Appendix B

Groundwater Use and Acreage Estimation

Paso Basin Land Use Management Area (PBLUMA) Planting Ordinance

Groundwater Use and Acreage Estimation

prepared by

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1 Summary

This appendix provides information regarding the steps used by the County of San Luis Obispo (County) to reasonably estimate the following with regards to the proposed Paso Basin Land Use Management Area (PBLUMA) Planting Ordinance ("planting ordinance," "ordinance," or "project"):

- Projected increase in groundwater usage associated with the proposed planting ordinance
- Acreage of previously uncultivated land that would be affected by the proposed planting ordinance
- Baseline (existing) groundwater extractions within the PBLUMA
- Reasonably foreseeable buildout projections within the PBLUMA
- Extent of project activities

2 Estimation of Projected Groundwater Use and Affected Acreage

This section discusses the steps taken by the County to determine the reasonable estimation of projected groundwater use and acreage affected by the proposed planting ordinance.

2.1 Reasonable Potential Increase in Groundwater Use

To estimate the reasonable potential increase of groundwater use from wells in the PBLUMA under the proposed planting ordinance, the following steps were taken by the County.

Step 1 Estimate the Number of Sites Within the PBLUMA

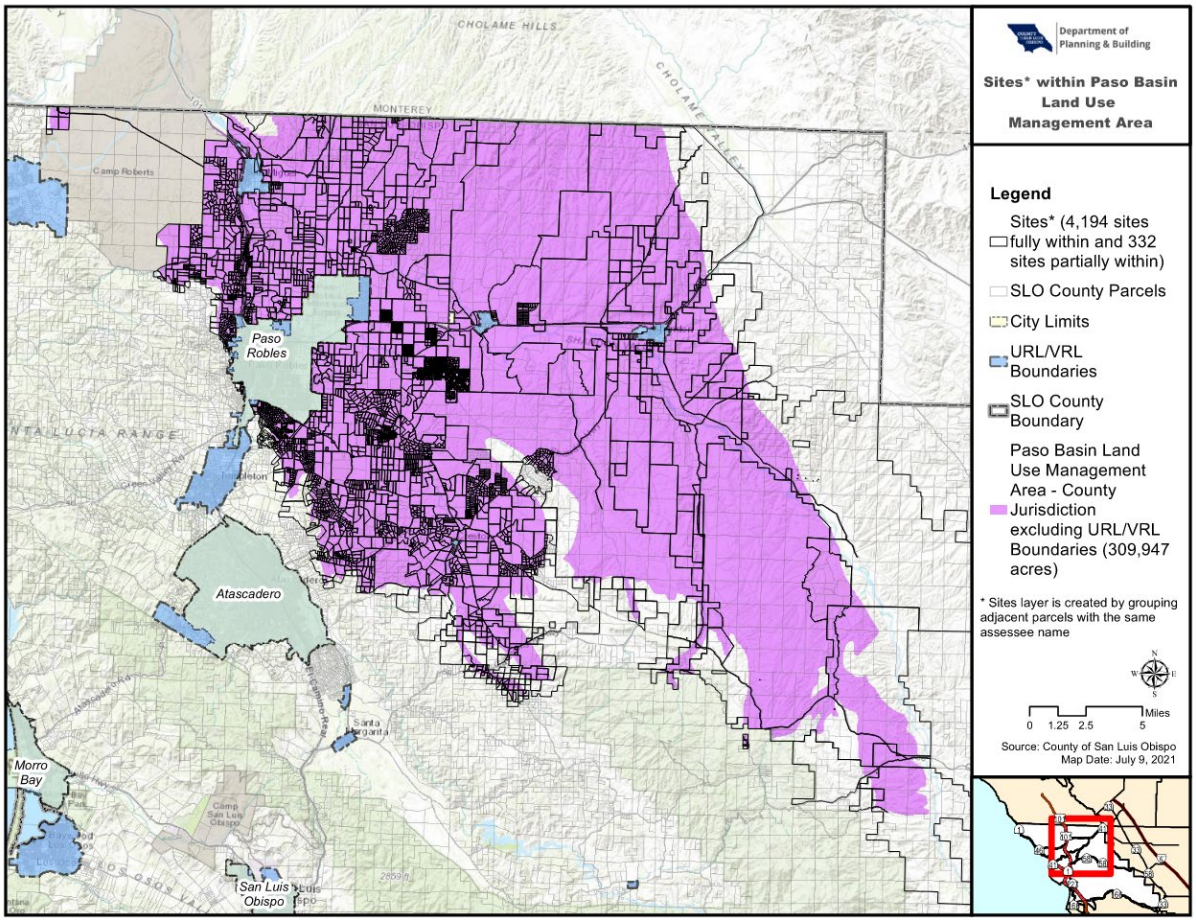
The County Inland Land Use Ordinance (Title 22, Section 22.80) defines site as "any lot or parcel of land or contiguous combination thereof, under the same ownership, or with the contiguous owners written consent, where grading or other use or activity regulated by this Title is performed or permitted." The draft planting ordinance published October 22, 2021 defines site as "any legal lot or parcel of land or contiguous combination thereof having the same owner, the same lessee, or the same controlling entity in existence on the effective date of this section."

The County estimated the number of individual sites within the PBLUMA based on the following criteria:

- Identify sites by grouping contiguous assessor parcels with the same owner name based on the data provided to the County Department of Planning & Building as of July 9, 2021.
- Include sites partially within the PBLUMA in the estimate. Plantings on these sites would be subject to the proposed ordinance if irrigated with water from groundwater well(s) within the PBLUMA.
- Exclude sites in the Urban Reserve Lines (URLs) and Village Reserve Lines (VRLs) from the estimate because crop production is not the primary intended use.

Based on these criteria, there are an estimated 4,194 sites that are fully within the PBLUMA and 332 sites that are partially within the PBLUMA. Figure 1 shows these sites, excluding the URLs and VRLs.

Figure 1 Sites Within PBLUMA (Excluding URLs/VRLs)

