PETITION TO ESTABLISH A NEW AMERICAN VITICULTURAL AREA TO BE NAMED CONTRA COSTA AND TO EXPAND THE CENTRAL COAST AND SAN FRANCISCO BAY AVAS

The following petition serves as a formal request for the establishment and recognition of an American Viticultural Area to be named Contra Costa, located in north-central and eastern Contra Costa County, California. The proposed AVA covers approximately 167146 acres and includes approximately 1700 acres of planted and productive vines spread across the AVA. In addition, this petition expands the Central Coast AVA and the San Francisco Bay AVA to share a common boundary with the Contra Costa AVA. This petition is submitted by Patrick L. Shabram on behalf of the Contra Costa Winegrowers Association.

This petition contains all the information required to establish an AVA in accordance with Title 27 Code of Federal Regulations (CFR) part 9.3.

Table 1 – Distinguishing characteristics of the Contra Costa viticultural area relative to surrounding areas

	Contra Costa	North	South	East	West
Topography	Typically not steep; typical slopes less than 5%, with 5%-20% in areas	Estuary	Generally, slopes exceeding 20%, commonly greater than 30%	Flatter Delta region with slopes less than 5%	Generally, slopes greater than 20%
Elevation	0ft-1300ft asl*; Mostly below 100ft asl	Suisun Bay to San Joaquin River (Delta)	Mostly above 100ft asl with elevations up to 3849ft asl	Generally, below 100ft asl	Generally, above 100ft asl
Mesoclimate	Moderately influenced by coastal air; 3200 to 4200 GDD**	Unreported	Warmer. GDD generally above 4000 GDD (except at higher elevations)	Progressively warmer, increasing to above 4300 GDD	Cooler with greater coastal influence; below 3200 GDD, more commonly below 3000 GDD
Soil	Alluvium and Delhi sands with areas of soils from sedimentary rock	Bay waters or muck soils of Delta islands	Soils from sedimentary rock	Alluvium with areas of muck soils	Soils from sedimentary rock
Common Varietals	Zinfandel, Petite Sirah, Mourvedre, Chardonnay, Cabernet Sauvignon (most common)	No viticulture	Limited	Unknown	Mix of Pinot Noir, Petite Sirah, Chardonnay, Cabernet Cauvignon (most common)
Existing AVAs	San Francisco Bay (partial), Central Coast (partial)	N/A	San Francisco Bay, Central Coast; farther south Livermore Valley (non-adjacent)	None	San Francisco Bay, Central Coast, Lamorinda

*asl = above sea level
**GDD = Growing Degree Days

Overview

The Contra Costa viticultural area is located in north-central and eastern Contra Costa County, including in and around Martinez, Pleasant Hill, Concord, Walnut Creek, Bay Point, Pittsburg, Antioch, Oakley, Brentwood, Byron, and several other smaller communities. The name Contra Costa is taken from Contra Costa County. Contra Costa County, located in the San Francisco Bay area, is bordered by San Pablo Bay and San Francisco Bay to the west; the Carquinez Strait, Suisun Bay, and the western waterways of the California Delta to the north; the Old River of the California Delta to the east; and Alameda County to the south. The majority of the viticulture in the county is in eastern Contra Costa County, followed by north-central Contra Costa County. The next-most active area for viticulture is in the Lamorinda area (southwestern Contra Costa county), which is recognized by the Lamorinda AVA (27 CFR §9.254). While currently the Lamorinda AVA is entirely located within Contra Costa County, and the northern sections of the Livermore Valley AVA occupy southern Contra Costa County, "Contra Costa" viticulture has traditionally been tied to north-central and eastern Contra Costa County. The area encompasses the valley floors and lower elevations bordering Suisun Bay to the southwestern edge of the California Delta of the San Joaquin/Sacramento rivers. The area receives coastal influence from breezes moving through the Carquinez Strait, which moderate temperatures but allow for warmer temperatures than areas of western Contra Costa County. The area is currently home to approximately 1700 acres of planted vines and at least fourteen wineries.

Currently, north-central Contra Costa County and the Lamorinda AVA are within the Central Coast AVA (27 CFR §9.75) and the San Francisco Bay AVA (27 CFR §9.157), while eastern Contra Costa County is not, despite long-standing associations of all of Contra Costa County with the Central Coast and San Francisco Bay. The Central Coast AVA was established based on "marine influence." As identified in T.D. ATF-216, "ATF believes that a viticultural area named with the word 'coast' should be an area under the marine influence."[1] Coastal air moves into the Contra Coasta viticultural area through

[1] *Federal Register*, "Establishment of Central Coast Viticultural Area," T.D. ATF- Vol. 50, No. 206, October 25, 1985, page 43128.

the Carquinez Strait, as demonstrated in the establishment of the Merritt Island AVA (27 CFR §9.68): "[t]he climate of Merritt Island is tempered by the cooling southwesterly breezes from the Carquinez Strait near San Francisco."[2] The Contra Costa viticultural area sits just east of the Carquinez Strait. Further, T.D. ATF-407 states, "the San Fancisco Bay and the local geographic features surrounding it permit cooling influence of the Pacific Ocean to reach farther into the interior of California in the Bay Area than elsewhere along the California coast."[3] Again, the Carquinez Strait is one such feature that allows for coastal air to reach farther inland into the interior of California, including the Contra Costa viticultural area, which has a distance from the Pacific Ocean consistent with the Livermore Valley AVA, but, unlike the Livermore Valley, borders waters of the greater San Francisco Bay estuary.

A 1997 petition to expand the Central Coast AVA, approved in 1999, specifically distinguishes eastern Contra Costa County as lacking the coastal influence necessary to associate the region with the Central Coast AVA, yet local growers and topographic profiles of the region suggest that coastal air does access the California Delta region via the Carquinez Strait and Suisun Bay. As noted above, this access is further supported by the final rule establishing the Merritt Island AVA (T.D. ATF-134; 27 CFR §9.68). A 2008 expansion of the San Francisco Bay AVA (T.D. TTB-67) also discusses airflow through the Carquinez Strait, referencing a map from the San Francisco Bay Air Quality Management District showing airflow on a "typical summer day," which demonstrates that the "air flow pattern through the Carquinez Strait brings the marine influence to the north, east, and south of the waterway."[4] Further, the Livermore Valley AVA to the south is known to have coastal influence with its inland location and is in the San Francisco Bay and Central Coast AVAs, despite having no direct access to San Francisco Bay area waterways.

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[2] *Federal Register*, "Merritt Island Viticultural Area," T.D. ATF-216, Vol. 48, No. 96, May 17, 1983, page 22145.
[3] *Federal Register*, "Establishment of the San Francisco Bay Viticultural Area and the Realignment of the Central Coast Viticultural Area (97-242)," T.D.-407, Vol. 64, No. 12, January 20, 1999, page 3016.
[4] *Federal Register*, "Expansion of the San Francisco Bay Viticultural Area," T.D. TTB-67, Vol. 73, No. 48, March 11, 2008, page 12880.

A study, conducted in 2019, found that much of north-central Contra Costa County and eastern Contra Costa County demonstrate geographic characteristics distinct enough from the rest of Contra Costa County and surrounding areas to warrant the establishment of a new viticultural area (Exhibit B). The original study area included more of north-central and eastern Contra Costa County than what was ultimately defined to be the Contra Costa viticultural area, but reduced the geographic extent of the proposed AVA to better match the geographic characteristics of the growing area. Further, the study found that the entire Contra Costa viticultural area is homogeneous enough compared to other areas of the San Francisco Bay and Central Coast AVAs to warrant an expansion of the Central Coast and San Francisco Bay AVAs.

Name Evidence

The Contra Costa vitcultural area takes its name from Contra Costa County. Contra Costa County is one of the original 27 counties established in California in 1850. The Spanish name, "opposite coast" is a reference to the county's position opposite San Francisco on San Francisco Bay. Of the 92 entries on the United States Geological Survey (USGS) Board on Geographic Names searchable database for domestic names, 91 of the entries for "Contra Costa" are in Contra Costa County. The one reference not in Contra Costa County is in neighboring Alameda County.

While viticulture is found within Contra Costa County outside the proposed Contra Costa AVA, in terms of wine, the name "Contra Costa" is typically associated with grape production in north-central and eastern Contra Costa County. The Lamorinda AVA (27 CFR §9.254) was established in large part to distinguish the Lamorinda growing area from the more commonly recognized winegrowing region of the county. The Contra Costa Winegrowers Association currently has seventeen winery and vineyard members (Exhibit I). Only one of these members is located outside or does not use fruit sourced from the Contra Costa winegrowing region. That same member, located in the Lamorinda AVA, is the only member of both the Contra Costa Winegrowers Association and the Lamorinda Winegrowers Association. Similarly, only two of the 65 members of the Lamorinda Winegrowers Association are located within the boundaries of the proposed

Contra Costa AVA, based on a membership map on the Lamorinda Winegrowers Association website[5] (Exhibit K). Hence, Lamorinda growers and winemakers and Contra Costa growers and winemakers clearly see their respective areas as distinct winegrowing regions. Southern Contra Costa County is within the Livermore Valley AVA. No members of the Contra Costa Winegrowers Association are currently within the Livermore Valley AVA.

Much of the association of winegrapes from north-central and eastern Contra Costa County to the Contra Costa name can be attributed to both the acreage of vineyards and the history of Contra Costa winegrowing. Historically, north-central Contra Costa County was the epicenter of Contra Costa viticulture, while currently eastern Contra Costa County has the most acreage of wine grapes in the county. An often quoted mantra is that Contra Costa was Napa before there was Napa, as Contra Costa County was one of the Bay Area's leading winegrowing regions prior to Prohibition, with the vast majority of that production in central and eastern Contra Costa County. Older vineyards, including vines over 100 years old, continue to produce fruit for commercial wines in both north-central and eastern Contra Costa County.

Many websites and publications will reference Oakley (eastern Contra Costa), Brentwood (eastern Contra Costa), and Martinez (north-central Contra Costa) when referring to Contra Costa wines. On the Gold Medal Wine Club website, for example, the Contra Costa County region is described as follows:

> *The area is known for its earthy Old Vine Zinfandel, as well as its Rhône varietals such as Carignane and Mourvèdre. Even thought* [sic] *fewer acres are under vine, the wines produced in this region are critically acclaimed and the grapes are in demand by winemakers in Napa and Sonoma. Those looking for the majority of the surviving vineyards will*

[5] https://lamorindawinegrowers.com/membership-lists/#!directory/map

> *find them in the eastern part of the county near the towns of Oakley and Brentwood.*[6]

Some of the vineyards identified in sources like the Gold Medal Wine Club are actually located in Antioch. In addition to vines in Oakley, Brentwood, and Antioch, old vines continue to produce fruit at Viano Vineyards in Martinez. Viano Vineyards traces its history back to 1888. The area east of Martinez around Viano Vineyards is still known as "Vine Hill," which is recognized on USGS topographic maps of the area. Vine Hill is a reference to the area's history of viticulture.

The reputation of Contra Costa vineyards has already been equated with a "Contra Costa style." *AppellationAmerica.com* notes:

> *Vineyards in the region benefit from large diurnal temperature fluctuations from cool coastal bay winds scurrying through the county on a west to east journey to the Central Valley. The vineyards are also comprised predominantly of old vines which have escaped the scourge of Phylloxera…. While wines that carry county appellation designations rarely have a defining terroir character, this cannot be said of Contra Costa County. The earthy, dusty and leathery quality of the region's big reds is evidence of a definitive Contra Costa style.*[7]

Growth in viticulture within the last thirty years in the Contra Costa winegrowing region has been focused around the communities of Brentwood, Knightsen, and Byron, in large part because of the greater availability of agricultural land. As such, the largest vineyards and the largest wineries, outside of Viano Vineyards in Martinez, are in eastern Contra Costa County. While newer vineyards do not feature the 100-year-old vines noted by the sources above, they do benefit from the breezes through the Carquinez Strait and deep, well-drained soils that have defined the Contra Costa style. Hence, the reputation tied to

[6] https://www.goldmedalwineclub.com/wine-region/contra-costa-county-region
[7] http://wine.appellationamerica.com/wine-region/Contra-Costa-County.html

the name "Contra Costa" is typically associated with the long-standing vineyards and ancient vines around Martinez, Antioch, Oakley, and Brentwood and with more contemporary growth in the surrounding communities.

Historical Evidence

As noted above, the Contra Costa viticultural area has a longstanding history with wine. According to the "History of Contra Costa County Grape Growing & Wine Making Prior to Prohibition," by Ron Peck (Exhibit J), the first grapes were planted in Brentwood in 1846.[8] Between 1860 and 1890, three primary grape-growing areas in the county emerged: the Mt. Diablo area, the Martinez area, and the Oakley area. All of the Martinez and Oakley areas, and most of the Mt. Diablo area (which includes Concord, Pleasant Hill, Walnut Creek, and parts of Clayton), are within the proposed Contra Costa AVA. By 1916, Contra Costa County was home to 6000 acres of grapes with 2700000 individual vines.[9] A 1908 letter to the editor in the *Pacific Rural Press* confirms central Contra Costa County as the largest production center in Contra Costa County stating:

> *I write to inform your readers that the wine grape crop in this, the central part of Contra Costa county, is very short this year…. This conclusion is the result of careful investigation in the Concord, Clayton and Walnut Creek sections —the largest wine producing sections of this county."*[10]

At the time that the Viano family purchased the existing vineyards in the Vine Hill area in 1920, there were fifteen wineries in Vine Hill.[11]

While vineyards in Antioch, Oakley, and Brentwood and at Vine Hill in Martinez survived Prohibition, most of Contra Costa's vineyards did not. Nevertheless, Viano Vineyards is now run by fourth- and fifth-generation members of the Viano family. Cline

[8] Peck, Ron, "History of Contra Costa County Grape Growing & Wine Making Prior to Prohibition," unpublished work, date unknown.
[9] *Sacramento Union*, "State Will Number Every Grape Vine," Vol. 188, No. 21, 21 March 1916.
[10] Busev, J.F., "Wine Grapes in Contra Costa County," Pacific Rural Press, Vol. 76, No. 9, 29 August 1908.
[11] Viano Vineyards, http://www.vianovineyards.com/default.asp, accessed on April 25, 2020.

