Paso Robles replaced grassland that was never irrigated. Grapes, while not thirsty like almonds, have nevertheless produced an enormous net increase in groundwater consumption. According to estimates made by a rural resident interviewed in 2014, over one hundred thousand acre feet of water has been extracted from the Paso Robles basin over the last thirty years. Rural residents report that the water levels in their

wells have fallen 80, 100, even 150 feet since the 1990s. For some this means that their wells run dry in the summer months when irrigation peaks; for others it has meant drilling deeper wells at a price tag of at least \$25,000.³ Monitoring wells show that since 1981 water levels have dropped an average of 25, 60, and 110 feet in the three subdistricts of the basin, while annual precipitation has remained relatively constant.

Managing Groundwater Mining in Paso Robles

The growth of wine grape production in Paso Robles has generated a particular regional social formation with a diverse array of groups: small farmers with deep roots in the region; large commercial wineries; recently arrived boutique winery owners; growing numbers of Latino—mostly Mexican—agricultural workers; small organic family farmers; retired rural residents; and workers in the tourism industry. Wealthy people, attracted by the image of California wine country, cashed in securities such as stocks and bonds and bought land in Paso Robles, where they built luxury homes and established boutique wineries with tasting rooms. Most of this land was previously used for cattle ranching and had never been irrigated. Thus, a good number of groundwater-intensive wineries of less than one hundred acres were developed by these pioneering investors who focused on producing expensive high-quality products, raising the profile of the region among wine consumers and the general public.

Eying this success, commercial wineries and speculative investors followed, establishing larger vineyards. In the last decade, this expansion of wine production has brought with it a booming tourism industry, with new hotels and restaurants popping up to cater to visitors traveling the "wine routes" such as Union Road. Paso Robles is today a patchwork of different sized vineyards, some with wineries and some without. Scattered among these vineyards are rural res-

idents, small vegetable and fruit farms, and horse ranches. The city of Paso Robles has also expanded, with thousands of new residents each decade since 1980. This influx doubled the population from 9,200 in 1980, to 18,600 in 1990 and increased it another 30 percent to 24,300 inhabitants in 2000. In the years since the economic crisis in 2008 (which was followed by the groundwater crisis a few years later) only five hundred new residents are registered—an increase of about 1.6 percent (Paso Robles Housing Division, 2018). When the depletion of the aquifers caused by all this growth finally caused alarm bells to ring, there were conflicting analyses of the cause of the problem and its solution. Groups blamed other groups; some accepted shared responsibility; others denied that a problem even existed.

Confronted with continual increases in water extraction and a conflict that showed no possibility of resolution in the short term, on August 27, 2013 the San Luis Obispo (SLO) County Board of Supervisors passed an “urgency ordinance” that froze levels of groundwater pumping throughout the Paso Robles basin. On the face of it the ordinance was a drastic measure. California state law protects a property owner’s right to make reasonable and beneficial use of water beneath his or her property—the “overlying right.” And the only restriction SLO County had on well drilling was a zoning code that a well could not be within ten feet of the neighbor’s property line. Limits on groundwater extraction in California were only set by the quantity of recoverable water under the ground, the costs of extracting it, or the decisions reached by the judges in the twenty-six adjudicated water basins.

As water levels around Paso Robles dropped, however, it became clear that the groundwater “free-for-all” was not free at all, and the costs were distributed unevenly. There was the short term economic cost of drilling ever-deeper wells—even a small-bore well for residential use costs upwards of

\$25,000. A large vineyard can assume the drilling of multiple wells as a cost of production with minimal effect on profit. But because Paso Robles had become home to many retirees and other rural residents who do not practice agriculture, as well as many small-scale farmers who operate with relatively small budgets, these people saw the depletion of groundwater and the well-drilling it required as a threat to their existence, rather than just another cost of production. Some of these rural residents and small farmers hold strong environmental values, and they saw aquifer depletion as an unacceptable environmental problem, beyond the economic costs it provoked. Springs might stop flowing and water quality would diminish. Mary, an environmental activist and rural resident, told me with sadness that “steelhead trout used to come all the way up here to the headwaters of the Salinas River. Now there is no water in the river” (pers. communication, April 10, 2016). For this resident, it was riverine ecology, including federally threatened species such as the California Red-legged frog and the Steelhead trout, that motivated efforts to reduce surface and groundwater use in the region.