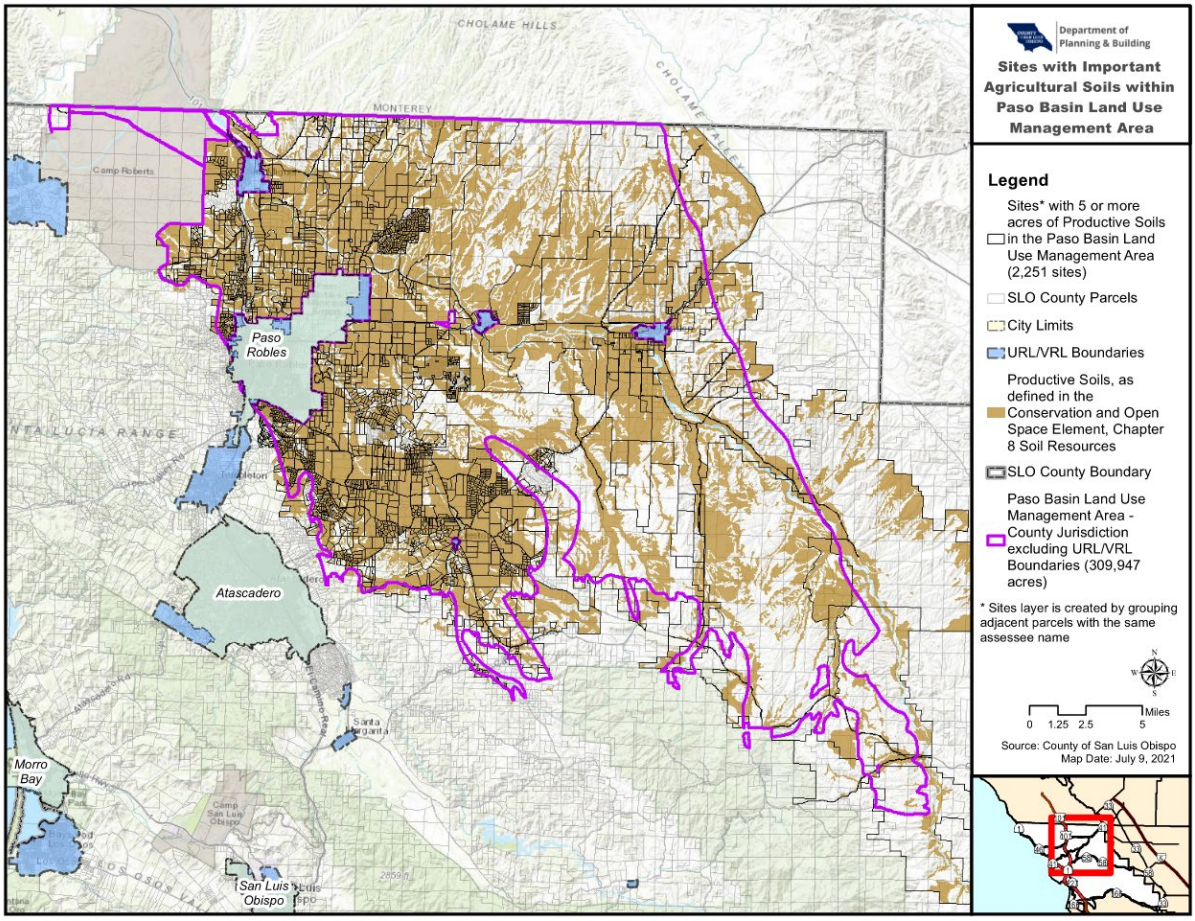


Step 2 Estimate the Number of Sites With Important Agricultural Soils Within the PBLUMA

The number of individual sites with important agricultural soils within the PBLUMA is estimated at 2,251 sites (see Figure 2). This estimate is based on the following criteria:

- Include sites fully and partially within PBLUMA, excluding URLs/VRLs, from Step 1 (see Figure 1).
- Include only sites that have at least 5 acres of important agricultural soils, as defined in the County General Plan's Conservation and Open Space Element, Chapter 8, *Soil Resources*, based on the United States Department of Agriculture Natural Resources Conservation Service's (NRCS) soil data, which considers factors such as soil type and slope. The County assumed that new or expanded plantings of irrigated crops would occur on these soils because such soils are best-suited for irrigated crop production. The County used a 5-acre minimum as a filtering criteria because the highest crop water duty factor (based on those specified in the draft planting ordinance) is 4.8 acre-feet per year (AFY) per acre for irrigated pasture. About 5 acres of planted irrigated pasture would use the full 25 AFY allowed for exempted crop plantings under the proposed ordinance.

Figure 2 Sites With Important Agricultural Soils Within the PBLUMA



Step 3 Estimate the Existing Water Use for Irrigated Crops on Sites With Important Agricultural Soils

The County estimated existing water usage for irrigated crops on individual sites with important agricultural soils based on the following criteria:

- Include sites outside URLs/VRLs with 5 or more acres of important agricultural soils, from Step 2.
- Calculate estimated existing water use per individual site by multiplying estimated irrigated crop acreage provided by the County Agriculture Department by the crop-specific water duty factors from the draft planting ordinance. It is noted that the irrigated crop data provided by the Agriculture Department was not intended to identify/verify irrigated crops for the purpose of implementing existing/future ordinances or to establish any water rights.

Based on the above criteria, there are an estimated 1,529 sites that contain no irrigated crops, 385 sites that use an estimated less than 25 AFY of water for irrigated crops, and 337 sites that use an estimated 25 AFY or more of water for irrigated crops.

Step 4 Estimate the Maximum Potential Increase in Water Use for Proposed Ordinance

The County estimated the maximum potential increase in water use from projected new or expanded crop plantings with an estimated total water demand of 25 AFY or less per site (which would be exempt from further CEQA review under the proposed planting ordinance), based on the following criteria:

- Assume the estimated existing water use for irrigated crops per site, from Step 3.
- Assume the water supply for crop irrigation is groundwater wells within the PBLUMA.
- Calculate the estimated potential water use per site by subtracting the estimated existing water use from Step 3 from the maximum 25 AFY allowed per site for exempt crop plantings.
  - Sites with 25 AFY or more estimated water use for irrigated crops could apply for a planting permit to allow water neutral plantings (337 sites). Assume no potential increase in water use for these sites.
  - Sites with existing irrigated crops using less than 25 AFY of estimated water use could apply for: (1) an exemption to increase total water use for irrigated crops up to 25 AFY, or (2) a planting permit if they remain water neutral[1] (385 sites). Assume all of these sites apply for an exemption to increase total water use for irrigated crops to 25 AFY per site, so the potential increase in water use is 25 AFY minus estimated existing water use for irrigated crops from Step 3.
  - Sites with no existing irrigated crops could apply for exemption from further CEQA review to use up to 25 AFY each (1,529 sites). Assume 25-AFY potential increase in water use per site for these sites.

Figure 1 presents the estimated maximum potential increase in water usage from the individual sites within the PBLUMA with estimated maximum potential increases in water use from groundwater wells in the PBLUMA for irrigated crops that could be allowed by the 25-AFY exemption under the proposed ordinance.

Table 1 Estimated Maximum Potential Increase in Water Use From 25-AFY Exemptions

Estimated Existing Water Use for Irrigated Crops (per Site)	Number of Individual Sites	Estimated Maximum Potential Increase in Water Use Allowed by 25-AFY Exemptions (AFY)
25 AFY or more	337	N/A
0-25 AFY	385	6,766
No irrigated crops	1,529	38,225
Total	**2,251**	**44,991**

Note: This estimate is based on tax parcel boundaries and does not account for potential differences between tax parcel boundaries and legal parcel boundaries.

Step 5 Estimate Reasonable Potential Increase in Water Use from Proposed Ordinance

The County assumed a reasonable projected annual increase in water use from the 25-AFY exemptions allowed under the proposed ordinance would be 1 percent of the total maximum

[1] In this context, "water neutrality" refers to a balanced water demand inventory, where new crops are replacing previous crops and do not result in an overall increase in estimated water demand from groundwater wells within the PBLUMA.

potential increase from Step 4 from January 31, 2023 to January 31, 2045, consistent with the growth assumptions used to model projected water demands in the 2014 Paso Robles Groundwater Basin Model Update (San Luis Obispo County Flood Control and Water Conservation District 2014:ES-9). Figure 2 shows the calculations. The estimated reasonable potential increase in groundwater use that would be allowed by the proposed ordinance for the entire PBULMA is a 450-AFY annual increase, totaling a 9,900-AFY increase by January 31, 2045.

Table 2 Estimated Reasonable Potential Increase in Water Use From Proposed Ordinance

Estimated Existing Water Use for Irrigated Crops (per Individual Site)	Reasonable Potential Total Annual Increase in Water Use (1% of Maximum Potential Increase in Water Use from Step 4) (AFY)	Reasonable Potential Total Increase in Water Use, From January 31, 2023 to January 31, 2045 (Cumulative) (AFY)
0-25 AFY	68	1,496
No irrigated crops	382	8,404
Total	**450**	**9,900**

Note: This estimate does not account for future Paso Robles Subbasin Groundwater Sustainability Plan management actions that may require area-specific pumping reductions.

2.2 Reasonable Potential Affected Acreage

To estimate the reasonable potential acreage affected by the proposed planting ordinance, the County made the following overall assumptions.

- Assume proposed planting permits under the ordinance would not increase the cultivated acreage in the PBLUMA as it is too speculative to predict how crop types and acreages may shift on site, given the potential to either switch to a more water-intensive crop or less water-intensive crop.
- The crop-specific water duty factors as defined in the draft planting ordinance range from 4.8 AFY per acre for irrigated pasture to 1.25 AFY per acre for wine grapes. Based on these water duty factors, the 450-AFY estimated reasonable potential annual increase in groundwater use for exempt plantings could be used to plant 94 acres of irrigated pasture or 360 acres of wine grapes. The average of these two extremes is 227 acres.