Cellars, now based in Sonoma but founded in Oakley, has sourced fruit from Oakley-area vineyards since 1982, along with other wineries that have continued to use the old Antioch/Oakley/Brentwood area vines. Fred Cline notes helping his grandfather produce wine on his Oakley farm prior to founding Cline Cellars in 1981.[12]

More contemporary plantings started in earnest in the 1990s with Bloomfield Vineyards and Hannah Nicole Vineyards among the first with new plantings. Some of the larger, more recent plantings by the Nunn family, the Tamayo Family, Petersen Vineyards, the Campos family, and others mostly occurred in and around the communities of Brentwood, Byron, Knightsen, and Oakley.

Urbanization has limited the size, but not stopped, more contemporary plantings in and around Martinez. Aside from additional plantings at Viano Vineyards, plantings at three contemporary vineyards have been developed just west of Martinez. Shadow Brook Winery was established in 2005 in Walnut Creek at the foot of Mount Diablo.

In 2011, a group of growers who had been meeting informally for several years prior established the Contra Costa Winegrowers Association to recognize the winegrowing region. The association currently includes thirteen winery members and four vineyards members. The association also has nineteen associate members and taster members, companies and individuals that recognize and support Contra Costa as a distinctive winegrowing region.

Geographic Evidence

The Contra Costa viticultural area is distinguished by coastal influence of marine air that filters through the Carquinez Strait into Suisun Bay and the California Delta, offering warmer days and cooler nights than areas to the west, but with more moderate high temperatures than those to the east, as temperatures gradually increase moving inland. This pattern also distinguishes the Contra Costa viticultural area from warmer temperatures just to the south, which are farther from these marine air influences, or from

[12] Cline Cellars, "The Story Behind Cline Cellars," accessed on April 25, 2020.

far-eastern Alameda County south of Byron, which experiences much warmer air temperatures, as air moving down the Altamont Highlands warms adiabatically. Meanwhile, deposition in the more gradual slopes and flatter terrain lends to deeper, well-drained soils that are distinguished from the thinner soils and rocky terrain on and around Mount Diablo and surrounding foothills to the south of the proposed AVA.

Topographic and Geologic Evidence

The Contra Costa viticultural area exhibits flatter terrain with typically less than 5% slope compared to more mountainous regions to the south and west (Exhibit C). This terrain is interrupted in places by rolling hills of up to 30%, but generally with slopes between 5%-20%. Along the outskirts of the viticultural area, especially to the west and south, terrain becomes steeper, generally exceeding 20% and commonly above 30% slope. A ridge dissects the viticultural area between Concord and Bay Point, with slopes exceeding 30%. This ridgeline does not extend all the way to Suisun Bay, and near its northern extent, the elevation is below 600 feet above sea level (asl). To the east, terrain is generally flat moving deeper into the California Delta and into the San Joaquin Valley.

Most of the terrain is below 100 feet asl, with nearly all of the area below 1000 feet asl, in elevation. Those areas exceeding 100 feet asl generally occur along the edges of the viticultural area to the west and south and in the central ridgeline. By comparison, elevations to the west exceed 1300 feet asl, while increasing elevations to the south culminate with Mt. Diablo at 3849 feet asl.

Viticulture in this area is found on the gentler slopes at lower elevations as opposed to the steeper and higher slopes to the west and south. While steep slopes will impact solar radiation and timing of full exposure depending on orientation, elevation is more important in distinguishing the Contra Costa viticultural area. As coastal airflow is cooler, thus heavier, it generally stays at lower elevations unless needing to rise over topographic features. This characteristic is especially prevalent in late afternoon to early morning airflow. Often locations above 1000 feet asl in elevation are positioned above marine inversions, hence experience reduced diurnal cooling. Airflow that is forced to

rise over topographic features cools, then warms adiabatically as it moves up, then down the orographic terrain. Hence, climate, which impacts grape development, timing of harvest, and sugar accumulation and acidity, are impacted by the topographical and elevation changes that occur in the area. Topography also impacts soils as discussed later in this petition.

Climatic Evidence

A review of 2018-2014 Growing Degree Days (GDD) in the Contra Costa viticultural area shows a climate that is warmer than areas in western Contra Costa County and cooler than the more protected sections of Contra Costa County to the south. To review climatic shifts, data were assessed from available weather stations inside and outside the Contra Costa viticultural area. In selecting weather stations, priority was given to governmental and research stations, including six stations operated through the California Irrigation Management Information System (CIMIS). Data from three stations of various agencies were accessed through the California Data Exchange Center (CDEC). Finally, data from three stations were accessed through *Weather Underground* in an effort to fill data points in areas not well-covered by other stations.[13] Data sets for the 2018-2014 growing season were selected because they were found to be the most complete.

Comparative heat summations used the Winkler Index methodology, sometimes referred to as the Winkler Scale or Amerine/Winkler Scale, as a basic guide. The Winkler Index references heat summations during the growing season, which has been defined as April 1 through October 31. When developing the methodology, Winkler used monthly averages, but the methodology deployed for the study utilized daily accumulations rather than monthly accumulations unless otherwise noted. Hence, heat summations were calculated using daily accumulations of average daily temperatures, specifically heat summations equal to the sum of daily growing season Growing Degree Days (GDD), where GDD=$\sum$ ($T_{daily\ max}$+$T_{daily\ min}$)/2-50°F, unless (T_{max}+T_{min})/2 is less than 50°F for any given day, in which case GDD equals zero for that given day.

[13] www.wunderground.com

A complete description of the meteorological stations and methodology utilized for this study can be found in a study conducted by the author of this petition on the Contra Costa viticultural area. That report was conducted as an objective study of the area, which led to the decision to pursue this petition. The report is included as Exhibit B.

GDD for the Contra Costa viticultural area during the five years studied (Table 2) ranged from 3008 to 4190 (°F), which was warmer than weather stations in west Contra Costa County (CIMIS213 & ONO), including the Larmorinda AVA (CIMIS178). These stations generally demonstrated GDD below 2900 (°F). A weather station at Briones Regional Park (BNE in the tables below), still considered north-central Contra Costa County, was found to have GDD only slighter lower than GDD found within Contra Costa County, but it was found to have lower maximum daily temperatures than areas within the Contra Costa viticultural area, likely a result of its modestly-elevated position. For example, the average high temperature at Briones Regional Park during the 2018 growing season was 76°F, which was cooler than the 81°F to 86°F average high temperatures found within the Contra Costa viticultural area. Hence, this location lacked the warmer days and cooler nights common to the Contra Costa viticultural area. It should also be noted that, as a regional park, it would be unlikely to be utilized for commercial viticulture.

A weather station in central Clayton (KCACLAYT10) is also in central Contra Costa County. This station demonstrates warmer temperatures than the Contra Costa viticulutral area, a product of its high maximum temperatures. In 2018, the growing season average maximum temperature was 92°F and in 2017 the average growing season maximum temperature was 91°F (Tables 4 and 5), suggesting that moderating effects of marine air into the area are insufficient to prevent higher temperatures. Further supporting this suggestion is a large growing season variance between average maximum and average minimum at 42°F, 8-10 degrees (F) higher than the next-largest variance (Brentwood at 32°F in 2018 and 31°F in 2016). Clayton had an average minimum 2018 temperature consistent with cooler climates to the west in western Contra Costa County, but western Contra Costa County stations likely see lower minimum temperatures as a result of

greater fog cover, hence lower insolation levels, while Clayton likely experiences lower moderating effects of coastal air.

A station at the Harvey O'Banks Pumping station (HBP) is just inside the Contra Costa County line, hence technically in eastern Contra Costa County. This station shows much higher GDD than what is found in the Contra Costa viticultural area, more a result of higher minimum temperatures than higher maximum temperatures. Growing season average minimum temperatures in 2018 were seven degrees (F) higher than the Brentwood station (CIMIS47), ten miles to the north. The net result is an average growing season variance that is at or below other stations within the defined Contra Costa viticultural area. The Harvey O'Banks Pumping Station is located just east of the Altamont wind farms, and likely experiences significant influence from air movement through the Livermore Valley and over the Altamont Hills. Such directional movements may be subject to adiabatic warming caused by orographic descent onto the San Joaquin Valley floor, hence subject to patterns distinct from those found within the viticultural area of Contra Costa. The overall warmer growing season temperatures at the O'Banks Pumping Station are consistent with warmer temperatures observed at the similarly positioned Tracy Pumping Station to the south in Alameda County but also just east of the Altamont Hills, reviewed for an unrelated study of the Livermore Valley AVA.[14] That study found ten-year average GDD (2016-2007) at the Tracy Pumping Station to be 4592 (°F). Hence, GDD observations at the Harvey O'Banks Pumping Station are more consistent with observations at the Tracy Pumping station than with the Contra Costa viticultural area.

Two stations south of the currently proposed AVA in south Walnut Creek (KCAWALNU35 and KCAWALNU81) demonstrate temperatures consistent or nearly consistent with the Contra Costa viticultural area. These data were used to help determine the underlying viticultural area, but both are in residential areas or on the edge of residential areas and dedicated open space. As such, both stations were not included in

[14] Shabram, Patrick L., "Mesoclimate Patterns of the Livermore Valley AVA," unpublished, prepared for the Livermore Valley Winegrowers Association, 2017.

the final boundaries in effort to help simplify the southern boundary. Further, a station on Jersey Island (CIMIS247), north of the eastern section of the proposed AVA, shares climatic characteristics of the Contra Costa viticultural area, but soils here are inconsistent with the viticultural area, and as such, are excluded from the proposed boundary.

Table 2 – 2018-2014 GDD (°F) for weather stations in and around the Contra Costa viticultural area

Station	***Relative Location***	***2018 GDD***	***2017 GDD***	***2016 GDD***	***2015 GDD***	***2014 GDD***
CIMIS47	Contra Costa	4141	4157	4090	---	4195
CIMIS170	Contra Costa	3579	---	---	3852	3008
CIMIS247*	Northeast	3955	4047	---	---	---
KCAWALNU81*	South	3290	3680	3519	---	---
KCAWALNU35*	South	4025	4417	---	---	---
CIMIS248	East	4423	4355	---	---	---
KCACLAYT10	South	4489	4656	4097	---	---
HBP	South	4535	4840	4607	4767	4973
CIMIS178	Southwest	2729	2809	2716	2665	2820
BNE	West	3156	---	3124	3279	3469
ONO	West	2327	2859	2386	2598	2602
CIMIS213	West	1848	2222	2005	2371	2308

*These stations show annual temperatures consistent with, or nearly consistent with, the Contra Costa viticultural area, but were excluded from the AVA primarily for other reasons.

Table 3 – Two-year GDD average (2018-2017)

Station	***Relative Location***	***GDD***
CIMIS47	Contra Costa	4149
CIMIS247*	Northeast	4001
KCAWALNU81*	South	3485
KCAWALNU35*	South	4221
CIMIS248	East	4389
HBP	South	4688
KCACLAYT10	South	4573
CIMIS178	Southwest	2769
ONO	West	2578
CIMIS213	West	2035

*These stations show annual temperatures consistent with, or nearly consistent with, the Contra Costa viticultural area, but were excluded from the AVA primarily for other reasons.

Average maximum temperatures also distinguish the Contra Costa viticultural area from surrounding areas of Contra Costa County. Areas to the west experience much cooler average maximum growing season temperatures, typically in the 70s (°F), while within

the Contra Costa growing area high temperatures are typically in the 80s (°F). To the south, average maximum temperatures range from the 80s to the 90s (°F). Of the stations studied, with the exception of HBP to the south, average minimum temperatures are typically in the low- to mid-50s. That creates greater diurnal shifts in the Contra Costa winegrowing area than what are found in western Contra Costa County, but not as large as the diurnal shifts found at Clayton to the south.

Table 4 – 2018 Average growing season maximum temperatures (°F), average minimum temperatures (°F), and average temperature variation (ΔT)

Station	***Relative Area***	***Ave Max***	***Ave Min***	***Ave Variation***
CIMIS47	Contra Costa	86	53	32
CIMIS170	Contra Costa	80	53	27
CIMIS247*	Northeast	81	56	25
KCAWALNU81*	South	81	50	31
KCAWALNU35*	South	83	55	28
CIMIS248	East	84	51	33
KCACLAYT10	South	92	50	42
HBP	South	83	60	23
CIMIS178	Lamorinda	75	50	25
BNE	West	76	53	23
ONO	West	70	51	19
CIMIS213	West	66	52	14

*These stations show annual temperatures consistent with, or nearly consistent with, the Contra Costa viticultural area, but were excluded from the AVA primarily for other reasons.