Rural residents and small-to medium-sized farmers initiated the push for groundwater regulation in Paso Robles, and their actions were motivated by a strong if vaguely formulated notion of group inequality conceived in terms of small property owners versus large ones. There was a certain truth to it. The folks who began to press for a groundwater moratorium were not the biggest landowners, and their vineyards were often relatively modest. Nonetheless, at the current price of (about) \$40,000 per acre for irrigated land, the proverbial forty-acre parcel of land around Paso Robles is worth \$1.6 million dollars—much more with vines and buildings. So, these “small” farms are often multimillion dollar businesses. They look “small” next to the large commercial wineries, which sometimes cultivate thousands

of acres. Some of the larger, commercial vineyards and wineries also spoke out against groundwater depletion, recognizing that their livelihoods were just as threatened as the others by unregulated groundwater use, despite their greater ability to absorb the high costs. In an initial moment, however, groundwater use resembled a “tragedy of the commons” scenario, where no one user would reduce pumping despite the fact that all would benefit if they all did.

Another divide was perceived by this amorphous social group of rural dwellers between themselves and the urban residents of Paso Robles. Urban dwellers far outnumber rural dwellers in the Paso Robles Groundwater Basin, but they are less wealthy. About 40 percent of urban residents in Paso are renters rather than property owners, and they are more often workers in the agricultural, service, and tourism industries, rather than owners of their own businesses. Furthermore, residents within city limits are provided water through the municipal water company—the “purveyor”—and it is the city rather than the individual property owners that holds “overlying rights” to the water. Race and ethnicity intersects with social class in the rural-urban divide, as more than one-third of residents of Paso Robles city are of Latino, mostly Mexican, descent, and many work in the vineyards (United States Census Bureau 2010). Rural residents tended to differentiate themselves from the urban residents by saying it was the wine grape agriculture that drove the economy, providing jobs to everyone else, and by claiming that they had the deepest roots in the region. Because rural dwellers were extremely aware of groundwater depletion and urban residents were far less so (they do not have their own wells), the push for groundwater sustainability in Paso Robles was led by white, relatively wealthy, rural dwellers. City water purveyors mobilized their own considerable resources behind the effort to economize and rationalize water use in the basin, but

urban citizens in general did not mobilize, except for those with deep environmental values.

Once the problem of groundwater depletion was made visible by this mass of small farmers and rural dwellers, the regional press publicized the issue.⁴ In March 2012, the county of SLO formed a “Blue Ribbon Committee” to study the problem of groundwater, made up of representatives of different social groups, each with longstanding presence in the region. In 2014, this committee was reformed as the Groundwater Advisory Board (GAB) and remained outside of the apparatus of county government while holding an official advisory role.

In addition to the GAB, various organizations formed to discuss, devise, and propose solutions to the problem before and after the declaration of the “urgency ordinance” that established the moratorium on groundwater extraction. The Paso Robles Alliance for Groundwater Solutions (PRAAGS) was a group that advocated for a “hybrid” water district model that ensures some representation of large landowners, small landowners, and rural residents. The board of this organization was made up of vineyard and cattle ranch owners, and others who own businesses related to agriculture. They tended to be from longstanding, economically strong families in the region. For example, PRAAGS board member, Matt Turrentine, came from a wine brokering family. Turrentine gained some dubious fame for brokering a series of deals by which large tracts of irrigated land, some planted in grapes, were sold to investment banking firms such as the Harvard University Trust (Philpott 2015). The PRAAGS organization backed the passage of Assembly Bill 2453 in the California State legislature, which was necessary to form a hybrid water district in Paso Robles that did not conform to the legal standard of the “one-acre, one-vote” formula of representation and cost distribution.

Pro Water Equity (PWE) was a parallel organization that

also emerged in this context to champion a model of managing groundwater with a regional “water district” that has equitable and proportional representation built into the board. The organization came into existence when fissures between people working on this issue led to a separation with the PRAAGS. PWE had some support from small-scale farmers and winery owners but gained the bulk of its membership among the rural residents in the Paso Robles groundwater basin. It was a volunteer organization that did not have the clear association with big agricultural interests that characterized PRAAGS. Its members argued for greater representation of small landowners in groundwater management than that contemplated in the hybrid water district approved by Assembly Bill 2453.

A third group, “Protect Our Water Rights” (POWR), rejected the water district model entirely, arguing instead for protecting the water rights of overlying property owners through the adjudication process in the courts. Adjudication is very costly and time-consuming; it can take decades and tens of millions of dollars in lawyers and court fees. PRAAGS and PWE both formed with the intention of reaching a political solution without entering the adjudication process. POWR, guided by a deep distrust of government and an exalted faith in property rights, rejected the hybrid, representational model of the water district outlined in the Assembly Bill 2435. Instead, POWR encouraged hundreds of landowners to file “quiet title” documentation with the courts that protected their water rights from encroachment.