These overall assumptions equate to 227 acres of previously uncultivated acreage being planted per year, for a total of 5,280 acres from January 31, 2023 to January 31, 2045 (which equates to 22 years).

The reasonable scenario for site-specific impacts is based on a 20-acre wine grape vineyard, the crop with the lowest water duty factor in the proposed ordinance (1.25 AFY per acre) allowing the most acreage that could be planted under a 25-AFY per site exemption. The reasonable assumption of a 227-acre annual increase in irrigated crop production in the PBLUMA allowed by the proposed ordinance equates to approximately 12 (rounded up from 11.35) new 20-acre vineyards per year allowed under a 25-AFY of groundwater per site exemption.

Determination

Based on the above narrative, for purposes of environmental impact analysis in the PEIR, the reasonable impact scenario for the proposed planting ordinance assumes:

- 12 new 20-acre sites (equating to 240 acres) per year would utilize the ordinance, for a total of 264 new 20-acre sites (equating to 5,280 acres) between January 31, 2023 and January 31, 2045 (22 years)

3 Baseline Groundwater Extractions

This section discusses the steps taken by the County to determine the baseline/existing (current) amount of groundwater extractions occurring within the PBLUMA.

Step 1 Review Available Existing Data

Step 1 includes the following:

- Review of the annual reports prepared for the Paso Robles Subbasin Groundwater Sustainability Plan (GSP; County of San Luis Obispo et al. 2020) as they are the most recent data available for groundwater extraction estimates within the PBLUMA. Table 3and Table 4provide groundwater extraction estimates per the Paso Robles Subbasin Water Year 2020 Annual Report (GSI Water Solutions, Inc. 2021).

Table 3 Groundwater Extractions by Water Use Sector

	Groundwater Extraction by Water Use Sector (AF)			
Water Year[1]	Municipal	Public Water Systems and Rural Domestic	Agriculture	Total
2017	1,626	5,060	64,100	70,800
2018	1,677	5,060	75,500	82,200
2019	1,729	5,060	55,800	62,600
2020	1,509	5,060	60,700	67,300
Method of Measure	Metered	2016 Groundwater Model	Soil-Water Balance Model	–
Level of Accuracy	High	Low-Medium	Medium	–

AF = acre-feet

[1] Water Years begin October 1 and conclude on September 30. E.g., Water Year 2017 equates to October 1, 2016 through September 30, 2017.

Table 4 Municipal Groundwater Extractions

	Metered Groundwater Extractions (AF)			
Water Year[1]	City of Paso Robles[2]	San Miguel Community Services District	Community Service Area 16 (County of San Luis Obispo)	Total
2017	1,261	295	70	1,626
2018	1,302	325	50	1,677
2019	1,392	289	48	1,729
2020	1,121	297	91	1,509

AF = acre-feet

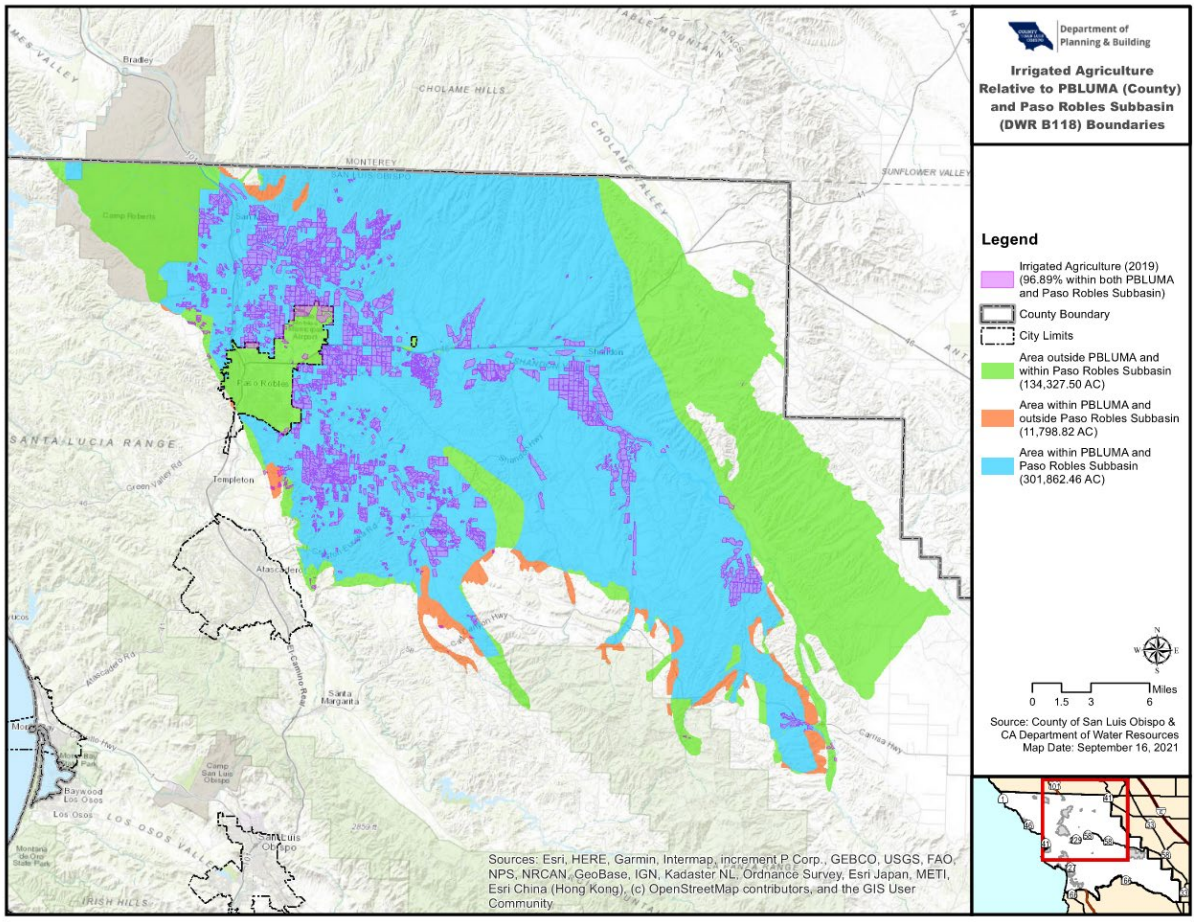
[1] Water Years begin October 1 and conclude on September 30. E.g., Water Year 2017 equates to October 1, 2016 through September 30, 2017.

[2] The City of Paso Robles produces groundwater from wells located in both the Paso Robles Subbasin and the Atascadero Subbasin. Only the portion produced from within the Paso Robles Subbasin is included herein.

Step 2 Compare the Paso Robles Subbasin and the PBLUMA Study Area

The Paso Robles Subbasin and PBLUMA include different areas, as shown in Figure 3, with an overlay of irrigated agriculture data for reference.

Figure 3 Irrigated Agriculture Relative to PBLUMA (County) and Paso Robles Subbasin (DWR B118) Boundaries



Step 3 Modify Available Data to Reflect Water Use Just within the PBLUMA Study Area

Water usage within the PBLUMA is related to municipal, agriculture, public water systems, and rural domestic uses, as discussed below.

- **Municipal.** The PBLUMA includes the Shandon Community Services District and County Service Area 16 (Shandon water service areas) and does not include the City of Paso Robles. Use the water usage data for these communities from Table 4 above.
- **Agriculture.** Assume agricultural groundwater extraction for the PBLUMA is the same as Paso Robles Subbasin because the majority of irrigated agriculture (97 percent, based on 5) is within both boundaries. It is noted that the groundwater modeling used for the GSP annual reporting estimates agricultural water using a different methodology than the crop-specific water duty factors used in the planting ordinance, accounting for more variables. The methodology is described in the Paso Robles Groundwater Basin Model Update (San Luis Obispo County Flood

Control and Water Conservation District 2014). Use the agricultural water usage data from Table 3 above.