Table 5 – 2017 Average growing season maximum temperatures (°F), average minimum temperatures (°F), and average diurnal temperature variation (ΔT)

Station	***Relative Area***	***Ave Max***	***Ave Min***	***Ave Variation***
CIMIS47	Contra Costa	86	54	31
CIMIS247*	Northeast	81	56	25
KCAWALNU81*	South	83	52	29
KCAWALNU35*	South	86	56	30
CIMIS248	East	85	53	32
KCACLAYT10	South	91	52	39
HBP	South	83	62	21
CIMIS178	Southwest	77	50	27
ONO	West	73	54	19
CIMIS213	West	69	52	17

*These stations show annual temperatures consistent with, or nearly consistent with, the Contra Costa viticultural area, but were excluded from the AVA primarily for other reasons.

The above referenced study was completed during the 2019 growing season. As such, complete 2019 growing season data were not available. Table 6 and Table 7 show updated GDD tables including 2019 data where available.

Table 6 – 2019-2014 GDD (°F) for weather stations in and around the Contra Costa viticultural area

Station	*Relative Location*	*2019 GDD*	*2018 GDD*	*2017 GDD*	*2016 GDD*	*2015 GDD*	*2014 GDD*
CIMIS47	Contra Costa	4275	4141	4157	4090	---	4195
CIMIS170	Contra Costa	3634	3579	---	---	3852	3008
CIMIS247*	Northeast	3961	3955	4047	---	---	---
KCAWALNU35*	South	4211	4025	4417	---	---	---
CIMIS248	East	3932	4423	4355	---	---	---
HBP	South	4633	4535	4840	4607	4767	4973
CIMIS178	Lamorinda	2781	2729	2809	2716	2665	2820
BNE	West	3281	3156	---	3124	3279	3469
ONO	West	2590	2327	2859	2386	2598	2602
CIMIS213	West	2118	1848	2222	2005	2371	2308

*These stations show annual temperatures consistent with, or nearly consistent with, the Contra Costa viticultural area, but were excluded from the AVA primarily for other reasons.

Table 7 – Average GDD (°F) for weather stations in and around the Contra Costa viticultural area

Station	*Relative Location*	*4-year Ave. (2019-2016)*	*3-Year Ave. (2019-2017)*	*2-Year Ave. (2019-2018)*
CIMIS47	Contra Costa	4166	4191	4208
CIMIS170	Contra Costa	---	---	3607
CIMIS247*	Northeast	---	3988	3958
KCAWALNU35*	South	---	4218	4118
CIMIS248	East	---	4237	4144
HBP	South	4654	4669	4584
CIMIS178	Lamorinda	2759	2773	2755
BNE	West	---	---	3219
ONO	West	2541	2592	2459
CIMIS213	West	2048	2063	1983

*These stations show annual temperatures consistent with, or nearly consistent with, the Contra Costa viticultural area, but were excluded from the AVA primarily for other reasons.

Over the five years studied plus 2019, GDD within the Contra Costa winegrowing region is generally in the 3500 to 4200 (°F) range, with some annual variation. Temperatures at Holt (CIMIS248), in San Joaquin County to the east, show slightly higher totals for two of the three years when data were available, showing that the cooling coastal influence moves relatively unhindered into the San Joaquin Valley, but warms with decreasing

distance from the Carquinez Strait and the Pacific Ocean to the west. The most recent two-year average at Holt is in line with the Contra Costa viticultural area, but the three-year average is higher. Distinctions are much more dramatic to the west where GDD is below 2800 (°F) and often below 2500 (°F).

An analysis of precipitation was also conducted as part of the 2019 study (Table 8). The highest precipitation totals are found in Lamorinda, western Contra Costa County, and Briones Regional Park, which would be expected giving orographic lifting through the western Contra Costa highlands. Data at Holt (CIMIS248) to the east were limited. Precipitation totals just to the south of the proposed AVA suggest more precipitation fell during the study period to the south. For example, in 2017-2018 (October 1, 2017 to September 30, 2018), precipitation in the Contra Costa viticultural area ranged from 243mm to 351mm for the three stations studied (CIMIS47, KCAANTIO10, and CIMIS170). For the three stations studied in the Lamorinda AVA and western Contra Costa County, precipitation ranged from 483mm to 593mm. The differences were even more pronounced in 2016-2017, with western Contra Costa precipitation ranging from 345mm to 565mm, while precipitation in the Lamorinda AVA (CIMIS178 and ONO) ranged from 1073mm to 1712mm. The five-year average was 360-392mm for Contra Costa (Brentwood and Antioch), but 682-1021mm in Lamorinda. To the south, at KCAWALNU81 and KCAWALNUT35, excluded from the AVA but with temperatures data comparable to the Contra Costa winegrowing region, precipitation totals were comparable to slightly higher in 2017-2018, but noticeably higher in 2016-2017 for one of the two stations (KCAWALNU81). Hence, relative to the rest of Contra Costa County, the Contra Costa winegrowing region is drier. While most precipitation does not fall during the growing season, precipitation does impact soils by impacting the availability of water to plants (depending on field capacity of the soil), the soil texture due to weathering, and the availability of soluble minerals within the soil, all of which can

impact the microbiology of the soils, which has shown to impact overall flavor of the wines.[15]

Table 8 – Annual precipitation based on hydrologic year (mm)

Station	*2017-2018*	*2016-2017*	*2015-2016*	*2014-2015*	*2013-2014*	*5 Year Average*
CIMIS47	243	345	497	435	279	360
KCAANTIO10	330	531	391	405	301	392
CIMIS170	351	565	---	335	232	---
CIMIS247*	266	---	---	---	---	---
KCAWALNU81*	311	875	---	---	---	---
KCAWALNU35*	399	---	---	---	---	---
BNE	---	---	655	469	374	---
CIMIS248	222	---	---	---	---	---
CIMIS178	593	1712	1179	712	907	1021
ONO	565	1073	737	561	490	685
CIMIS213	483	---	610	553	411	---

*These stations show annual temperatures consistent with, or nearly consistent with, the Contra Costa viticultural area, but were excluded from the AVA primarily for other reasons.

Hence, in terms of climate, the Contra Costa viticultural area is distinguished from the western stretches of Contra Costa County, including Lamorinda, by warmer temperatures. Yet temperatures within the Contra Costa viticultural area continue to be influenced by coastal air moving inland. This air and the climatic patterns associated with its flow through the Carquinez Strait reduce the fog influence more commonly found in places like El Cerrito, but still provide moderately cooler temperatures. Where this influence is less pronounced in the protected Clayton Valley or where greater influence comes from air moving over the Altamont Hills, temperatures are generally warmer than those found within the Contra Costa winegrowing area. The area is also drier than areas to the west. Inland, temperatures are still impacted by airflow through the Carquinez Strait and through the California Delta, which helps moderate temperatures in viticultural areas such as Lodi and Merritt Island, but temperatures gradually warm moving inland.

[15] Maltman, Alex, *Vineyards, Rocks, & Soils*, New York: Oxford University Press, 2018.
University of California, Davis. "Sequencing study lifts veil on wine's microbial terrior." *News and Information*. Press release, November 25, 2013.

Temperature indices like GDD have long been used to establish viticultural regions.[16,17] Long traditions in grape-growing regions have shown that climate plays a significant role in wine grape development.[18] Temperatures impact the timing of bud break, grape development and sugar accumulations, and subsequent harvest dates as well as the appropriate varietal for a given region. Warmer temperatures can impact bud break, grape maturity, and harvest dates, while low nocturnal temperatures can moderate this process and can impact grape metabolism and allow for more grape development at low temperatures. The combination of warm days, cool nights, and drier conditions attribute to creating a unique flavor profile for the Contra Costa winegrowing region.

Soil Evidence

The Contra Costa viticultural area is an area of diverse soil types, although a pattern of deep, well-drained, often alluvial soils is present. These soils are usually classified as alluvial in nature, either on alluvial fans, on alluvial terraces, on floodplains, or along coastal waters. The vegetation is typically grasses and forbs.

According to National Resources Conservation Service (NRCS) soil surveys, the most common soil in the proposed AVA is Capay clay, which is especially predominant in the agricultural regions around Brentwood, but also in pockets throughout the viticultural area, including in the broader valleys of north-central Contra Costa County and in places around Bay Point, Pittsburg, and Antioch. Capay soils are deep, moderately well-drained to poorly-drained soils derived of sedimentary parent material.[19] They are common in flood basins, alluvial fans, interfan basins, and along the rims of basins. They tend to alternate between very firm and very sticky, and develop under alternating wet/dry seasons. Vegetation is typically grasses, although Capay soils are highly utilized for agriculture, including irrigated row crops, grains, and dry pastureland. In eastern Contra Costa County, Capay soils are associated with Brentwood clay loams. Brentwood series

[16] Jones, Gregory V. et al, "Spatial Analysis of Climate in Winegrape Growing Regions in the Western United States," *American Journal of Enology and Viticulture*, September 2010, 313-326.
[17] Swinchatt, Jonathan and Howell, David G., *The Winemaker's Dance: Exploring Terrior in the Napa Valley*, University of California Press, 2004.
[18] Winkler, A.J. et al, *General Viticulture*, University of California Press, 1974.
[19] Soil descriptions are, for the most part, based on Official Soil Descriptions (OSDs) from the NRCS.

soils are moderately- to well-drained soils on nearly-level to gentle slopes. Brentwood soils are commonly used for orchards and vegetables. Natural vegetation includes grasses and scattered oaks.

Rincon clay soils are the second-most common soils, formed from alluvium on old stream or marine terraces or old alluvial fans. Rincon, also geographically associated with Capay soils in the area, are most predominant around Antioch, but are also found in pockets throughout the viticultural area. Rincon soils are well-drained, with slow permeability. Typical usage includes fruit trees, row crops, grains, pasture, or alfalfa. Natural vegetation is primarily grasses.

Altamont-Fontana Complex is the third-most common soil type, although if combined with Altamont Clay, becomes the most common soil type. Altamont-Fontana Complex soils are found in the highland areas to the south of the study area, places currently devoid of viticulture, but Altamont soils are found in the milder slopes at the intersection of the highland areas and the flatter alluvial terrace fans. To the south, Altamont soils represent greater sloped areas, but in eastern Contra Costa County, they are found on slopes typically below 20%. Altamont soils are deep, well-drained soils of fine-grained sandstone and shale. They are associated with both flatter, alluvial-derived soils (e.g., Rincon, Capay, etc.) and steeper soils found in highland areas (e.g., Diablo), which makes them somewhat pivoting between the more gradual, flatter terrain of east Contra Costa County and the highland slopes of southern Contra Costa County. As such, Altamont soils, versus Altamont-Fontana Complex, help distinguish the terrain of the Contra Costa viticultural area from the more mountainous terrain outside the viticultural area.

Other viticulturally significant soils include Delhi sand, Zamora clay, and Briones loamy sand. One large pocket of Delhi sand is found in the Oakley area east of Antioch and north of Brentwood. These soils are excessively-drained soils of granitic material found on floodplains, alluvial fans, and terraces. They have high permeability and lack topsoil. They are viticulturally significant, as grapes are a common agricultural product of these soils. Otherwise, typical vegetation would be grasses and forbs. Significant pockets of

Zamora silty clay loam, which are common to other viticultural areas in the Bay Area, are found in central sections of Contra Costa County within the proposed AVA. Zamora soils are found on alluvial terraces or fans and are well-drained. Zamora series soils are commonly used for orchards, row crops, or field crops. Grasses and widely-spread oaks are the natural vegetation. Another viticulturally significant soil is the Briones Loamy Sand, found around Martinez and Walnut Creek as well as southwest of Brentwood, mostly on modest slopes. This soil is well-drained to excessively-drained over sandstone. Typically used for range land, with native vegetation of grasses and scattered oaks, viticulture in these soils is found around Martinez. Hence, a common theme in all these soils is that they are well-drained, on mild slopes, and are usually a result of alluvial deposition.

Pockets of Clear Lake clay, also common to viticultural areas elsewhere in Bay Area viticulture, are found in the Contra Costa viticultural area. Clear Lake soils are generally poorly-drained and less likely to be home to viticulture. No current viticulture is found on these soils within the Contra Costa viticultural area.

Several other soil types can be found in the Contra Costa viticultural area, but are better used to distinguish the vitucultural area from surrounding areas. In addition to Altamont-Fontana Complex soils found on steeper slopes above 30% mostly to the south of the proposed AVA, other upland soils include Los Osos clay loam soils, which are also well-drained and derived of sandstone and shale parent material. Los Osos soils are moderately deep with grasses, shrub, and live oak vegetation. Usage is primarily range land. Los Osos soils occur in greater quantities in the highlands west of Martinez and Walnut Creek, but can be found in pockets elsewhere in the study area, typically at lower elevations. A third soil type associated with steeper terrain, but typically at lower, rolling elevations in this area, is Diablo clays, soils common to grassy vegetation and derived of weathered sedimentary rock. At lower elevations, the often deep and well-drained nature of these soils is consistent with soils utilized for viticulture. Further, they may be partially depositional in nature along the fringes of highland areas as the soil type moves

downslope. At higher elevations, many of these soils become thinner and more reflective of parent rock.