Another key motivation of POWR was to defend its members and all residents of Paso Robles from water speculators, and in particular the large investors who might want to practice water trading or banking with Paso Robles’ groundwater or aquifer. Water banking is a method of management of surface and groundwater in which an owner of physical water can store it in an aquifer for future use. The model

assumes that in times of abundance, surface water would be used to recharge aquifers for use in times of scarcity. This storing cheap and selling dear would of course result in huge profits, as surplus water can be had for pennies per acre/foot and sold later for as much as \$1,600 per acre/foot. According to a POWR organizer, Tracy, who farms five hundred acres of wine grapes, water banking and the creation of water markets mark a slow process of dispossession of the water rights of overlying property owners by big businesses working through government. “The only way to protect our water rights,” she told a group convened to discuss groundwater management, “is to have them recognized by the courts” (pers. communication, September 3, 2014). Rights to aquifers, she insisted, are held by overlying property owners, and POWR defended these rights as a way to protect against water bankers and speculators who could gain control of the water district through electoral politics and could sell Paso Robles groundwater to urban developers in Southern California.

Maneuvers such as water banking are certainly not unheard of in California, where billionaire farming corporations exert constant pressure to control water. One company, Paramount Farms, owned by Stewart and Linda Resnick, holds enormous extensions of land in the dry Westlands irrigation district on the western side of California’s southern Central Valley, where it grows almonds, pomegranates, and other crops. The Resnicks were instrumental in creating the Kern County Water Bank, inland from San Luis Obispo County, by buying up all the land over an aquifer and using it to store cheaply bought water for future use or sale. In 2011, their Fiji Water Company bought Justin Wineries in SLO, fueling speculation that they were making a water grab in the Paso Robles Groundwater Basin and perhaps trying to make a play for creating a water bank there (“Justin Vineyards” 2010). PRAAGS, with its Board of

Directors comprised of wealthy and powerful members of the region's wine industry, declared itself in favor of water banking. POWR's fears were perhaps not unfounded.

From Hybrid District to SGMA

The process of forming a water district to manage groundwater in Paso Robles was highly contested. One key problem was the representational structure of the district. California law enshrines water districts as organizations formed by landowners to build, maintain, and operate surface water storage and conveyance infrastructures. Usually these districts derive water from a river or canal, and distribute it among the landowners, but sometimes these districts also use settling ponds to recharge aquifers with water to be used later. California water districts operate like companies, and those who derive the most benefit from them pay the most for them, in a proportional manner. Thus, for example, if a landowner owns 5 percent of the land serviced by a water district, that landowner pays 5 percent of the costs and receives 5 percent of the water. This proportional principle also holds for the election of members to the Board of Directors of a water district: one acre, one vote. The landowner who owns 5 percent of the land has 5 percent of the votes.

The one acre, one vote mode of representation may make sense for traditional California water districts that manage surface water for irrigation, but it was seen as deeply problematic for overlying property owners and residents of the Paso Robles groundwater basin. In the first place, there was no conveyance and storage infrastructure to build, maintain, and operate in Paso Robles: the purpose of the proposed water district was to manage levels of extraction, with relatively minor costs for monitoring. Second, proportional voting would give the power to make decisions about extraction and conservation to the largest growers, seen by rural residents and small farmers to be the cause

of aquifer depletion and dry wells in the first place. As one activist, Mary, put it, "proportional voting sends us back to the eighteenth century" when only property-owning white males could vote in the United States (pers. communication, April 27, 2014). When a prominent water lawyer drew up the plans for a traditional California water district in Paso Robles, overlayers rejected it and demanded one that was more representative.

The GAB and San Luis Obispo County officials worked for years to design a representational format for the proposed groundwater water district that would be acceptable to the various groups in the groundwater basin. In the end, they came up with a complicated arrangement for electing directors to the Water District Board of Directors that gave votes to both overlying residents and to landowners (often the same person fit into both categories). There were nine seats in total: three to be elected by registered voters on a one person, one vote basis; and six to be elected by landowners on a one acre, one vote basis. However, these six landowner seats were divided into small landowners (less than forty acres), medium landowners (forty to four hundred acres), and large landowners (more than four hundred acres), each with two seats. Any landowner could only vote within their ownership category, and their vote was weighted by the number of acres they owned. Any registered voter within the district boundary could run for the registered voter seats, and any landowner could run for any of the landowner seats. This plan was thus a "hybrid" of representational and proportional voting systems. Because the hybrid district differed from the standard California water district, the California legislature approved it with Assembly Bill 2453. The hybrid water district proposal was approved by the San Luis Obispo County Local Agency Formation Committee, and it was put to popular vote.