- **Public Water Systems/Rural Commercial.** Small public water systems extraction estimates from Water Year 2020 Annual Report (1,530 AFY) are based on the Groundwater Basin Model Update (San Luis Obispo County Flood Control and Water Conservation District 2014; Table 3-25 on page 66). This estimate was modified to include only uses within the PBLUMA: 102 AFY for miscellaneous small commercial (e.g., rural schools, restaurants with private wells) and 71 AFY for wineries (estimated 201 wineries in 2012 based on Alcoholic Beverage Control permitting data) (San Luis Obispo County Flood Control and Water Conservation District 2014), for an estimated total of 173 AFY in 2012. From 2013 to September 15, 2021, the County finalized construction permits for new commercial uses in the rural PBLUMA with an estimated total water use of 5.9 AFY, summarized in Table 5. The annual average increase in water use over this 8-year period (2013-2021) is 0.74 AFY. Assuming 173 AFY rural commercial water use in the PBLUMA in 2012, the water use would have increased to 176 AFY by 2017 and 178.9 AFY by 2021.
- **Rural Domestic.** Rural domestic extraction estimates from the Paso Robles Subbasin Water Year 2020 Annual Report (3,530 AFY per year) are based on groundwater modeling that includes almost 12,000 rural acres that are within the Paso Robles Subbasin but outside the PBLUMA (GSI Water Solutions, Inc. 2021; per Figure 1). To modify this estimate to only reflect the PBLUMA, the County estimated the number of occupied rural domestic units in the PBLUMA based on geographic information system (GIS) analysis using County addressing data (Table 6).

Table 5 New Commercial Uses in Rural PBLUMA, 2013-2021

Type of Commercial Use	Number of New Facilities Constructed, 2013-2021[1]	Description	Estimated Water Use Rate	Estimated Water Use (AFY)
Event Center	1	17,000 sf with temporary events and catering kitchen	5 gallons/patron/visit @ 20 events/year @ 200 patrons/event[2]	0.06
Commercial Greenhouse (non-cannabis)	1	6,500 sf	2.5 AFY/acre[3]	0.4
Bed & Breakfast	1	8 units	38 gallons/occupant/day @ 70% occupancy @ 2 occupants/room	0.1[2]
Industrial Building	1	Collision center and spray booth	0.06 AFY/1,000 sf[4]	0.06
Winery	15	About 185,000 sf total	0.35 AFY/winery[5]	5.25
Total Estimated Water Use (AFY)				**5.9**
Estimated Annual Increase in Water Use, 2013-2021 (AFY)				**0.74**

[1] As of September 15, 2021 based on County construction permit data queried by permit final date.

[2] Per example water use analysis prepared for similar use (Paris Valley Road Winery).

[3] Per water duty factors in draft planting ordinance.

[4] Source: City of Santa Barbara 2009

[5] Water Year 2020 Annual Report estimates 71 AFY water use for an estimated 201 wineries in 2012 (GGSI 2014), which is a 0.35-AFY average water use per winery.

AFY = acre-feet per year; sf = square feet

Table 6 Occupied Rural Domestic Units in the PBLUMA Outside Shandon and San Miguel

Land Use Category	Number of Parcels with 1 Address Used for Habitation	Number of Parcels with 2 Addresses Used for Habitation	Number of Parcels with 3+ Addresses Used for Habitation	Estimated Total Number of Occupied Dwelling Units
Agriculture (AG)	1,716	331	76	2,606
Rural Lands (RL)	81	23	10	157
Residential Rural (RR)	1,000	187	5	1,389
Residential Suburban (RS)	931	31	3	1,002
Residential Single-Family (RSF)[1]	27	0	0	27
Commercial Retail (CR)[1]	6	1	0	8
Total	**3,728**	**573**	**94**	**5,189**

Estimated using Address Points with Residential Use as of September 15, 2021.

[1] RSF and CR parcels are all in Creston VRL.

The County then calculated the residential annual construction rate for the PBLUMA to estimate growth from 2017 to September 15, 2021 based on County construction permit data to back-calculate the number of existing rural domestic units between 2017 and 2020 (Table 7). The GSP groundwater model assumes 0.75 AFY of groundwater extraction per rural domestic unit (62 percent outdoor and 38 percent indoor) and assumes 100 percent of indoor use is returned to the groundwater basin with septic systems (San Luis Obispo County Flood Control and Water Conservation District 2014). It is assumed that 0.465 AFY of groundwater extraction would be necessary per rural domestic unit (outdoor only).

Table 7 Estimated Rural Domestic Units and Associated Water Use, 2017-2021

Year	Number of New Dwelling Units[1]	Estimated Total Number of Rural Domestic Units	Rural Domestic Groundwater Extractions (AFY)
2017	49	4,940	2,272
2018	46	4,989	2,295
2019	81	5,035	2,316
2020	55	5,116	2,353
2021, as of 9/15/21	18	5,189	2,387

[1] Based on construction permit final date. Includes single-family dwellings, mobile homes, secondary units, accessory dwelling units, and agricultural worker housing/farm support quarters, not including replacement units.

Note: Groundwater extraction estimates in 2020 GSP annual report are based on Water Year (October through September), and this construction permit analysis is based on calendar year. Water Years begin October 1 and conclude on September 30. E.g., Water Year 2017 equates to October 1, 2016 through September 30, 2017.

Step 4 Consider New Land Uses Using Extracted Groundwater Not Considered in Existing Dataset

The proposed planting ordinance would not apply to cannabis plantings as there is a separate permitting process under the County for such crops. Therefore, cannabis activities are regulated and tracked separately from "irrigated crops" and are not included in agricultural water use estimates. As of September 15, 2021, the County has approved 12 land use permits to allow cannabis activities within the PBLUMA. The cannabis ordinance requires a 1:1 water offset within the PBLUMA, so there is no net increase in groundwater extraction associated with this new land use.

Step 5 Calculate Four-Year Average Groundwater Extractions for the PBLUMA to Use as Baseline for Impact Analysis

Table 8 shows the average groundwater extractions by water use sector for the PBLUMA between 2017 and 2020. As previously discussed, between 2017 and 2020, an average of 66,873 AFY of groundwater has been extracted for use within the PBLUMA. Of this total, 96 percent, or an average of 64,025 AFY, is used for agricultural purposes (Table 9).

Table 8 Groundwater Extractions by Water Use Sector for PBLUMA, 2017-2020 Average

	Groundwater Extractions by Water Use Sector for PBLUMA (AFY)							
Water Year[1]	Agricul-ture	San Miguel Community Services District	Community Service Area 16 – Shandon	Rural Domestic	Small Public Water Systems	Total	Percentage of Total for Agriculture	Percentage of Total for Non-Agriculture
2017	64,100	295	70	2,272	176	**66,913**	96%	4%
2018	75,500	325	50	2,295	177	**78,347**	96%	4%
2019	55,800	289	48	2,316	177	**58,630**	95%	5%
2020	60,700	297	91	2,353	178	**63,619**	95%	5%
Average	**64,025**	**302**	**65**	**2,309**	**177**	**66,877**	**96%**	**4%**

Note: Agriculture values are from Table 3. San Miguel CSD and CSA 16 values are from Table 4. Rural domestic values are from Table 7. Small Public Water Systems values are from Table 5.

[1] Water Years begin October 1 and conclude on September 30. E.g., Water Year 2017 equates to October 1, 2016 through September 30, 2017.

Table 9 Summary of PBLUMA Baseline Groundwater Extractions by Sector, 2017-2020 Average

Sector	Groundwater Extraction (AFY)
Agriculture	64,025 (96%)
Non-Agriculture	2,852 (4%)
Total	**66,877 (100%)**

4 Buildout Groundwater Extractions

This section discusses the steps taken by the County to estimate the projected groundwater extractions on January 31, 2045 buildout for the PBLUMA. The water supply for buildout in the PBLUMA is assumed to be groundwater. The majority of the PBLUMA is rural and does not have updated buildout projections in existing planning documents.