The proposed boundaries for the Contra Costa AVA include large areas of Altamont-Fontana Complex, as well as large quantities of Los Osos soils at lower elevations, because some steep terrain has been included to encompass smaller, flatter valley bottoms that are currently home to viticulture, and for boundary simplification, especially on the central Willow Pass to Kirker Pass ridgeline. It happens that highland soils in this area are more homogeneous than soils in the flatter areas; hence these soil types are disproportionally represented in the breakdown of soil types in the proposed AVA. Steeper terrain (greater than 20% slope) represents less than 13.5% of the terrain in the proposed AVA, but much of that terrain is represented by Altamont-Fontana Complex, Los Osos, or Diablo soils. As noted above, some of these soils are also found on slopes lower than 20% and at lower elevations, especially Diablo clays. The primary reason for not changing the boundaries in effort to establish greater exclusion of these soil types, especially Diablo soils, is because at lower elevations, these soils are deeper and more in line with those found elsewhere in the proposed AVA.

A clear distinction in soil types that have, for the most part, been excluded from the proposed AVA are muck soils. By definition, these soils are generally waterlogged, highly organic, and acidic. These soils are primarily found along the Contra Costa coastline or along waterways of the California Delta. They are common on Jersey Island, Bethel Island, Bradford Island, and other Contra Costa islands of the California Delta, and for this reason, these areas have not been included in the proposed AVA. These soils include Joice muck, Kingile muck, Rindge muck, Shima muck, and Webile muck. The limited area of muck soil that has been left in the proposed boundary is included primarily to simplify the boundary using easily identifiable features, especially right along the coast of Suisun Bay and the San Joaquin River and Delta sloughs. Most of these soils would be unlikely to host viticulture, especially Joice muck, which also has a high saline content.

Collectively, Capay, Rincon, Altamont, Brentwood, Delhi, Zamora, and Briones soils constitute a little over 50% of the proposed AVA and the vast majority of viticultural land in the Contra Costa viticultural area. Another deep, moderately well-drained soil is Antioch Loam (2.3%). Antioch loam soils are derived of alluvium and found on alluvial terraces. Hence, the majority of soils (just under 53%) are represented by these soil types. Several other similar soil types exist in the area, but given the diversity of soil series, have not been quantified and described for this petition.

Table 9 – Soil series representing greater than 2% of the Contra Costa viticultural area

Series	*Parent Material*	*Vegetation*	*Acreage*	*% of Area*
Capay Clay	Alluvium from sandstone/shale	Annual grasses & forbs	17,238	10.3
Rincon Clay Loam	Alluvium from sedimentary rock	Annual grasses & forbs	13,123	7.9
Altamont-Fontana	(complex)		11,240	6.7
Altamont Clay	Fine-grained sandstone & shale	Annual grasses, forbs & scattered oaks	10,613	6.4
Brentwood Clay	Fill from sedimentary rock	Annual grasses, forbs & scattered oaks	8,557	5.1
Delhi Sand	Granitic rock	Annual grasses & forbs	8,365	5.0
Los Osos Clay Loam	Sandstone & shale	Grasses, forbs, shrubs & oaks	7,505	4.5
Clear Lake Clay	Alluvium from mixed sources	Grasses & forbs	5,690	3.4
Marcuse Clay	Sedimentary rock	(unspecified by NRCS)	4,821	2.9
Zamora Silty Clay Loam	Alluvium from mixed sources	Annual grasses, forbs & widely spread oaks	4,745	2.8
Diablo Clay	Shale, fine grained sandstone	Annual grasses & forbs	4,701	2.8
Joice Muck	Waterlogged materials	Saltgrasses and other herbaceous plants	4,577	2.7
Sacramento Clay	Alluvium from mixed sources	Tules, marsh grasses & some riparian trees	4,310	2.6
Briones Loamy Sand	Sandstone	Grasses, forbs, & scattered oaks	4,309	2.6
Antioch Loam	Alluvium	Grasses, forbs, & scattered oaks	3,892	2.3
Lodo Clay Loam	Hard shale and fine-grained sandstone	Annual grasses & forbs	3,776	2.3

Soils may hold subtle distinctions that impact overall grape characteristics. Holding capacities impact how much moisture can be utilized by the vine from rainfall, while

good drainage helps prevent soil-borne pathogens. Further, moisture, or lack thereof, impacts stress placed on the vine, which impacts overall character in the wine. Further, different soil-holding capacities and drainage encourage different plant growth, which leads to different organic nutrients present in the soil. Recent research suggests that microorganisms, impacted both by climate and soil, may be responsible for these subtle shifts in flavor. The deep, well-drained soils of the Contra Costa viticultural area, combined with the warm days and cooler nights, have been credited for establishing a distinctive flavor profile for Contra Costa wines.

Conclusion

A combination of historical and modern viticulture is tied to the Contra Costa viticultural area. The proposed AVA is warmer than areas to the west and cooler than areas to the south. Moving east, temperatures become increasingly warmer. The Contra Costa winegrowing area features warm days and cool nights, moderated by the inland flow of marine air through the Carquinez Strait, airflow that limits fog (hence the pattern of warmer days and cooler nights), but still provides significant coastal influence. While this petition does not attempt to distinguish the extent of moderating temperatures moving inland, the name "Contra Costa" is not applicable to areas east of Contra Costa County. The area also features gentle slopes to flatter terrain than areas to the west and south with deep, well-drained, mostly alluvial-derived soils. Soils are distinguished from the highland soils to the south and west and from the muck soils found on Delta islands to the north/northeast.

EXPANSION OF THE CENTRAL COAST AVA

The following outlines justification for the expansion of the Central Coast AVA to include the entire Contra Costa viticultural area. While petitioned in conjunction with the creation of the Contra Costa AVA, the petitioners feel the merits of expanding the Central Coast AVA stand on their own, regardless of any decision concerning the Contra Costa AVA. As such, we request that the expansion of the Central Coast AVA be considered even if the TTB rules against establishment of the Contra Costa AVA. The

proposed expansion of the Central Coast AVA would add 109955 acres to the AVA, an approximate 1.1% increase.

Overview

The Central Coast AVA, created in 1985 (T.D. ATF-216) and expanded in 1999 (T.D. ATF-407) and 2006 (T.D. TTB-48), was established on the influence of Pacific marine air, separating the coast from inland locations lacking coastal influence. T.D. AFT-134 specifically singles out Paso Robles as being inland, but influenced by coastal air moving up the Salinas Valley (in a southeasterly direction) from Monterey Bay, hence under coastal influence. The Contra Costa winegrowing region is similarly influenced by marine air, in this case flowing through the Carquinez Strait, but unlike Paso Robles and the similarly inland Livermore Valley AVA, the Contra Costa winegrowing region is located on a coastal inlet of the greater San Francisco Bay estuary and the tidal waters of the California Delta. Hence, the Contra Costa viticultural area is directly bordered by waterways with direct access to the Pacific Ocean through the Carquinez Strait and Golden Gate (Exhibit L). Further, the name Central Coast has a legal definition that applies to all of Contra Costa County. Finally, climates found within the Central Coast AVA are similar to climates found in eastern Contra Costa County, the section of the county currently not within the Central Coast AVA. As such, expansion of the Central Coast to include all of the Contra Costa vitucultural area is warranted.

It should be noted that some confusion already exists regarding the Contra Costa County and the Central Coast AVAs. Several publications, for example, already describe the winegrowing regions of Contra Costa County as being in the Central Coast AVA. *Wine-Searcher.com*, for example, notes that Contra Costa County is in "California's Central Coast AVA,"[20] a description that is clearly applied to include eastern Contra Costa County, as the site describes vineyards and offers wines from grapes grown in eastern Contra Costa county (Exhibit O).

[20] https://www.wine-searcher.com/regions-contra+costa+county

Name Justification

The California legal code definition of "California central coast counties" includes Contra Costa County (CA Business and Professional Code §25236). Specifically, the code notes:

> *Only dry wine produced entirely from grapes grown within the Counties of Sonoma, Napa, Mendocino, Lake, Santa Clara, Santa Cruz, Alameda, San Benito, Solano, San Luis Obispo, Contra Costa, Monterey, and Marin may be labeled with the words "California central coast counties dry wine." It is unlawful to label any other wine with a label containing the words "California central coast counties dry wine."*

This law does not imply that wine from only part of Contra Costa County is a Central Coast wine, but rather the entire county. While Federal law, specifically 27 CFR §9, supersedes California law, the state regulation, established in 1955 and last amended by statute in 1990, nonetheless establishes both a legal and historical association of Central Coast California with Contra Costa County.

Further, the Central Coast Wine Competition, hosted by the California Mid-State Fair is open to wines from Contra Costa County. The Interim CEO is quoted on the competition's web page as saying, "Our goal with the Central Coast Wine Competition is to promote the quality and style of wines being produced on the Central Coast, and to expand knowledge and awareness to wine consumers of the accomplished wineries in the region."[21] This, combined with other references of "Contra Costa County" to Central Coast wine, for example *Wine-Searcher*'s definition, demonstrates that the name Central Coast is already associated with wines from all of the Contra Costa viticultural area, despite the fact that the greatest acreage of viticultural farmland in Contra Costa County is currently outside the Central Coast AVA.

[21] https://centralcoastwinecomp.com/2020/03/30/registration-opens-for-the-2020-central-coast-wine-competition/

The inclusion of Contra Costa County in the "Central Coast" region is also recognized by at least one Federal agency. The Bureau of Land Management (BLM) Central Coast Field Office includes all of Contra Costa County including the Contra Costa viticultural area. Screenshots of the BLM's Central Coast administrative unit are included as Exhibits P and Q.

Finally, it should be noted that "costa" is the Spanish word for "coast." Unlike many other counties with geographically descriptive names (e.g., Riverside County), it does not share this name with a city or town, but rather the name is descriptive of the county itself. Hence, the very name Contra Costa implies an association with the coast.

While all of Contra Costa County is typically associated with the Central Coast, areas to the east of the county are typically not. Wines produced from grapes in San Joaquin County, just to the east of Contra Costa County, and Sacramento County to the northeast, are neither recognized by California legal code nor are part of the Central Coast Wine Competition nor are these counties part of the BLM Central Coast administrative unit. While the coastal influence that moves through the Carquinez Strait gradually diminishes moving inland, the name association with the Central Coast is much more abrupt, offering a legitimate distinction.

Geographic Evidence

The Central Coast AVA, established in 1985, is based on the influence of Pacific marine air, separating the coast from inland locations lacking coastal influence. T.D. AFT-216 identifies inland locations (specifically Paso Robles) as being under the influence of coastal airflow. T.D. ATF-134 establishing the Merritt Island AVA and T.D. TTB-67 expanding the San Francisco Bay AVA recognize marine airflow through the Carquinez Strait, airflow that impacts the Contra Costa winegrowing region. The geographic evidence in this petition to expand the Central Coast AVA gives first consideration to the criteria established in T.D. ATF-216, specifically air temperatures and associated marine air influence. This petition also addresses criteria put forth for expansion of the Central Coast AVA, specifically T.D. ATF-407 and T.D. TTB-48.

A review of GDD in Contra Costa County both currently within the Central Coast AVA and outside the AVA, conducted as part of the study that lead to this petition, demonstrates that GDD totals in Brentwood (CIMIS47), currently outside the Central Coast AVA, share temperatures consistent with locations (e.g., KCAWALNU35) inside the AVA (Tables 2 and 3). In fact, GDD at Clayton (KCACLAYT10), currently within the Central Coast AVA, was excluded from the proposed Contra Costa AVA for lacking the level of diurnal coastal influence experienced within the Contra Costa viticultural area. These numbers, updated for this petition, show similar patterns when averaged with 2019 data. Jersey Island is excluded from the proposed Contra Costa AVA because of soils and is hence not part of this proposed expansion, but nevertheless shows temperatures in eastern Contra Costa County cooler than Walnut Creek – Lakewood (KCAWALNU35). Similarly, the three-year average at Brentwood is cooler than the three-year average at Walnut Creek - Lakewood (Tables 9 and 10).

Table 10 – Comparison of GDD and average GDD at Brentwood in the eastern part of the Contra Costa viticultural area with nearby Central Coast AVA locations (°F)

Location	*Viticultural Areas*	*2018 GDD*	*2-year GDD*	*8-year GDD**
Brentwood	Contra Costa	4141	4149	3875
Clayton	Central Coast	4489	4573	---
Walnut Creek - Lakewood	Central Coast	4025	4221	---
Livermore	Livermore Valley/Central Coast	3879	3732	3759

*Excludes 2009 and 2015 data, which are incomplete at Brentwood (CIMIS47).

Table 10 was calculated as part of the 2019 study of the Contra Costa viticultural area, conducted before the end of the 2019 growing season. Table 11, incorporating 2019 data, shows that stations within eastern Contra Costa County (Brentwood – CIMIS47 and Jersey Island – CIMIS247) that are outside the Central Coast AVA demonstrate GDD averages comparable or even less than GDD averages found in Contra Costa County and within the Central Coast AVA. Hence, eastern Contra Costa County demonstrates GDD consistent with or more moderated by Pacific airflow, hence cooler, than locations of Contra Costa within the Central Coast AVA, and only modestly warmer over eight years, based on GDD found in at least one location within the Livermore Valley AVA (Table 10).

Table 11 – Average GDD (°F) for weather stations in and around the Contra Costa viticultural area

Station	*Relative Location*	*3-Year Ave. (2019-2017)*	*2-Year Ave. (2019-2018)*
Brentwood	Contra Costa	4191	4208
Concord	Contra Costa/ Central Coast	---	3607
Jersey Island*	Northeast	3988	3958
Walnut Creek – Lakewood*	Central Coast	4218	4118

*These stations show annual temperatures consistent with, or nearly consistent with, the Contra Costa viticultural area, but were excluded from the AVA primarily for other reasons.