The creation of the Paso Robles hybrid groundwater dis-

trict was soundly rejected in an election held in February 2016. The San Luis Obispo County (SLO) government ran an extensive informational campaign about AB 2453 in the months preceding the election. SLO's Public Works Department held dozens of meetings with local residents to explain the details of the plan, but dissent increased as the election neared. Protect Our Water Rights (POWR) was especially vocal, fighting against any form of water district on the basis that groundwater was property of the landowner, and the political management of groundwater exposed landowners to the risk of dispossession by government and big business. POWR held informational meetings, social events such as barbecues and concerts, and advocated for adjudication as the only form of groundwater management that protected the individual property right to water. At the same time, critics on the left continued to voice that the proposed hybrid water district was fundamentally undemocratic and assigned the costs of operation disproportionately to the smallholders and rural residents. Despite the support of the local press and county government, 74 percent of the voters rejected the formation of a hybrid water district. Even more rejected a new tax to support regulation of the groundwater basin.

What made this resounding "no" vote especially interesting is that at the same time the Hybrid Water District process was unfolding in Paso Robles, the State of California was implementing a statewide regulatory framework for sustainably managing groundwater: the Sustainable Groundwater Management Act (SGMA). SGMA was passed into law in late 2014 and went into effect on January 1, 2015. For all but those few previously adjudicated basins, SGMA requires that overlayers in each groundwater basin form Groundwater Sustainability Agencies (GSAs) by June 30, 2017, and that these GSAs create and carry out Groundwater Sustainability Plans (GSPs) by January 31, 2020 (or 2022, depend-

ing on the severity of overdraft in the groundwater basin). Any groundwater basin that does not meet these requirements will be put on probation by the California State Water Board, which then administers the basin and charges the overlayers for the service, until the time when the overlayers can file an acceptable GSA or GSP. Existing water agencies such as community service districts (CSDs), water districts (WDs), and county governments can be named GSAs, and it is the county governments that assume responsibility for all lands not covered by those other agencies.⁵

Paso Robles groundwater basin overlayers, having rejected the hybrid water district, scrambled to comply with SGMA. Because water politics are so complicated, and many of the overlayers reject the idea of water districts, only one such agency was formed before the GSA deadline of June 30, 2017: the Shandon-San Juan Water District, and another—the Estrella-El Pomar-Creston Water District—was in the formation process. Both of these water districts operate with the "one acre, one vote" proportionality principal and allow landowners within their boundaries to opt out of membership. Many have opted out, which has led to a highly fragmented, checkerboard pattern to the water districts and the need for the county government to cover groundwater sustainability activities in those areas not included in the water districts, paying for the services out of the county's general fund. Some of those resisting inclusion in the water districts cite fears of water banking; others simply do not want to pay both the charges assessed by the water district to run the GSA, and the county tax levied for the same reason. Whatever the reasons for resisting the creation of a basin-wide agency, Paso Robles enters the SGMA era with many of its groundwater users unconvinced of the need to treat groundwater as a common pool resource and with lingering suspicion about the aims of the state and capital in establishing such a hydro-commons.

Conclusion: Creating a Commons

In 2013, at the height of the recent extreme drought, the groundwater-fueled California wine crush was the biggest on record (CDFA 2015). In 2014 and 2015, farmers all over California were denied surface water allocations by the federal and California irrigation systems, and they increased groundwater pumping. The drought abated in most of California due to heavy rains and snow in the winter of 2016–2017, but the Central Coast is still relatively dry, and many areas such as Paso Robles that are not serviced by surface water irrigation systems continue to depend on groundwater. Although SGMA was passed in 2014, it will not be until the GSPs are submitted in 2020–2022 that any limits on groundwater extraction are likely to be set. And overlying groundwater users will have until 2040–2042 to restore groundwater levels to something like those of January 1, 2015 and reach equilibrium between extraction and recharge. A water manager, Tyler, in the Central Valley of California shared with me his opinion that many agricultural producers will simply ignore the regulations as long as possible, maximizing short term profits, and quit the business or declare bankruptcy when faced with sanctions. “If people are serious about reducing groundwater extraction, you will see property values falling,” he told me in late 2016, “but for many parcels they aren’t” (pers. communication, December 17, 2016). Agricultural land for orchards has indeed dropped in price in much of California, but vineyards have held their value (Rodriguez 2017).