Step 1 Estimate Buildout Water Use for Urban Areas

Community plans are available for the two urban areas (San Miguel and Shandon) within the PBLUMA, which provide buildout projections for residential and non-residential development. The County assumed residences in the urban areas of the PBLUMA have the same water use rate as in the rural areas: 0.465 AFY per dwelling unit, as explained in Section 3 (Step 3). For non-residential development, the County assumed 0.17 AFY per 1,000 square feet (sf) for service commercial (City of Santa Barbara 2009). Table 10 shows the projected buildout and associated water use for these two community planning areas.

Table 10 Estimated Water Use for the San Miguel and Shandon Communities in the PBLUMA by January 31, 2045

Community Area	Projected Buildout Year	Projected Dwelling Units at Buildout[1]	Projected Non-Residential Area at Buildout (sf) [1]	Estimated Water Use Rate	Estimated Water Use by 2045 (AFY)
San Miguel	Beyond 2035	1,791 (1,344 by 2045)	652,000 (271,000 by 2045)	0.465 AFY/ dwelling unit	671
Shandon	2035	1,437	317,000	0.17 AFY/ 1,000 sf	722

[1] Sources: County of San Luis Obispo 2012 and 2016

Step 2 Estimate Residential Development at Buildout in the Rural Areas of the PBLUMA and Associated Water Use

The County estimated existing and maximum potential residential development by parcel and land use category based on County address data and allowed residential density, assuming the existing subdivision restriction[2] remains in place for the PBLUMA by January 31, 2045. Table 11 shows the existing and maximum potential dwelling units projected within the rural areas of the PBLUMA.

[2] The County of San Luis Obispo restricted subdivision of land within the Paso Robles Groundwater Basin until the basin is designated as Level of Severity I (County Land Use Ordinance, Title 22, Section 22.94.025).

Table 11 Existing and Maximum Potential Dwellings in the Rural Areas of the PBLUMA

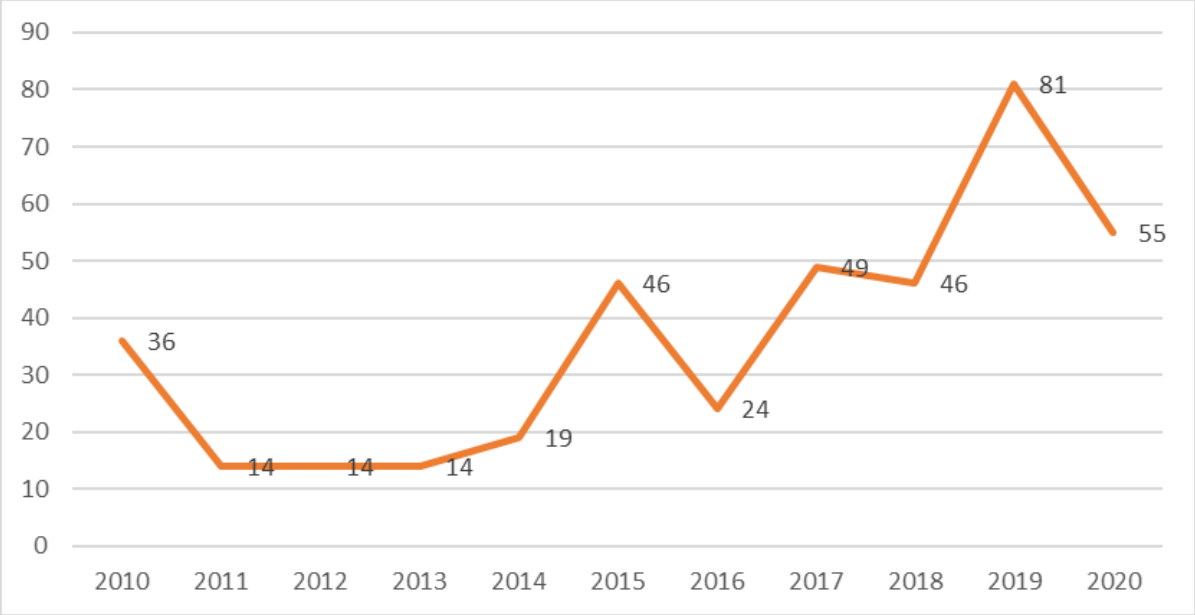
Land Use Category	No. of Parcels	No. of Parcels with Zero Dwellings[1]	No. of Parcels with 1 Dwelling[1]	No. of Parcels with 2 Dwellings[1]	No. of Parcels with 3+ Dwellings[1]	Estimated Total Existing Dwellings	Maximum Potential Increase[2]	Maximum Potential Dwellings by January 31, 2045
Agriculture (AG)	3,921	1,798	1,716	331	76	2,606	9,157	11,763
Rural Lands (RL)	147	33	81	23	10	157	185	441
Residential Rural (RR)	1,350	158	1,000	187	5	1,389	1,000	2,700
Residential Suburban (RS)	1,020	55	931	31	3	1,002	931	2,040
Residential Single-Family (RSF)[1]	28	1	27	0	0	27	29	29
Commercial Retail (CR)[1]	N/A	N/A	6	1	0	8	0	8
Total	**6,438**	**2,044**	**3,728**	**572**	**94**	**5,189**	**11,302**	**16,981**

[1] Based on address points with residential use by land use category for parcels in PBLUMA (excluding the Shandon URL and the San Miguel URL). Assumes the number of addresses for residential use is the number of occupied dwelling units per parcel.

[2] Assumes the maximum residential development for AG and RL parcels is two primaries and one accessory dwelling unit (for a total of three addresses) per parcel, and for RR, RS, and RSF parcels is one primary and one accessory dwelling unit (for a total of two addresses) per parcel. Does not account for potential new agricultural worker housing.

The County then estimated the reasonable buildout by January 31, 2045 based on the residential construction permit rate for the PBLUMA. Figure 4 shows the number of dwelling units completed by year in the county between 2010 and 2020.

Figure 4 Number of Dwelling Units Completed per Year in PBLUMA, 2010-2020



Note for Figure 4: Includes single-family dwellings, mobile homes, secondary dwellings, accessory dwellings, and agricultural worker housing/farm support quarters in PBLUMA, excluding the San Miguel and Shandon water service areas. Also excludes replacement dwellings. Sorted based on construction permit final date.

The County used the 2015-2020 average (50 new dwellings per year) for the baseline construction rate as it includes both average and above average years for the economy and construction industry. Use of the 2010-2020 average may under-estimate development because the County was still recovering from a substantial (once in a generation) slump in the economy and construction industry between 2010 and 2015. Use of the 2017-2020 average would likely over-estimate development since that was a period of more substantial growth in the County.

As stated in Section 2.2, the planting ordinance is estimated to increase irrigated crop acreage in the PBLUMA by 5,280 acres by January 31, 2045, a 13 percent increase from 2020 baseline irrigated crop acreage (37,640 acres). The County does not track the intended occupancy of new residential dwellings unless they are permitted and deed-restricted as agricultural worker housing projects (i.e., if the dwelling units are intended to house the agricultural workforce for on-site or nearby crop production). (See Section 5.8 for a discussion of potential agricultural worker housing.) Therefore, it is too speculative to estimate the correlation between the construction of residential dwellings in the rural PBLUMA and irrigated crop acreage. It is assumed that 50 new dwellings would be built per year in the rural areas of the PBLUMA by January 31, 2045 (based on the 2015-2020 average construction rate), totaling 1,150 new dwellings by January 31, 2045 (Table 12).

Table 12 Reasonable Increase in Dwelling Units in Rural Areas of the PBLUMA by January 31, 2045

Estimated Total Existing Dwellings	Reasonable Increase by January 1, 2045[1]	Estimated Dwellings by January 31, 2045
5,189	1,150	6,339

Note: The rural portions of the PBLUMA exclude the San Miguel and Shandon communities.