Previous Central Coast Expansions

While the AVA as defined by T.D. ATF-216 is emphasized in this petition, the petitioners would nonetheless like to address the two expansions of the Central Coast AVA. The first expansion, published in 1999 (T.D. – ATF-407) was done in conjunction with the creation of the San Francisco Bay AVA, aligning the two AVA boundaries. That Treasury Decision notes, "An indication of the 'coastal climate's effect on the area is the difference between July and September temperatures. September (fall) is usually warmer than July in coastal areas, while the reverse is true in coastal areas."[22] The premise surrounds a long-held understanding that peak temperature lag times between the June solstice and the period of average maximum season temperatures is more pronounced in coastal areas, as bodies of water have a moderating effect on climate and generally take longer to warm and cool. Both the depth insolation travels in ocean waters (compared to land) and the specific heat of water slow the warming of ocean waters, so coastal locations typically experience cooler summers and a greater lag between the greatest sun angle and the warmest temperatures. Along the California coast, the lag is further complicated by cooler ocean currents, upwelling of ocean waters, and shifts in pressure gradients. Coastal California is moderated by the cold California current, while coastal upwelling brings cold water from deeper in the ocean to the surface. Predominant western wind flow that is greatly enhanced by regional pressure differentials caused by inland heating carries air that is cooled by this cold surface water. This pattern breaks down in the later summer/early fall as subtropical high pressure over the Pacific moves south, allowing greater offshore winds.

[22] *Federal Register*, "Establishment of the San Francisco Bay Viticultural Area and the Realignment of the Central Coast Viticultural Area (97-242)," T.D.-407, Vol. 64, No. 12, January 20, 1999, p. 3021.

The Treasury Decision description of warmer September than July temperatures isn't completely accurate, however, as a table (Table 1 in the petition) referenced by T.D. ATF-407 identifies warmer average July temperatures in several Central Coast AVA locations, including Martinez (0.5°F warmer average July temperature), King City (1.3°F warmer average July temperature), San Jose (1.3°F warmer average July temperature), Palo Alto (1.3°F warmer average July temperature), Los Gatos (2.0°F warmer average July temperature), Livermore (2.3°F warmer average July temperature), Gilroy (3.6°F warmer average July temperature), Mt. Diablo (3.8°F warmer average July temperature), and Paso Robles (4.7°F warmer average July temperature).[23] Antioch is listed as having a 3.6°F difference. By comparison, Merced is listed as having differences in average temperatures of 6.2°F. T.D. ATF-407 also notes, "a location's climate is dictated primarily by it position relative to the wind stream distance from the Pacific—the greater the wind stream distance, the greater the July/October temperature differential and the greater the degree day accumulation, as the wind stream will be increasingly warmed by ground as it passes over."[24] The preceding statement is only partially true, as topography and urban heat islands can impact climate as well. A second criterion addressed appears to be topography, as "an airstream continuum of degree-day temperatures correlated with airstream distance from the Pacific Ocean," which is clarified earlier in the ruling (when addressing the San Francisco Bay AVA) to mean that airflow is not interrupted by topographical barriers. As surface airflow through the Carquinez Strait is in contact with surface waters past Antioch and into the California Delta, with a gradual warming of GDD moving inland, eastern Contra Coast County meets this criterion. The gradual warming through the Carquinez Strait and into the California Delta contrasts with the sudden increase in temperatures found east of steeper terrain in Central Coast regions to the south. A 2017 study commissioned for the Livermore Valley Winegrowers Association, for example, found GDD totals 850 to 1460 (°F) higher moving from the

[23] "Petition to Amend the Boundaries of Central Coast Viticultural Area," February, 1997.
[24] *Federal Register*, "Establishment of the San Francisco Bay Viticultural Area and the Realignment of the Central Coast Viticultural Area (97-242)," T.D.-407, Vol. 64, No. 12, January 20, 1999, p. 3021. Note that although the Treasury Decision specifically discusses July and September temperatures, this statement identifies the "July/October temperature differential."

Livermore Valley AVA to just east of the Altamont Hills.[25] Such a pattern also appears to be the case with station HBP, which demonstrates warmer temperatures than Brentwood and Jersey Island, both in the path of marine air moving from the Carquinez Strait into the Central Valley.

As part of the 2019 Contra Costa study (Exhibit B), additional analysis of July and September average maximum and minimum temperatures was conducted at Antioch and Brentwood, in the proposed expansion areas; Gilroy, King City, Livermore, Los Gatos, Martinez, Paso Robles, and San Jose, within the Central Coast AVA and the Central Valley cities of Fresno, Madera, Los Banos, and Merced, all east of the Central Coast AVA.[26] Graphical demonstration of this analysis is found in Exhibit R. Figure 1 lists a number of cities with average July maximum and minimum temperatures based on 30-year averages (2010-1981 being the most recent normal temperatures based on meteorological standards) accessed through the Western Region Climate Center. Some of these stations may be the same stations referenced in "Table 1" of the petition to expand the Central Coast AVA and the subsequent final rule (T.D. AFT-407). Brentwood was added using CIMIS data, although in this case, the 30-year average is based on 2016 to 1986, excluding 2009 due to the unavailability of data. Brentwood was added to provide a second eastern Contra Costa County reference. As expected, the Central Valley stations have overall warmer temperatures, both in maximum and minimum temperatures. Higher minimum temperatures are a result of greater daytime absorption and lack of cooling breezes leading to warmer night-time temperatures. Antioch and Brentwood have average maximum temperatures (91.5°F and 90.7°F, respectively) consistent with Paso Robles (at 91.1°F) and 1-3 degrees (F) warmer than Livermore and Martinez (88.9°F and 88.5°F, respectively), but much lower than the Central Valley stations (ranging from 95.1°F at

[25] Shabram, Patrick L., "Mesoclimate Patterns of the Livermore Valley AVA," unpublished, prepared for the Livermore Valley Winegrowers Association, October 2017.

[26] Any determination of the impacts of urban heat islands was outside the scope of the study. It is expected that urban heat islands (UHI) may play a small role at Antioch but a more limited role at Brentwood based on placement of the weather stations, but UHI may also impact comparative stations. The extent to which UHI may impact temperatures at any of these respective stations is open for debate. UHI usually have a greater impact on low temperatures, but overall impact varies by location and population size. Studies have found temperature impacts of 1.8°F to 5.4°F for metropolitan areas with greater than one million people. Of the cities listed, only San Jose would have a population this size (Los Gatos is a suburb of San Jose), although the Fresno metropolitan area approaches this total.

Los Banos to 98.2°F at Fresno). Note, however, much lower average minimum temperatures at Paso Robles (52.4°F) compared to Antioch and Brentwood (59.2°F and 56.5°F, respectively). The lower minimum temperatures can be the result of multiple influences, but likely suggest greater coastal influence at Antioch and Brentwood than at Paso Robles, which experiences a greater temperature variance. While coastal breezes can have a cooling effect in the late afternoon leading into night, coastal air also helps moderate the loss of heat radiation to the atmosphere, offering some limitation to this temperature variance. Because of the lower minimum temperatures, Paso Robles has a lower average temperature (71.8°F) than Antioch and Brentwood (75.4°F and 73.6°F, respectively), despite likely having less coastal influence. Further adding to the argument that Paso Robles may experience less coastal influence, September average maximum temperatures (Figure 2 of Exhibit R) at Paso Robles (88.3°F) are more in line with Central Valley temperatures (ranging from 89.3°F to 90.5°F) than Antioch and Brentwood (85.8°F and 86.0°F, respectively).

The argument here is not that Paso Robles lacks coastal influence. Compared to inland cities in the Central Valley, modest coastal airflow has a moderating effect on temperatures at Paso Robles. Rather, the arguments made in the petition that led to T.D. TTB-407 failed to recognize that the difference between average July and September temperatures at Antioch as presented in Table 1 of the petition were not only significantly lower than Merced in the Central Valley, but lower than Paso Robles within the Central Coast AVA and only slightly higher than Gilroy, also within the Central Coast AVA. Figure 3 of Exhibit R offers an updated comparison based on numbers used in this analysis. While the variance between July and September may be larger than many (but not all) Central Coast AVA locations, the variance at Antioch is not comparable to those found in the Central Valley cities, indicating a coastal influence. Hence, inclusion of Antioch and Brentwood is consistent with the criteria presented in T.D. ATF-216.

T.D.-407 also uses the *Sunset Magazine Western Garden Book* classifications to justify expansion, noting “the Central Coast viticultural area within Zones 7, 14, 15, 16, and 17.” The proposed expansion area lies within Zone 14 of the climate guide (Exhibit S),

described by the *Western Garden Book* as "Zone 14: Northern California's inland areas with some ocean influence."[27] Following is a more detailed description of the Zone 14 climate type provided by the Sunset WesternGarden Collection:

> *Marine air moderates parts of Zone 14 that otherwise would be colder in winter and hotter in summer. The opening in Northern California's Coast Ranges created by San Francisco and San Pablo bays* [sic] *allows marine air to spill much farther inland. The same thing happens, but the penetration is not as deep, in the Salinas Valley. Zone 14 includes the cold-winter valley floors, canyons, and land troughs in the Coast Ranges from Santa Barbara County to Humboldt County.*
>
> *The milder-winter, marine-influenced areas in Zone 14 and the cold-winter inland valley within Zone 14 differ in humidity. For example, lowland parts of Contra Costa County are more humid than Sacramento.*

Hence, this support for the 1999 expansion also supports the proposed expansion presented in this petition. Further, the description presented by the *Western Garden Book* further supports coastal influence into the eastern part of the county.

T.D. ATF-407 also uses a cool Mediterranean Köppen climate classification designation (Csb) to support the 1999 expansion. East Contra Costa County also has a Mediterranean climate. Designation of a cool Mediterranean climate (Csb) versus a warm Mediterranean climate (Csa) is dictated by the warmest month with an average temperature below 22°C. Antioch and Brentwood both have climate types that border Csa/BSk climates, but it should be noted that so too do Livermore, Paso Robles, Cachuma Lake (east of Santa Ynez), and Priest Valley (east of King City), all located within the Central Coast AVA. For this petition, Köppen climate classifications were determined using climatic data from the stations rather than small-scale maps of the area as presented in petitions associated with both the 1999 and 2006 proposals. In areas that had at least one month with an average temperature greater than 10°C and the coldest month an average

[27] https://www.sunsetwesterngardencollection.com/climate-zones/zone/central-california

temperature between 18°C and 0°C, distinguishing between B (dry climate types) and C (temperate humid climate types) is determined by a combination of annual temperatures (which impacts evapotranspiration rates) and when the concentration of precipitation occurs. In central to northern California, outside the Sierra Nevada, the climate types in question are BSk (Semiarid or Mid-Latitude Steppe) climates and Cs (Mediterranean) with a wet winter/dry summer precipitation pattern. Csa indicates a Mediterranean climate with a warmer summer than Csb. Using Brentwood as an example, with an average annual temperature of 16.0°C using CIMIS data and a winter concentration of precipitation, Brentwood would need to receive approximately 310mm of precipitation to be considered a Mediterranean climate (otherwise it would be considered BSk). The average annual precipitation at Brentwood is 326mm. To be considered Csb, the warmest month would need to be less than 22°C. The warmest month is 23.1°C (Table 12). Hence Brentwood has a Csa climate. While Brentwood is not a Csb climate, by definition, neither are several other locations within the Central Coast AVA (e.g., Livermore, Paso Robles). Lower precipitation totals at Central Coast locations may be in part because of higher terrain to the west, which subject the locations to modest rain shadow effects, or because they lack steep terrain to their east, which creates the conditions for precipitation through orographic lifting. Meanwhile, several Central Valley locations east of the Central Coast AVA, with higher average temperatures, fall in the BSk climate type even where precipitation is comparable to those found in Central Coast AVA locations due to higher evapotranspiration rates. For example, Merced (both the coolest and wettest of these cities), with an average annual temperature of 16.9°C, would need an average precipitation of 350mm to be considered a Mediterranean climate type.

Table 12 – Average temperature and annual precipitation normals (2010-1981)*

Location	***Warmest Month Ave Temp (°C)***	***Precipitation (mm)***
Antioch	24.1	336
Brentwood	23.1	326
Cachuma Lake	22.3	561
Livermore	22.7	387
Paso Robles	23.0	324
Priest Valley	22.7	542
Fresno	28.3	292
Los Banos	26.3	253
Madera	26.4	311
Merced	25.4	331

Sources: NOAA Regional Climate Centers, California Irrigation Management Information System.
*Brentwood based on 2016-1986 excluding 2009.

Conclusion

Strong evidence exists that all of the Contra Costa viticultural area should be included in the Central Coast AVA. In addition to the association of the name Central Coast with all of Contra Costa County, the Contra Costa viticultural area exhibits coastal influence due to its position directly east of the Carquinez Strait. Several Treasury Decisions have already established that this coastal airflow through the strait allows marine airflow to penetrate farther inland than at other areas along the Central Coast region. Many of the points and exhibits presented with the 1999 expansion of the Central Coast AVA further support expansion of the Central Coast AVA to include all of the Contra Costa viticultural area, including climate zones in the *Western Garden Book,* precipitation totals, and temperature variance between July and September. Further, GDD totals in the proposed expansion area are in line with, and in some cases lower, than GDD found within the existing Central Coast AVA (see Tables 2, 3, 6, 7, 10, 11). Most importantly, the area meets the standards established by T.D. ATF-216, which identifies “marine influence” as the primary characteristic of this winegrowing region. A clear distinction is observed between the climate of the Contra Costa viticultural area and locations farther removed from coastal influence impacting the overall climate.