While the twenty-year timeline for implementing state regulation of groundwater may seem very long, the SGMA legislation has already had effects. Growers in the Central Coast, driven by the profit motive and a strong market for wine, continue to maximize their individual benefit by perforating wells and even—as in the case of the North Fork

Ranch in Cuyama (actually an investment by the Harvard University Trust through the company Grapevine Capital)—converting hundreds of acres of grazing land to grapes. But in this changed legal and regulatory context, there are also signs that county governments are willing to take actions to protect groundwater as a public good. Paso Robles’ urgency ordinance was copied by the Board of Supervisors of Ventura County to stop aquifer depletion in the Santa Clarita River drainage. Other counties, such as Santa Barbara and Modesto, failed to pass similar legislation, but the SLO Board of Supervisors approved ordinance 3308 that prohibits any new extractions from the Paso Robles aquifer until the GSP for that basin is formulated and goes into effect. This moratorium effectively locks existing water extractions in place and is supported by landowners (usually smaller producers and rural residents) wishing to protect their wells. Other county governments are considering implementing ordinances such as that passed in Paso Robles to avoid a rush of well-drilling before SGMA’s GSPs go into effect and are fully implemented over the next two decades. Regardless of the mechanism by which overlayers seek to regulate groundwater extraction, scarcity and the SGMA legislation have prompted government officials and landowners to begin to think about groundwater as a shared common-pool resource.

It is not at all clear how well groundwater regulation in the form of SGMA will work in California over the long term. At this early stage in the process, there is indication that local overlayers of groundwater basins are taking the process seriously, under the threat that if they fail to comply with the law, the California Department of Water Resources (DWR) will take over the management of their basin and charge them for the service, with penalties. So, although the SGMA law was designed to minimize state involvement in the regulatory process, the DWR may need to expand its enforcement capacity greatly. It is also likely that some dis-

gruntled overlies will push water management back into the courts through the adjudication process. A better outcome would be that the actual process of management will generate local enforcement capacity and positive values for groundwater that help consolidate the sustainable management of the resource. The conceptualization of groundwater as a common-pool resource will likely strengthen and spread as overlies participate in the formation of GSAs and GSPs, and in the daily activity of monitoring and ensuring the sustainability of their—and their neighbors'—water use.

This would be a positive outcome and would work against the efforts of individuals to elude and bypass regulation in order to realize short-term profits by draining the state's aquifers. And it would come none too soon, as climate change will most likely reduce precipitation in the southern half of the state of California, reduce the Sierra Nevada snowcap that works as the great storage mechanism for the state, and alter the timing of the snowmelt that feeds the reservoirs. But while California remains one of the world's premier agricultural producers, the water scarcity created by climate change and successful common pool resource management will certainly push capital toward investments in other places, where such management is lax or absent. The transnationalization of agriculture (Friedmann and McMichael 1989) has already morphed into a more sweeping tendency toward wholesale land and water "grabs" throughout the global south (Edelman, Oya, and Borras Jr. 2013). Unfortunately, the successful sustainable regulation of groundwater in California may depend on its unsustainable extraction elsewhere. The process of creating groundwater commons would have to proceed within hugely variable regimes of rights, customs, social institutions, and cultural values. At the very least, then, the future of SGMA cannot be understood independent from these other groundwater-fueled processes of agricultural development and management.

Notes

1. There is a vast discussion of "common-pool resources," "commons," "public goods," and other concepts used to understand how people share things. One scholar whose ideas have been applied to groundwater management in recent years in California is Elinor Ostrom (pers. communication, Seth, Paso Robles, January 31, 2017).
2. Funding for this research was provided by UC-MEXUS, through a collaborative grant to the author and Yanga Villagómez, to study "Groundwater Use and Management in the Context of Globalized Agriculture and Climate Change." UC-MEXUS is a research center of the University of California and Mexico's National Science and Technology Council, or CONACYT.
3. Prowater Equity, a group formed to argue for controlling on groundwater extractions, has collected testimonies about aquifer depletion and its effects on wells throughout the Paso Robles area. See: <http://prowaterequity.org/stories/>. Retrieved 2/27/2015.
4. A number of people active in water politics at the time cited a series of 2012 and 2013 articles in the *San Luis Obispo Tribune* for bringing the issue to the forefront of politics. See, for example, "Deep Trouble in North County." *San Luis Obispo Tribune*, June 16, 2013. <http://www.sanluisobispo.com/news/special-reports/article39447159.html>.
5. It is impossible to cover the details of the Sustainable Groundwater Management Act in this chapter. For more information see: <http://www.water.ca.gov/groundwater/sgm/>.

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