[1] Based on the 2015-2020 PBLUMA average. The maximum potential increase is 11,302 dwellings. Reasonable increase assumes 10% of the maximum potential increase.

As explained in Section 3, Step 3, the estimated water use per rural domestic dwelling unit is 0.465 AFY (outdoor only). Therefore, the estimated 6,339 dwelling units at January 31, 2045 buildout would use an estimated 2,950 AFY of groundwater.

Step 3 Estimate Non-Residential Development at Buildout in Rural Areas of the PBLUMA and Associated Water Use

The estimated baseline water use for non-residential development in rural areas of the PBLUMA is 177 AFY based on Section 3 above. To estimate non-residential development on January 31, 2045 buildout in rural areas of the PBLUMA, the County assumed the same rate of construction that occurred during the 8-year period from 2013-2021 would be constructed during the 22-year period from January 31, 2023 to January 31, 2045 when the planting ordinance would be in effect (Table 13). The same estimated water use rates used in Section 3, Step 3 for baseline rural commercial water use estimates (Table 5) are used in this step for new types of commercial construction. Based on this analysis, the total estimated increase in water use by January 31, 2045 is 18 AFY, bringing the estimated total water use by January 31, 2045 to 195 AFY.

Table 13 Estimated Water Use for Non-Residential Uses in Rural Areas of the PBLUMA by January 31, 2045

Type of Commercial Use	Number of New Facilities Constructed 2013-2021[1]	Number of New Facilities Projected to be Constructed by January 31, 2045	Estimated Water Use Rate for New Construction	Estimated Increase in Water Use by January 31, 2045 (AFY)
Event Center	1	3	5 gal/patron/visit @ 20 events/year @ 200 patrons/event [2]	0.18
Commercial Greenhouse (non-cannabis)	1	3	2.5 AFY/acre [3]	1.2
Bed & Breakfast	1	3	38 gal/occupant/day @ 70% occupancy @ 2 occupants/room	0.32
Industrial Building	1	3	0.06 AFY/1,000 sf [4]	0.18
Wineries	15	45	0.35 AFY/winery [5]	15.75
Total Estimated Increased in Water Use by January 31, 2045 (AFY)				**18**

[1] As of September 15, 2021 based on County construction permit data queried by permit final date.

[2] Per example water use analysis prepared for similar use (Paris Valley Road Winery).

[3] Per water duty factors in draft planting ordinance.

[4] Source: City of Santa Barbara 2009

[5] Water Year 2020 Annual Report estimates 71 AFY water use for an estimated 201 wineries in 2012 (GGSI 2014), which is a 0.35-AFY average water use per winery. Water Years begin October 1 and conclude on September 30. E.g., Water Year 2017 equates to October 1, 2016 through September 30, 2017.

Table 14 summarizes the January 31, 2045 buildout groundwater extractions for the PBLUMA from Steps 1 through 3 above. In the rural areas of the PBLUMA, the estimated water use by January 31, 2045 for residential (2,950 AFY) and non-residential (195 AFY) is 3,145 AFY.

Table 14 January 31, 2045 Buildout Groundwater Extractions for the PBLUMA

Area	Residential Units[1]	Non-Residential	Groundwater Extractions (AFY)
San Miguel	1,344	271,000 sf	671
Shandon	1,437	317,000 sf	722
Rural PBLUMA	6,339	45 wineries	3,145
		3 event centers	
		3 bed & breakfasts	
		3 greenhouses	
		3 industrial buildings	
Total	**9,120**	**588,000 sf (urban)**	**4,538**
		45 wineries	
		3 event centers	
		3 bed & breakfasts	
		3 greenhouses	
		3 industrial buildings	

[1] Includes single-family dwellings, mobile homes, secondary dwellings, accessory dwellings, and agricultural worker housing/farm support quarters.

5 Related Project Activities

This section estimates the extent of activities that may reasonably result from the proposed ordinance, including:

- **Site Preparation/Development**
  - Construction of irrigation wells
  - Construction of agriculture ponds and reservoirs
  - Vegetation removal and grading for tilling, ripping, drainage/erosion control infrastructure, irrigation lines, and agricultural roads
  - Installation of agriculture fencing
- **Planting, Maintenance, and Harvest**
  - Operation of new irrigation pumps
  - Operation of agricultural equipment and vehicles

It is assumed proposed planting permits (water-neutral) under the ordinance would not increase the irrigated cultivated acreage in the PBLUMA overall, as it is too speculative to predict how crop types and acreages may shift on site, given the potential to either switch to a more water-intensive crop (e.g., vineyard to pistachio) or less water-intensive crop (e.g., alfalfa to vineyard).

It is assumed the 25-AFY of groundwater per site exemption would allow planting irrigated crops on sites that have been (1) historically undeveloped; (2) used for grazing or dry farming; or (3) currently cultivated with irrigated crops using less than 25 AFY.

The reasonable scenario for site-specific impacts is based on a 20-acre wine grape vineyard, the crop with the lowest water duty factor in the draft ordinance (1.25 AFY per acre) that would allow the most acreage that could be planted under a 25-AFY per site exemption. The reasonable assumption of 12 new 20-acre vineyards per year allowed by the ordinance under a 25-AFY of groundwater per site exemption equates to a 240-acre annual increase in irrigated crop production in the PBLUMA allowed by the ordinance (see Section 2.2).

Determination

As concluded in Section 2.2, for purposes of environmental impact analysis in the PEIR, the reasonable impact scenario for the proposed planting ordinance assumes:

- 12 new 20-acre sites (equating to 240 acres) per year would utilize the ordinance, for a total of 264 new 20-acre sites (equating to 5,280 acres) between January 31, 2023 and January 31, 2045 (22 years)

5.1 Irrigation Wells

The planting ordinance would indirectly result in the drilling of new irrigation wells within the PBLUMA to serve allowed new and expanded plantings on sites not currently irrigated without existing wells. Well depth would vary based on unique geology and groundwater elevation levels, which is too speculative to estimate for the new plantings allowed by the ordinance given uncertainty of where new plantings would occur. Installation of a new irrigation well involves using

drilling rigs to drill a well to access groundwater, and installing casing to protect the well from contaminants, as well as installing a well screen and pump equipment. Well construction is regulated by the County Department of Environmental Health & Safety (EHS), per standards outlined in Title 8 of the County Code. Per Executive Order N-7-22, during the current drought, EHS will not approve applications for new irrigation wells within a medium- or high-priority SGMA basin unless they include a hydrogeologic study showing the new well would not interfere with the production of existing nearby wells or result in subsidence, and the applicable GSAs finds that the new well would not conflict with the sustainability goals of the GSP.

Available Data

The County EHS maintains a database of irrigation well permits issued for properties countywide since 1965, which is the best available data source for estimating if properties in the PBLUMA have existing irrigation wells on site. This dataset is limited in that there are an unknown number of existing irrigation wells that pre-date County well permit requirements that are not included. Additionally, the EHS records do not track the current pumping rate of the irrigation wells. Some wells included in the database may not have sufficient capacity to serve irrigated crop plantings, so a new well would be required to support new or expanded planting under the ordinance. In addition, existing irrigated plantings may be served by off-site irrigation wells. The current agricultural offset ordinance and proposed planting ordinance do not require new or expanded irrigated crops to be served by on-site wells.

Assumptions

It is assumed that planting allowed by “water neutral” planting permits would be served by existing irrigation wells, since there would be a similar groundwater extraction demand requirement for new crops as previously irrigated crops within a six-year period. Changes in groundwater elevation levels or shifts in where the irrigated crops are located on larger sites may require drilling of new irrigation wells for planting permits; however, it is too speculative to predict how crop types and acreages may shift on site, given the potential to either switch to a more or less water-intensive crop. It is also too speculative to predict how groundwater elevation levels may change over the lifespan of the proposed ordinance, given the uncertainty of where new plantings allowed under the proposed ordinance would occur and the areas that would be affected by pumping reduction mandates adopted by the Groundwater Sustainability Agencies (GSAs) for GSP implementation.