The petitioners recognize that the Central Coast was expanded to match the boundaries of the San Francisco Bay AVA proposed at the time. As discussed in the next section, the exclusion of eastern Contra Costa from the San Francisco Bay AVA was an error perpetuated by a misunderstanding of the climate around Antioch. This same misunderstanding may have led to the exclusion of eastern Contra Costa viticulture from the Central Coast AVA.

SAN FRANCISCO BAY EXPANSION

The establishment of the San Francisco Bay AVA, created in 1999 (T.D. ATF-407) and expanded in 2006 (T.D. TTB-48) and 2008 (T.D. TTB-67), was congruent with the 1999 and 2006 expansions of the Central Coast AVA. The AVA was created based on climatic influence of Pacific marine air and San Francisco Bay influence and/or a name association with San Francisco Bay. The petition distinguishes San Francisco Bay from San Pablo Bay coastal influence, apparently because the airflow moves through the Petaluma Gap (referred to as the Estero Gap in T.D. TTB-47) into the Petaluma Valley and onto the North San Pablo Bay, but airflow from San Francisco Bay moves into San Pablo Bay and through the Carquinez Strait. The inclusion of Martinez and Concord in the San Francisco Bay AVA would not make sense without this recognition. Evidence provided with the 2006 and 2008 expansions of the San Francisco Bay AVA support airflow patterns through the Golden Gate into San Francisco Bay, through San Pablo Bay, and through the Carquinez Strait, into Suisun Bay and into the California Delta. T.D. ATF-407 also distinguishes the San Francisco Bay AVA from the North Bay by low precipitation totals in the San Francisco Bay region and by the area being Region I-III as defined by Amerine & Winkler.[28] As the Central Coast expansion was dependent on the creation of the San Francisco Bay AVA, evidence provided in support of the San Francisco Bay AVA is likewise presented as evidence in support of an expansion of the Central Coast AVA.

[28] Amerine, M. and Winkler, M. (1944). Composition and quality of musts and wines of California grapes. *Hilgardia* ,15, 493–675.

Name Evidence

The name San Francisco Bay is used to identify the body of water south of Point San Pablo (Contra Costa County) and Point San Pedro (Marin County). The name is also commonly applied to the collection of contiguous waterways that include San Francisco Bay, San Pedro Bay, Suisun Bay, Grizzly Bay, and Honker Bay. For example, the San Francisco Estuary is defined by the San Francisco Estuary Partnership (SFEP) as the San Francisco Bay-Delta Estuary[29] (Exhibit T). Many agencies, non-profit organizations, businesses, and media reports refer to the nine county "San Francisco Bay area," or more commonly "the Bay Area" for short. For example, the host entity of SFEP is the Association of Bay Area Governments representing the nine San Francisco Bay area counties. All of Contra Costa County is associated with this nine-county region. The Metropolitan Transportation Commission notes that the "Nine Bay Area Counties" region stretches from "the Wine Country in the north to Silicon Valley in the south, from the shores of the Pacific to the edge of the Central Valley…," later listing the "nine counties that touch San Francisco Bay" to include Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma.[30] As Napa, Solano, and Sonoma counties do not touch San Francisco Bay as outlined in the more restrictive body of water (that body of water south of the Point San Pedro and Point San Pablo), it is clear that the name San Francisco Bay extends to include the greater region of bay estuaries.

This regional inclusion of all of Contra Costa County in the San Francisco Bay area is recognized by state-level agencies, including the California Department of Water Resources. The Brentwood CIMIS station, for example, is identified as "San Francisco Bay Region"[31] (Exhibit U). Non-profits, private individuals, and businesses also recognize all of Contra Costa County as part of the San Francisco Bay area. The Wikipedia page for Contra Costa County, California, for example, identifies the county

[29] San Francisco Estuary Partnership (2020). "About SFEP." https://www.sfestuary.org/about-us/about-sfep/

[30] Metropolitan Transportation Commission (2020). "Nine Bay Area Counties," https://mtc.ca.gov/about-mtc/what-mtc/nine-bay-area-counties.

[31] State of California, Department of Water Resources California Irrigation Management System (2020). "Station List," https://cimis.water.ca.gov/Stations.aspx.

as occupying the northern portion of the East Bay region of the San Francisco Bay area.[32] The Wikipedia page for San Francisco Bay also notes that the San Francisco Bay area is "surrounding the San Francisco, San Pablo, and Suisun Bay estuaries in Northern California…including the counties that directly border the San Francisco, San Pablo, and Suisun estuaries."[33]

Several of the exhibits supporting the petition to establish the San Francisco Bay AVA also support the San Francisco Bay name including viticulture in eastern Contra Costa County. Exhibit E in that petition, for example, notes the "Largest Bay Area Wineries," reproduced from the November 21, 1988 issue of the *San Francisco Business Times*, including Cline Cellars (number 11 on the list), located in Oakley, California (included with this petition as Exhibit V). Exhibit D from that petition notes that the "Map & Definitions of California Grape Pricing Districts" includes all of Contra Costa County in District 6, defined as Alameda, Contra Costa, Santa Clara, San Francisco, San Mateo, and Santa Cruz Counties (included as Exhibit W in this petition). Although this second example does not apply the name "San Francisco Bay," it supports a commonality in viticultural recognition between other wine-producing counties of the San Francisco Bay AVA. Exhibit Q from the petition to establish the San Francisco Bay AVA, "Map 1: Bay Area Place Names," includes all of Contra Costa County including the place names of Pittsburg, Antioch, Brentwood, and Bryon, all located in the proposed expansion area (included in this petition as Exhibit X).

Geographic Evidence

T.D. ATF-407 specifically identifies two pieces of information to support the eastern boundary of the AVA: precipitation and degree day totals. The following addresses both these characteristics.

[32] Wikipedia (2020). "Contra Costa County, California," https://en.wikipedia.org/wiki/Contra_Costa_County%2C_California.
[33] Wikipedia (2020). "San Francisco Bay Area," https://en.wikipedia.org/wiki/San_Francisco_Bay_Area.

Temperatures

The Treasury Decision notes that the Central Valley is identified as Region V by Amerine and Winkler. M.A. Amerine and A.J. Winkler were researchers at the University of the California, Davis who, during the mid-20th Century, created what has become known as the Winkler Scale or Winkler Index to classify California winegrowing regions. The calculation uses monthly, rather than daily, degree day calculations [$GDD=\sum (((T_{monthly\ ave.\ max}-T_{monthly\ ave.\ min})/2)-50°F) \times \#$ of day per month)].[34] Unfortunately, the calculations outlined in the best-known works of Amerine and/or Winkler, "Composition and Quality of Musts and Wines of California Grapes," [35] published in 1944, and *General Viticulture*,[36] published in 1962 and 1974, continue to be used to establish recent and current climatic conditions despite a greater number of weather stations, improvements in equipment, the expansion of urban heat islands, and a changing climate.[37] Region V climates under the Winkler Index include GDD calculations higher than 4000 GDD (°F). The 30-year average at Brentwood (CIMIS47) in east Contra Costa County is 3801 (2018-1987 excluding 2009 and 2015) using the monthly, rather than daily, accumulation noted earlier in this petition. Over the duration of record-keeping at the Brentwood CIMIS station (November 1985 to present), annual GDD was below 4000 (°F) in 24 of the 32 growing seasons for which records are complete, ranging from a low of 3220 (1998) to a high of 4271 (2019).

T.D. ATF-407 also notes that San Francisco Bay winegrowing areas are in the Region I-III category, which would indicate GDD at 3500 (°F) or lower. Livermore is specifically identified with a GDD of 3400, a figure given in *General Viticulture*. A recalculation of GDD using 2010-1981 normals at the Livermore NOAA station, however, results in a

[34] Shabram, P.L. "The Limitation of the Winkler Index." *Wines & Vines*, Collector's Edition, December 2018/January 2019m pp. 108-111. Some indications suggest that many of the calculations in Amerine and Winkler's work simplified calculation to 30 days per month. For the purposes of this petition, calculations use the actual number of months for each month (e.g., 31 days in May).

[35] Amerine, M. and Winkler, M. "Composition and Quality of Musts and Wines of California Grapes." *Hilgardia* ,Vol. 15, Num 6, 1944, pp. 493–675.

[36] Winkler, A.J., Cook, J.A., Kliewer, W.M., Lider, L.A., *General Viticulture*, University of California Press, 1962, 1974.

[37] Shabram, P.L. "The Limitation of the Winkler Index." *Wines & Vines*, Collector's Edition, December 2018/January 2019, pp. 108-111.

GDD of 3663 (°F), which would place it in Region IV if used to establish a region-wide Winkler Index designation. Hence, Brentwood is not inconsistent with Amerine and Winkler climatic designations found within the existing San Francisco Bay AVA.

The reason that Antioch may have been purposefully excluded from the San Francisco Bay AVA despite its position straddling the San Francisco Bay Estuary may have been because it is listed as Region V with 4200 degree days in *General Viticulture*. Brentwood is also listed with 4100 degree days. There are two concerns with relying on these data, however. First, despite the groundbreaking nature of Winkler et al.'s work, these calculations are dated. The petitioners of the San Francisco Bay AVA had their own calculations for Antioch at 3798 (°F).[38] As noted above, the 30-year average for Brentwood is 3801 (°F). A modern calculation of GDD at Antioch, matching the methodology deployed by Winkler et al., places it at 4020 (°F). This calculation still places Antioch in Region V, which brings up the second point: areas farther inland (e.g., Brentwood), demonstrate lower GDD totals than the Antioch station, which suggests that the location of the longest operating NOAA station in Antioch may not be completely indicative of the overall mesoclimate common to eastern Contra Costa County. While this Antioch station is used in this petition specifically to justify expansion of the Central Coast AVA, in part because of the longevity of the data, this station located at Antioch Pumping Plant #3 appears to skew higher than surrounding data. It is possible that a microclimate in the immediate vicinity is slightly warmer than surrounding areas. While the station used for the *General Viticulture* Antioch data is unknown, a historic station at a Fiberboard Paper Mill existed from 1915 to 1974, while the Antioch Pumping Plant #3 station has recordings back to 1955. It is also not known which station was referenced in the original San Francisco Bay petitioner's calculation for Antioch. Data from 1990-1961, the standard 30-year time period used at the time of the San Francisco Bay calculation, would have shown a GDD of 3825 (°F) if using data from the Antioch Pumping Plant #3 station, which is slightly higher than the number referenced by the original petition. Very unknown is the station used for the Brentwood calculation in

[38] "Petition to Amend the Boundaries of Central Coast AVA," "Table 1: Coastal Characteristics Climate," February 1997. Note this table does not list units, so all units are reasonably assumed to be Fahrenheit.

General Viticulture. Further, locations farther inland, specifically Modesto, list a lower GDD than Brentwood at 4010 in *General Viticulture*. Given Brentwood's position relative to airflow through the Carquinez strait, the fact that stations farther inland would have lower GDD than Brentwood and Antioch seems to counter the argument that Central Valley locations are warmer based on decreasing coastal influence unless interrupted by topographic features (or as noted in the above description of Clayton and Tracy, if protected from marine airflow experience adiabatically warmed air). It is possible that climate changed during the second half of the twentieth century, altering wind patterns enough to allow for greater inland airflow created by greater pressure differentials, explaining why both the petitioners of the original San Francisco Bay AVA and this petition get lower GDD totals than Winkler. As such analysis was not conducted, a more pertinent point would be to note that using the winegrowing regions based on Winkler's work may not offer the best tool for analyzing influence from San Francisco Bay. Modern calculations of Modesto GDD, for example, show 4676 (°F) degree days.

Please note that daily data for the Antioch station at Antioch Pumping Plant #3 were not readily available, and as such, the station was not used in the assessment of the Contra Costa viticultural area, which relied on a daily accumulation methodology for calculating GDD.

Precipitation

As noted in Table 12, annual precipitation totals at Antioch and Brentwood are generally higher than those found at the Central Valley cities of Fresno and Los Banos, but not necessarily lower than those found at Madera and Merced. Consistent with T.D. ATF-407, however, precipitation totals at Antioch and Brentwood are lower than those found in North Bay locations at the Napa airport (512 mm), Petaluma (677 mm), and Sonoma (798 mm). An argument can be made that precipitation totals are not necessarily the best argument for establishing the San Francisco Bay viticultural area, as precipitation is not just a reflection of humidity, but also dictated by lifting mechanisms. Hence, Central Valley cities just west of the Sierra Nevada may experience increased precipitation caused by orographic uplift, while Central Valley cities just east of the coastal ranges

may experience lower precipitation totals as a result of a rain shadow effect. Nevertheless, an exhibit with the petition to establish the San Francisco Bay AVA titled "Annual Rainfall Averages in Inches" (Exhibit Q in the San Francisco Bay AVA petition, included with this petition as Exhibit Y) demonstrates 13 inches in Antioch, which is equivalent to San Jose, and only one inch less than Santa Clara, Newark, and Martinez, hence offering no reason why Antioch would not be part of the San Francisco Bay AVA based on precipitation.