It is assumed that planting allowed by 25-AFY exemptions on sites with some existing irrigated crops (as estimated in Figure 4and Table 1) would be served by existing irrigation wells on site.

It is also assumed that planting allowed by 25-AFY exemptions on the 1,529 sites with no existing irrigated crops (as estimated in Table 1 and shown on Figure 4) would be served by existing irrigation wells on site, if there are any on site (730 sites as identified in EHS records), or by new irrigation wells if there are none on site (799 sites). Of these 799 sites that do not have existing irrigation wells, it is assumed that 10 percent, or approximately 80 (rounded up from 79.9) of the sites would choose to plant using the 25-AFY exemption under the proposed ordinance by January 31, 2045. Based on these assumptions, approximately 4 new wells (rounded up from 3.6) would be drilled annually to serve the plantings on these sites, for a total of 88 new groundwater wells by January 31, 2045.

Determination

Based on the above narrative, for purposes of environmental analysis in the PEIR, the reasonable impact scenario for the proposed planting ordinance assumes:

- 4 new groundwater irrigation wells per year would be drilled under the ordinance, for a total of 88 new wells between January 31, 2023 and January 31, 2045 (22 years)

5.2 Agriculture Ponds/Reservoirs

Agriculture ponds and reservoirs are filled with groundwater pumped during the winter and used for supplemental irrigation and frost-prevention during the growing season. Drought and extreme temperatures and decline in groundwater elevation levels may increase the need for agriculture ponds/reservoirs.

It is assumed that new and expanded plantings allowed by "water neutral" planting permits may result in an increased or decreased need for ponds and reservoirs because the acreage of crops on site and distance the water needs to be transported may increase or decrease depending on if the conversion is from a high-to-low or low-to-high water intensity crop and where the crop is located on site. Therefore, it is too speculative to assume how planting permits may affect the construction rate of ponds and reservoirs.

To estimate the increase in agriculture ponds/reservoirs that could result to serve the new plantings allowed by the 25-AFY per site exemptions under the proposed ordinance, County staff cross-referenced the current PBLUMA site map (Figure 1) with aerial imagery analysis of agriculture ponds and irrigated crop data provided by the County Flood Control and Water Conservation District (2013). Based on this analysis, it is estimated that in 2013, of the 491 sites in the PBLUMA with some irrigated agriculture, totaling 20 acres or less per site, 5 percent (25 sites [rounded up from 24.55]) had an agriculture reservoir, with an average area of 0.9 acre.

Determination

Based on the above narrative, for purposes of environmental analysis in the PEIR, the reasonable impact scenario for the proposed planting ordinance assumes:

- 0.6 new approximately 0.9-acre agriculture ponds/reservoirs (equating to 0.5 acre) per year would be constructed under the ordinance, for a total of approximately 13 (rounded down from 13.2) new wells (equating to 11.7 acres) by January 31, 2045

5.3 Vegetation Removal and Grading for Site Preparation/Development, including Irrigation Pipelines and Agriculture Access Roads

It is assumed the disturbance footprint of site preparation activities (including vegetation removal, grading, and chemical applications) would be equal to the irrigated crop acreage allowed by the planting ordinance, estimated as 240 acres annual increase for a total increase of 5,280 acres by January 31, 2045.

It is assumed drainage/erosion control infrastructure (e.g., retention basins, trenches, swales), trenching for irrigation pipelines and construction of new agriculture roads for the new and

expanded plantings allowed by the ordinance would not exceed the grading depth of the tilling or ripping required for site preparation – less than 2 feet for alfalfa, pasture, vegetables, CBD hemp, supplementally irrigated dryland crops, and annual nursery crops, as well as 3 to 4 feet for wine and table grapes vineyards, citrus and deciduous orchards, and perennial nursery crops. Construction of new agriculture roads is subject to site-specific CEQA review by the County grading ordinance, which would evaluate site-specific impacts for situations where the roads exceed the grading depth of tilling or ripping.

Determination

Based on the above narrative, for purposes of environmental analysis in the PEIR, the reasonable impact scenario for the proposed planting ordinance assumes:

- Disturbance depth for site preparation activities would be less than 2 feet for alfalfa, pasture, vegetables, CBD hemp, supplementally irrigated dryland crops, and annual nursery crops, and 3 to 4 feet for wine and table grapes vineyards, citrus and deciduous orchards, and perennial nursery crops

5.4 Agriculture Fencing

It is assumed plantings allowed by 25-AFY exemptions would result in the installation of new agriculture fencing. It is assumed that the increase in irrigated acreage allowed by the ordinance, estimated as 240 acres per year increase for a total increase of 5,280 acres by January 31, 2045, would be surrounded by new fencing.

Determination

Based on the above narrative, for purposes of environmental analysis in the PEIR, the reasonable impact scenario for the proposed planting ordinance assumes:

- New fencing would be installed along the perimeter of the 12 new planting sites per year allowed by the ordinance under a 25-AFY of groundwater per site exemption, for a total of 264 new sites between January 31, 2023 and January 31, 2045 (22 years)

5.5 Irrigation Pumps

Irrigation pumps are used to transport groundwater to the surface (through irrigation main lines, lateral lines, and drip lines or sprinklers) and to and from any water storage tanks or reservoirs. Booster pumps may be required to provide additional pressure as needed, depending on well pump characteristics and groundwater elevation levels. The pumps may be powered by gas, diesel, or propane engines or with electricity provided by Pacific Gas & Electric (PG&E) or solar panels. Pipeline configuration and required pumping capacity varies by irrigated commodity and site layout, depending on the distance and elevation change between groundwater wells, crop fields, and any reservoirs or storage tanks in use. The change in the number of irrigation pumps in operation in the PBLUMA resulting from the planting ordinance is related to the estimated change in the number of irrigation wells and cultivated acreage in the PBLUMA. Change in groundwater elevation levels would also affect the energy and pressure needed to transport groundwater to the cultivation fields, but it is too speculative to estimate the effect of groundwater elevation level changes,

because they vary throughout the PBLUMA and it is too speculative to estimate where increased plantings would occur. It is assumed the new irrigation wells would require one new pump each.

New and expanded plantings allowed by "water neutral" planting permits may result in an increased or decreased number of booster pumps required because the acreage of crops on site and distance the water needs to be transported may increase or decrease depending on if the conversion is from a high-to-low or low-to-high water intensity crop and where the crop is located on site. Therefore, it is too speculative to estimate how "water neutral" planting permits would affect the number of irrigation booster pumps in operation.

The 25-AFY exemptions would increase the number of booster pumps in operation in the PBLUMA by allowing planting on sites without existing irrigation. The maximum area that could be planted with this exemption is 20 acres of vineyard (at 1.25 AFY per acre). It is assumed one booster pump (in addition to the well pump) would be required to serve this size of planting, as an average reasonable impact scenario, subject to variability based on site configuration.

The planting ordinance is estimated to allow an increase in overall irrigated crop production in the PBLUMA of 240 acres annually for a total increase of 5,280 acres by January 31, 2045 (Section 2.2). A 240-acre annual increase equates to 12 new 20-acre vineyards per year allowed by the ordinance under a 25-AFY of groundwater per site exemption. Based on this assumption, a reasonable estimate of cumulative increase in booster pumps resulting from the ordinance is 12 new booster pumps annually, for a total increase of 253 booster pumps in operation in the PBLUMA by January 31, 2045.

Determination

Based on the above narrative, for purposes of environmental analysis in the PEIR, the reasonable impact scenario for the proposed planting ordinance assumes:

- 12 new booster pumps per year would be drilled under the ordinance, for a total of 264 new booster pumps between January 31, 2023 and January 31, 2045 (22 years)

5.6 Agriculture Equipment and Vehicles

Agricultural operations use gas and diesel-powered equipment for field preparation and grading; planting; and applying pesticides, fertilizers, and herbicides. Alternatively, alternative fuels sources may be used. The planting ordinance would increase the use of agriculture equipment and vehicles by resulting in an increase in irrigated crop acres as allowed by 25-AFY of groundwater per site exemptions.