Previous Expansion of the San Francisco Bay AVA

The 2006 expansion of the San Francisco Bay AVA (T.D. TTB-48) does not specifically address geographic characteristics outside of an association between the Livermore Valley AVA and the Central Coast and San Francisco Bay AVAs. The association of Contra Costa County with the Central Coast name is reinforced in T.D. TTB-48. Little geographic evidence is provided, although Exhibit 16, "San Francisco Weather – Weird and Wacky," has the following highlighted statement:

> *Corresponding to these seven gaps in the western Coast Range are three in the inner range. Niles Canyon and the Hayward Pass are two of the gaps, and the Carquinez Strait, also called the "inner Golden Gate" completes the list.*

This statement supports movement of San Francisco Bay influence inland through the Carquinez Strait.

Aside from name recognition, including the Association of Bay Area Government and other agencies that serve the nine-county San Francisco Bay Area, the 2008 expansion of the San Francisco Bay AVA (T.D. TTB – 67) describes geology, soil, and climate similar to areas found within the existing San Francisco Bay AVA. This current petition notes that neither geology nor soils were considered in the establishment of the original AVA. Nevertheless, soils of the proposed expansion area, however, include Joice muck, which is noted in T.D. TTB-67. Although an effort is made in this petition to limit the amount of

Joice muck, as it is not conducive to viticulture, Joice muck is found in the proposed expansion area. Reyes silty clay soils, noted in T.D. TTB-67, are also present in the proposed expansion area. T.D. TTB-67 also notes the geology of upland slopes of Cretaceous sandstone and shale. Upland slopes are limited in the proposed expansion area, with an emphasis on the Quarternary alluvial terraces and fans out of these highlands. These same geologic units (Quarternary deposits) are currently found within the San Francisco Bay AVA, including in north-central Contra Costa County (Exhibit CC). Such deposits are also common to Santa Clara Valley, Livermore Valley, and the flatter terrain surrounding the San Francisco Bay (see Exhibit DD for an example). Further, primary bedrock associated with many of the soils of the proposed expansion have sandstone and shale parent material. As identified in T.D. TTB-67, Los Osos series soils are found in highland areas of the proposed expansion, and would be more prevalent if an effort had not been made to exclude this area as not viticulturally significant to the Contra Costa winegrowing region. So too are Altamont series soils found at elevated positions. Most important is the large presence of Rincon soils, which according to T.D. TTB-67, were reported by the petitioner to be common to alluvial fans.

T.D. TTB-67 provided additional evidence of airflow through the Carquinez Strait, noting:

> *The current expansion petition provides evidence and documentation that the marine air flow, with its cooling effect, travels north and east from the Golden Gate, into San Francisco Bay, San Pablo Bay, the Carquinez Strait, and to the proposed expansion area. Although the proposed expansion area was not included in the original San Francisco Bay AVA petition, since the filing of the original petition, additional observation sites have become available that provide a more detailed analysis of the air flow patterns in and around the Carquinez Strait. Figures obtained from a new observation site that show the typical summer afternoon flow pattern on both the north and south sides of the Carquinez Strait clearly show that the Carquinez Strait is not the northern boundary of the*

influence of the marine air that has entered through the Golden Gate Gap.[39]

The ruling further states, "The air flow pattern through the Carquinez Strait brings the marine influence to the north, east, and south of the waterway."[40]

Conclusion

Eastern Contra Costa County is well-established as part of the San Francisco Bay area. The exclusion of eastern Contra Costa County may have been a mistake based on dated information that did not completely demonstrate the San Francisco Bay influence that impacts the winegrowing region. Further, the two previous expansions of the San Francisco Bay AVA both support that marine air flows through the Carquinez Strait, airflow that also impacts the eastern sections of the San Francisco Bay AVA. Further, geology and soils are consistent with geology and soils found at other locations within the San Francisco Bay AVA.

BOUNDARY DESCRIPTIONS

The following boundary descriptions approximate the unique geography and reputation of the Contra Costa winegrowing region. As a general rule, the AVA encompasses lower, less steep terrain and immediately surrounding slopes along the San Francisco Bay estuary waters, excluding muck soils, steep terrain, and locations outside the temperatures profile most in line with the reputation associated with Contra Costa wines. Elevation is generally below 700ft asl. Steeper terrain, muck soils, and/or higher elevations that have been included have been done so to simplify the boundaries. The proposed Contra Costa AVA encompass 167146 acres.

This boundary follows points found on the following quadrangles of USGS 7.5' Series (1:24,000) topographic maps:

[39] *Federal Register*, "Expansion of the San Francisco Bay Viticultural Area," T.D. TTB-67; Ref, Re: Notice No. 70, March 11, 2008, 12878-12881.
[40] Ibid.

- Antioch North Quadrangle, California 7.5-Minute Series (2018)
- Antioch South Quadrangle, California 7.5-Minute Series (2018)
- Benicia Quadrangle, California 7.5-Minure Series (2018)
- Bouldin Island Quadrangle, California 7.5-Minute Series (2018)
- Briones Valley Quadrangle, California 7.5-Minute Series (2018)
- Byron Hot Springs Quadrangle, California 7.5-Minute Series (2018)
- Clayton Quadrangle, California 7.5-Minute Series (2018)
- Clifton Court Forebay Quadrangle, California 7.5-Minute Series (2018)
- Jersey Island Quadrangle, California 7.5-Minute Series (2018)
- Honker Bay Quadrangle, California 7.5-Minute Series (2018)
- Tassajara Quadrangle, California 7.5-Minute Series (2018)
- Vine Hill Quadrangle, California 7.5-Minute Series (2018)
- Walnut Creek Quadrangle, California 7.5-Minute Series (1995)
- Walnut Creek Quadrangle, California 7.5-Minute Series (2018)
- Woodward Island Quadrangle, California 7.5-Minute Series (2018)

From the starting point at the northern-most point of Holland Tract Road southeast of 624000m E 4210000m N on the Bouldin Island map,

(1) proceed south 1.9 miles along Holland Tract Road onto the Woodward Island map to its intersection with the 10ft elevation line southeast of 624000m E 4207000m N; then,

(2) proceed south-southeast in a straight line 4.1 miles to the intersection of Orwood Road and the Mokelumne Aqueduct, just northeast of 625000m E 4200000m N; then,

(3) proceed south-southwest in a straight line 5.5 miles onto the Clifton Court Forebay map to the stream gauging station on Italian Slough, just west of the Contra Costa/San Joaquin County line northwest of 625000m E 4191000m N; then,

(4) proceed in a southwesterly direction along Italian Slough, then Brushy Creek 7.2 miles onto the Byron Hot Springs map to the intersection of Brushy Creek and Vasco Road southeast of 618000m E 4287000m N; then,

(5) proceed northwest in a straight line 4.3 miles to the intersection of Kellogg Creek and Walnut Boulevard northwest of 615000m E 4190000m N; then,

(6) proceed west-southwest in a straight line 2.9 miles onto the Tassajara map to the intersection of Marsh Creek and Miwot Trail southeast of 609000 E 4192000m N; then,

(7) proceed in a northwesterly direction along Marsh Creek 2.4 miles onto the Antioch South map to its intersection with Deer Valley Road, southwest of 608000m E 4194000m N; then,

(8) proceed in a northerly direction along Deer Valley Road 3.1 miles to its intersection with Chadbourne Road northeast of 607000m E 4197000m N; then,

(9) proceed northwest in a straight line 0.6 mile to the terminus of Tour Way northwest of 607000m E 4198000m W; then,

(10) proceed northwest in a straight line 3.0 miles to the eastern intersection of Oil Can Trail and Stewartville Trail northeast of 602000m E 4100000m N; then,

(11) proceed in a northeasterly direction along Stewartville Trail 1.9 miles to its intersection with the Contra Loma Trail northeast of 603000m E 4202000m N; then,

(12) proceed northwest in a straight line 2.5 miles to the intersection of Somersville Road and Donlan Boulevard west of 601000m E and just north of 4205000m N; then,

(13) proceed in a straight line west-southwest 2.5 miles onto the Clayton map to the intersection of Nortonville Road and Kirker Pass Road northwest of 597000m E 4204000m N; then,

(14) proceed in a southwesterly direction along Kirker Pass Road 5.0 miles to its intersection with Alberta Way northwest of 591000m E 4200000m N; then,

(15) proceed southwest in a straight line 1.5 miles to the southern intersection of Buckeye Trail and Blue Oak Trail with Lime Ridge Trail northeast of 588000m E 4199000m N; then,

(16) proceed south-southeast in a straight line 2.6 miles to the intersection of Arroyo Cerro Del and the 400 foot elevation line just southeast of 589000m E 4195000m N; then

(17) proceed northwest in a straight line 2.5 miles onto the Walnut Creek map to the intersection of Brodia Way and La Casa Via northwest of 585000m E 4196000m N; then,

(18) using the 1995 Walnut Creek map, proceed west-northwest in a straight line 3.1 miles to the marked 781-foot peak south of the shared Lafayette-Walnut Creek corporate boundary line and north of an unnamed light-duty road known locally as Peaceful Lane; then

(19) using the 1995 Walnut Creek map, proceed northwest in a straight line 1.7 miles the 833-foot peak marked "Hump 2;" then

(20) using the 1995 Walnut Creek map, proceed north-northwest 0.5 mile to the water tank (known locally as the Withers Reservoir) at the end of an unnamed light-duty road known locally as Kim Road, in the Cañada del Hambre y Las Bolsas Land Grant.

(21) proceed northwest in a straight line 3.0 miles onto the Briones Valley map to the intersection of Alhambra Creek Road and Alhambra Valley Road northwest of 575000m E 4202000m W; then,

(22) proceed northwest in a straight line 4.1 miles onto the Benicia map to the intersection of Highway 4 and Cummings Skyway southeast of 571000m E 4208000m N; then,

(23) proceed north-northwest in a straight line 1.8 miles to the intersection of McEwen Road and Carquinez Scenic Drive southwest of 571000m E 4211000m E; then,

(24) proceed northeast in a straight line 0.6 mile to the Port Costa Post Office northwest of 572000m E 4211000m N; then,

(25) proceed southeast in a straight line 0.9 mile to the first unnamed road (unimproved road) that touches the coastline at Little Bull Valley northeast of 572000m E and south of 4210000m N; then,

(26) proceed in an easterly direction along the Contra Costa County coastline approximately 38.3 miles onto the Vine Hill map, onto the Honker Bay map, and through New York Slough (excluding Browns Island and Winter Island) onto the Antioch North

map, onto the Jersey Island map into Big Break and Dutch Slough to Bethel Island Road east of 619000m E and just south of 4208000m N; then,

(27) proceed southeast in a straight line 0.7 mile to the intersection of Wells Road and Sandmound Boulevard southeast of 620000m E 4208000m N; then,

(28) proceed northeast in a straight line 2.7 miles to the starting point.

Central Coast Expansion Proposed Boundary

The proposed expansion of the Central Coast AVA is limited to the areas of the proposed Contra Costa AVA not currently within the Central Coast AVA. The changes below are found on the following U.S.G.S. maps:

- Antioch North Quadrangle, California 7.5-Minute Series (2018)
- Antioch South Quadrangle, California 7.5-Minute Series (2018)
- Bouldin Island Quadrangle, California 7.5-Minute Series (2018)
- Byron Hot Springs Quadrangle, California 7.5-Minute Series (2018)
- Clayton Quadrangle, California 7.5-Minute Series (2018)
- Clifton Court Forebay, California 7.5-Minute Series (2018)
- Honker Bay Quadrangle, California 7.5-Minute Series (2018)
- Jersey Island Quadrangle, California 7.5-Minute Series (2018)
- Tassajara Quadrangle, California 7.5-Minute Series (2018)
- Vine Hill Quadrangle, California 7.5-Minute Series (2018)
- Woodward Island Quadrangle, California 7.5-Minute Series (2018)

The modifications to the Central Coast AVA would be as follows (changes in Italics):

(4) From this point, the boundary proceeds east along the shoreline of Alameda County and Contra Costa County across the Richmond, San Quentin, Mare Island, ~~and~~ Benicia, *Vine Hill, and Honker Bay maps and through New York Slough (excluding Browns Island and Winter Island) across the Antioch North Map into Big Break and Dutch Slough to Bethel Island Road.* ~~maps to a point marked BM 15 on the shoreline of Contra Costa County. (Vine Hill Quadrangle)~~ *(Jersey Island map)*

~~(5) From this point, the boundary proceeds in a southeasterly direction in a straight line across the Honker Bay map to Mulligan Hill elevation 1,438. (Clayton Quadrangle)~~

(5) Proceed southeast in a straight line 0.7 mile to the intersection of Wells Road and Sandmound Boulevard southeast of 620000m E 4208000m N.

(6) Proceed northeast in a straight line 2.7 miles to the northern-most point of Holland Tract Road southeast of 624000m E 4210000m N on the Bouldin Island map.

(7) Proceed south 1.9 miles along Holland Tract Road onto the Woodward Island map to its intersection with the 10ft elevation line southeast of 624000m E 4207000m N.

(8) Proceed south-southeast in a straight line 4.1 miles to the intersection of Orwood Road and the Mokelumne Aqueduct, just northeast of 625000m E 4200000m N.

(9) Proceed south-southwest in a straight line 5.5 miles onto the Clifton Court Forebay map to the stream gauging station on Italian Slough, just west of the Contra Costa/San Joaquin County line northwest of 625000m E 4191000m N.

(10) Proceed in a southwesterly direction along Italian Slough, then Brushy Creek 7.2 miles onto the Byron Hot Springs map to the intersection of Brushy Creek and Vasco Road southeast of 618000m E 4287000m N.

(11) Proceed northwest in a straight line 4.3 miles to the intersection of Kellogg Creek and Walnut Boulevard northwest of 615000m E 4190000m N.

(12) Proceed west-southwest in a straight line 2.9 miles onto the Tassajara map to the intersection of Marsh Creek and Miwot Trail southeast of 609000 E 4192000m.

(13) Proceed in a northwesterly direction along Marsh Creek 2.4 miles onto the Antioch South map to its intersection with Deer Valley Road, southwest of 608000m E 4194000m N.

(14) Proceed in a northerly direction along Deer Valley Road 3.1 miles to its intersection with Chadbourne Road northeast of 607000m E 4197000m N.

(15) Proceed northwest in a straight line 0.6 mile to the terminus of Tour Way northwest of 607000m E 4198000m W.

(16) Proceed northwest in a straight line 3.0 miles to the eastern intersection of Oil Can Trail and Stewartville Trail northeast of 602000m E 4100000m N.

(17) Proceed in a northeasterly direction along Stewartville Trail 1.9 miles to its intersection with the Contra Loma Trail northeast of 603000m E 4202000m N.

(18) Proceed northwest in a straight line 2.5 miles to the intersection of Somersville Road and Donlan Boulevard west of 601000m E and just north of 4205000m N.

(19) Proceed in a straight line west-southwest 2.5 miles onto the Clayton map to the intersection of Nortonville Road and Kirker Pass Road northwest of 597000m E 4204000m N.

(20) Proceed in a southwesterly direction along Kirker Pass Road 2.5 miles to its western intersection with the 680-foot elevation line.

~~(6)~~ *(21)* The boundary proceeds in southeasterly direction in a straight line to Mt. Diablo elevation 3,849. (Clayton Quadrangle)

San Francisco Bay Expansion Proposed Boundary

The proposed expansion of the Central Coast AVA is limited to the areas of the proposed Contra Costa AVA not currently within the Central Coast AVA. The changes below are found on the following U.S.G.S. maps:

- Antioch North Quadrangle, California 7.5-Minute Series (2018)
- Antioch South Quadrangle, California 7.5-Minute Series (2018)
- Bouldin Island Quadrangle, California 7.5-Minute Series (2018)
- Byron Hot Springs Quadrangle, California 7.5-Minute Series (2018)
- Clayton Quadrangle, California 7.5-Minute Series (2018)
- Clifton Court Forebay, California 7.5-Minute Series (2018)
- Honker Bay Quadrangle, California 7.5-Minute Series (2018)
- Jersey Island Quadrangle, California 7.5-Minute Series (2018)
- Tassajara Quadrangle, California 7.5-Minute Series (2018)
- Vine Hill Quadrangle, California 7.5-Minute Series (2018)
- Vine Hill, California, 7.5-Minute Series, dated 1959, Photorevised 1980
- Woodward Island Quadrangle, California 7.5-Minute Series (2018)

The modifications to the San Francisco Bay AVA would be as follows (changes in Italics):

(21) Then proceed in a northwesterly direction in a straight line (across the Tassajara and Diablo Quadrangles) to Mt. Diablo (elevation 3,849) on the Clayton Quadrangle.

(22) Then proceed in a northwesterly direction in a straight *to the western intersection of Kirker Pass Road and the 680-foot elevation line* ~~to Mulligan Hill (elevation 1,438)~~ on the Clayton Quadrangle.

(23) Proceed in a northeasterly direction along Kirker Pass Road 2.5 miles to the intersection of Nortonville Road and Kirker Pass Road northwest of 597000m E 4204000m N.

(24) Proceed northeast in a straight line 2.5 miles onto the Antioch South map to the intersection of Somersville Road and Donlan Boulevard west of 601000m E and just north of 4205000m N.

(25) Proceed in a southeast in a straight line 2.5 miles the intersection Stewartville Trail and the Contra Loma Trail northeast of 603000m E 4202000m N.

(26) Proceed in a southwesterly direction along Stewartville Trail 1.9 miles to the its eastern intersection with Oil Can Trail northeast of 602000m E 4100000m N.

(27) Proceed southeast in a straight line 3.0 miles to the terminus of Tour Way northwest of 607000m E 4198000m W; then,

(28) Proceed in a straight line southeast 0.6 mile to the intersection of Deer Valley Road and Chadbourne Road northeast of 607000m E 4197000m N; then,

(29) Proceed in a southerly direction along Deer Valley Road 3.1 miles onto the to Tassajara map to its intersection with Marsh Creek Road, southwest of 608000m E 4194000m N.

(30) Proceed in a southeasterly direction along Marsh Creek Road 2.4 miles onto the Tassajara map to its intersection with Miwot Trail southeast of 609000 E 4192000m N.

(31) Proceed east-northeast in a straight line 2.9 miles onto the Byron Hot Springs map to the intersection of Kellogg Creek and Walnut Boulevard northwest of 615000m E 4190000m N.

(32) Proceed in a southeast in a straight line 4.3 miles to the intersection of Brushy Creek and Vasco Road southeast of 618000m E 4287000m N.

(33) Proceed in a northeasterly direction along Brushy Creek then Italian Slough 7.3 miles onto the Clifton Court Forebay map to the stream gauging station on Italian Slough, just west of the Contra Costa/San Joaquin County line northwest of 625000m E 4191000m N.

(34) Proceed north-northeast in a straight line 5.5 miles onto the Woodward Island map to the intersection of Orwood Road and the Mokelumne Aqueduct, just northeast of 625000m E 4200000m N.

(35) Proceed north-northwest in a straight line 4.1 to the intersection of Holland Tract Road 10-foot elevation line southeast of 624000m E 4207000m N.

(36) Proceed north-northwest along Holland Tract Road onto the Bouldin Island map to its northern-most point southeast of 624000m E 4210000m N.

(37) Proceed southwest in a straight line 2.7 mile to the intersection of Wells Road and Sandmound Boulevard southeast of 620000m E 4208000m N.

(38) Proceed northwest in a straight line 0.7 mile to the intersection of Dutch Slough and Bethel Island Road.

~~23) Then proceed in a northwesterly direction in a straight line (across the Honker Bay Quadrangle) to a point marked BM 15 on the shoreline of Contra Costa County on the Vine Hill Quadrangle.~~

(39) Then proceed ~~west-southwest~~ *in a westerly direction along Dutch Slough through Big Break onto the Antioch Map, through New York Slough (excluding Browns Island and Winter Island) onto the Honker Bay map then* along the south shoreline of the Suisun Bay and the Carquinez Strait to its intersection with Interstate 680 at the Benicia-Martinez Bridge and BM 66, T3N/R2W, on the Vine Hill Quadrangle.

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SUPPORTING EVIDENCE

This petition is in response to a geographic study conducted by Patrick L. Shabram, the author of this petition. The geographic study was conducted per interest by the Contra Costa Winegrowers Association. Patrick L. Shabram was retained to conduct an objective third-party assessment of the characteristics that distinguish the Contra Costa viticultural area and to determine whether establishment of a unique viticultural area and/or expansion of the Central Coast AVA would be justified. The study also identified appropriate boundaries for any subsequent petition. Patrick Shabram is a geographer and faculty member at Front Range Community College. He specializes in viticultural analysis, especially relating to viticultural areas. Some of the text of this petition has been taken from a report prepared by Shabram addressing these topics. The report also includes photographs taken in the area as well as additional graphs. Based on the findings of the report, Patrick Shabram was asked and agreed to prepare this petition. A complete copy of the report is included as Exhibit B.

As part of the Shabram analysis, Mike Bobbitt & Associates was hired to create several maps, including boundary maps and aerial views, slope, and soils maps. Mike Bobbitt & Associates is a Sonoma, California-based geographic information systems (GIS) company specializing in the wine industry. For this study, Shabram utilized Mike Bobbitt & Associates' Atascadero, California field office. Maps created by Mike Bobbitt & Associates are included as Exhibits C, D, E, F, G and H.

Also, for the Shabram report, John Viano of Viano Vineyards, chairman of the Contra Costa Winegrowers Association, Becky Bloomfield of Bloomfield Vineyards, vice-chairman of the Contra Costa Winegrowers Association, and several other growers and winemakers of the association were interviewed and consulted. Mr. Viano, Ms. Bloomfield, and other growers of the area are experienced, long-time viticulturalists in Contra Costa County. These growers provide historical context and personal observations of fog and wind patterns within the Contra Costa winegrowing region.

Included as exhibits are historical references, other maps and aerial images, and exhibits presented with previous petitions to expand the Central Coast AVA and create the San Francisco Bay AVA.

Exhibits

Following is a list of exhibits supporting this petition:

Exhibit A – USGS maps outlining the proposed Contra Costa AVA boundary and revised Central Coast AVA and San Francisco Bay AVA boundaries.

Exhibit B – Shabram, Patrick L., "Geographic Characteristics of the Contra Costa Winegrowing Area," 2019.

Exhibit C – Mike Bobbitt & Associates, "Contra Costa AVA: Proposed Boundary Slope Map," map, 2019.

Exhibit D – Mike Bobbitt & Associates, "Contra Costa AVA: Proposed Boundary NRCS Soils Map," map, 2019.

Exhibit E – Mike Bobbitt & Associates, "Contra Costa AVA: Proposed Boundary USGS Quad Map," map, 2019.

Exhibit F – Mike Bobbitt & Associates, "Contra Costa AVA: Proposed Boundary Aerial Map," map, 2019.

Exhibit G – Mike Bobbitt & Associates, "Contra Costa AVA: Proposed Boundary USGS Quad Map," map (showing Central Coast AVA, San Francisco Bay AVA, and neighboring AVAs), 2019.

Exhibit H – Mike Bobbitt & Associates, "Contra Costa AVA: Proposed Boundary Aerial Map," map (showing Central Coast AVA, San Francisco Bay AVA, and neighboring AVAs), 2019.

Exhibit I – Membership list of the Contra Costa Winegrowers Association, 2020.

Exhibit J – Peck, Ron. "History of Contra Costa County Grape Growing & Wine Making Prior to Prohibition," unpublished work, date unknown.

Exhibit K – Map showing location of members of the Lamorinda Winegrowers Association, captured from the Lamorinda Winegrowers Association website on July 7, 2020.

Exhibit L – Map of Carquinez Strait relative to the Pacific Ocean. 2020.

Exhibit M – Photo of Big Break Marina at Oakley. Big Break is part of the San Francisco Estuary. Windmills to the north take advantage of coastal airflow that gets funneled through the Carquinez Strait. Photo taken in April 2019.

Exhibit N – Photo looking east onto the eastern Contra Costa County shoreline taken from the summit of Willow Pass on Evora Road east of Concord and west of Bay Point. This point is also near the eastern boundary of the Central Coast AVA. Suisun Bay is just to the north. Airflow to the north is relatively unhindered after moving through the Carquinez Strait. While airflow would not have to pass over Willow Pass to enter eastern Contra Costa, at an elevation of only 560 feet asl, Willow Pass is not much of a topographic barrier for inland-moving Pacific airflow. Hayward Pass, noted in the petition to create the San Francisco Bay AVA as well as the 2006 expansion of the AVA as a wind gap for air movement into the Livermore Valley, has an elevation a little over 600 feet asl.

Exhibit O - Wine-Searcher. "Contra Costa County Wine," https://www.wine-searcher.com/regions-contra+costa+county. Screenshot captured on June 18, 2020.

Exhibit P –Map of Bureau of Land Management Central Coast Administrative Unit Field Boundary. Screenshot taken from BLM website, captured on June 18, 2020.

Exhibit Q – Map of Bureau of Land Management Central Coast Administrative Unit Field Boundary, zoomed in to Contra Costa County. Screenshot taken from BLM website, captured on June 18, 2020.

Exhibit R – Tables showing July and September average temperatures at selected cities and the temperature variance between average July and September temperatures.

Exhibit S – Maps from the *Western GardenBook Collection* showing *Western Garden Book* climate zones.

Exhibit T – Map of the San Francisco Bay-Delta Estuary, captured from the San Francisco Bay Estuary Partnership website on June 26, 2020.

Exhibit U – Description of the CIMIS 47 weather station at Brentwood, captured from the California Irrigation Management Information System website on June 26, 2020.

Exhibit V – "Largest Bay Area Wineries," reproduced from the *San Francisco Business Times*, November 21, 1988 and originally included with the petition to establish the San Francisco Bay AVA as Exhibit E.

Exhibit W – "Map & Definitions of California Grape Pricing Districts," originally included with the petition to establish the San Francisco Bay AVA as Exhibit D.

Exhibit X – "Bay Area Place Names," adopted from *Climatology of Summer Fogs in the San Francisco Bay Area* by Clyde Patton, University of California Press, 1956, included with the petition to establish the San Francisco Bay AVA as Exhibit B.

Exhibit Y – "Annual Rainfall Averages in Inches," included with the petition to establish the San Francisco Bay AVA as Exhibit Q.

Exhibit Z – "Fog Gaps and Barriers," included with the petition to establish the San Francisco Bay AVA as Exhibit N.

Exhibit AA – "California Predominant Surface Wind Flow Patterns," included with the petition to establish the San Francisco Bay AVA as Exhibit O(1).

Exhibit BB – Title and date unknown, included with the petition to establish the San Francisco Bay AVA as Exhibit O(2).

Exhibit CC – USGS, "Preliminary Geologic Map Emphasizing Bedrock Formations in Contra Costa County, California," 1994.

Exhibit DD – USGS, "Preliminary Geologic Map Emphasizing Bedrock Formations in Alameda County, California," 1996.

Exhibit EE – Location of Contra Costa vineyards, 2020.