The reasonable scenario for site-specific impacts is based on a 20-acre wine grape vineyard, the crop with the lowest water duty factor in the draft ordinance (1.25 AFY per acre) that would allow the most acreage to be planted under a 25-AFY of groundwater per site exemption. Other crop types may require more frequent planting (e.g., scattered annual planting for vegetables versus replanting every 20 to 30 years for vineyards) but would likely be selling to more localized markets than wine grapes with a shorter hauling distance, so the 20-acre wine grape vineyard is the more appropriate reasonable scenario.

5.6.1 Estimated Commute and Haul Mileage

Mileage Per Site

The following reasonable operational assumptions were made based on a 20-acre vineyard, which reflects a conservative, reasonable impact scenario for an individual agricultural operation that may use the 25-AFY water use exemption under the proposed planting ordinance:

- Nine workers per day for 22 to 58 days per year would be needed per 20-acre vineyard for site preparation, planting, and harvesting activities. Of these nine workers per site, eight worker (i.e., the crew workers) would commute to a site in the same vehicle (carpool) for a total of 22 days per year. The one remaining worker (i.e., the foreperson) would commute alone for 58 days per year.
  - It is assumed that the crew workers' carpool would average approximately 54 miles one-way (108 miles round-trip) per day for 22 days per year, which is the distance between the City of Paso Robles and the City of Avenal. This equates to 2,376 crew worker commute miles per year per planting site (108 miles per day x 22 days per year per site = 2,376 miles per year per site).
  - It is also assumed that the foreperson would commute an average of approximately 10 miles one-way (20 miles round-trip) per day for 58 days per year. This equates to 1,160 foreperson commute miles per year per planting site (20 miles per day x 58 days per year per site = 1,160 miles per year per site).
- In addition to planting and harvesting activities, nine workers would be required for pruning, irrigation, canopy manipulation, etc. for 26 additional days per year. For these additional activities, eight crew workers would carpool and one foreperson would commute alone.
  - It is assumed that the crew workers' carpool would average approximately 54 miles one-way (108 miles round-trip) per day for 26 days per year, which is the distance between the City of Paso Robles and the City of Avenal. This equates to 2,808 crew worker commute miles per year per planting site (108 miles per day x 26 days per year per site = 2,808 miles per year per site).
  - It is also assumed that the foreperson would commute an average of approximately 10 miles one-way (20 miles round-trip) per day for 26 days per year. This equates to 560 foreperson commute miles per year per planting site (20 miles per day x 26 days per year per site = 520 miles per year per site).
- An average of three hauls trips were conservatively assumed per year per planting site. One truck would be used to haul equipment/supplies and harvested crops per trip. Each haul trip would average approximately 54 miles one-way (108 miles round-trip), which is the distance between the City of Paso Robles and the City of Avenal. One employee would be used to drive the truck. This equates to 2,808 haul trip miles per year per planting site (108 miles per haul trip x 3 haul trips per year per site = 324 miles per year per site).

Based on these assumptions, approximately 6,864 worker commute miles and 324 haul trip miles per year (round-trip) per planting site would occur, for a total of 7,188 miles per year per site.

Total Overall Mileage by January 31, 2045

The planting ordinance is estimated to allow an increase in overall irrigated crop production in the PBLUMA of 240 acres annually for a total increase of 5,280 acres by January 31, 2045. A 240-acre annual increase equates to 12 new 20-acre vineyards per year allowed by the ordinance under a 25-AFY or groundwater per site exemption. Based on this assumption, a reasonable estimate of the overall increase in commute and haul trip miles allowed by the ordinance is 79,068 additional miles per site increase (7,188 miles per year per site x 12 sites per year = 86,256 additional miles per year), for a total increase of 1,897,632 annual commute and haul trip miles between January 31, 2023 and January 31, 2045.

On-Site Tractor Passes

A total of 14 tractor passes for site maintenance would occur per year per site. Therefore, the proposed ordinance would result in 3,542 annual tractor passes by January 31, 2045.

Maintenance and Harvesting Equipment

Table 15 shows the types of equipment that is projected to be used for agricultural maintenance and harvesting activities for each site under the proposed planting ordinance

Table 15 Typical Maintenance and Harvesting Equipment for a 20-Acre Wine Grape Vineyard in the PBLUMA

Activity	Equipment	No. of# Passes per Year per Site
Discing	1 ~95-hp tractor with disc	2
Mowing	1 ~95-hp tractor with mower	1
Fungicide	1 ~95-hp tractor with sprayer	6
Herbicide	1 ~95-hp tractor with sprayer	3
Harvest Tractors	2 ~95-hp tractors with gondolas	1
Harvester	1 OXBO 6120 harvester	1
Total		**14**

Source: Vineyard Professional Services, November 23, 202111/23/21. Rough estimate for 20-acre vineyard using data from similarly sized ranch, assuming 4.5 to 5 tons per acre and delivery to Gonzales.

hp = horsepower

5.7 Agricultural Accessory Structures

No agricultural accessory structures are included as part of the proposed ordinance. If agricultural operators propose any new agriculture accessory structures, such structures would be required to undergo a separate CEQA compliance review. The following is included for informational purposes only.

The storage and workshop needs for the plantings allowed by the 25-AFY exemption would not cause an increase in the construction rate for agricultural accessory structures. Sites that have not been previously cultivated often have an existing barn or shop on site if there is already an established residential use that could accommodate the needs of the 20 or fewer acres of crops allowed by the 25-AFY exemption. For sites already in cultivation that may plant under the proposed ordinance, irrigated crops do not necessarily have more on-site equipment and supply storage

needs than non-irrigated agricultural operations. Additionally, new plantings allowed by the ordinance may be part of operations that have existing plantings and storage facilities off site.

5.8 Agricultural Worker Housing

No agricultural worker housing is included as part of the proposed ordinance. If agricultural operators propose any new agricultural worker housing, such structures would be required to undergo a separate CEQA compliance review. The following is included for informational purposes only.

Agricultural worker housing is allowed in Agriculture and Rural Lands land use categories and must be in direct support of existing agricultural uses. Occupancy is limited to the employees of agricultural or ranching operations, and the spouses and children of those employees, restricted in a recorded agreement between the property owner and the County. Agricultural worker housing is categorized into two forms: (1) single-family dwellings, including mobile homes, and (2) group quarters (e.g., dormitories or bunkhouses and mess halls). The maximum density of single-family dwelling for agricultural workers is based on acreage of existing agricultural land use. For irrigated crops, one single-family agricultural worker dwelling unit is allowed per 20 acres of irrigated row crops, specialty crops, orchards, and vineyards; per 30 acres of irrigated pasture and alfalfa; per one acre of greenhouse nursery; or per three acres of field-grown nursery. For non-irrigated crops, one single-family agricultural worker housing unit is allowed per 320 acres of grazing land or per 40 acres of dry farm crops.

Agricultural worker housing is allowed on Agriculture and Rural Lands land use categories, in addition to the standard residential density allowance, which is two primary residences per legal parcel, as well as one junior accessory dwelling unit (JADU) up to 600 sf within the footprint of a primary residence and one accessory dwelling unit (ADU) up to 800 sf (or up to 1,200 sf if no JADU) per parcel. It is noted that properties under Williamson Act land conservation contract are restricted to one primary residence per minimum parcel size for conveyance, as specified in their contracts.

County staff analyzed construction permit records for agricultural worker dwellings, previously permitted as “farm support quarters.” From 2009 through 2021, a total of 17 agricultural worker dwelling units were built, averaging 1.3 new units per year. Only one new unit was built between 2017 and 2021, a period of higher than average economic growth for the County. However, as previously stated, no agricultural worker housing is included as part of the proposed ordinance.

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