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PETALUMA VALLEY
GROUNDWATER
SUSTAINABILITY AGENCY

Petaluma Valley Groundwater Sustainability Agency

Rate and Fee Study Update

SCIConsultingGroup
Public Finance Consulting Services

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I. Executive Summary

Background

The California Legislature enacted the Sustainable Groundwater Management Act ("SGMA") in 2014, marking the first Statewide effort to manage its groundwater basins. The goal of this historical legislation is to ensure that groundwater is sustainably managed and protected for all beneficial users, both now and in the future. Although it was enacted at the State level, SGMA was envisioned to be carried out locally. As such, it mandates that local Groundwater Sustainability Agencies be formed in medium and high-priority basins in order to develop and implement Groundwater Sustainability Plans ("GSPs").

The Petaluma Valley Groundwater Sustainability Agency ("GSA" or "Agency") was formed in 2017 to develop and implement a GSP for the Petaluma Valley Basin ("Basin"). The Agency submitted its GSP to the Department of Water Resources ("DWR") in January 2022. DWR approved the GSP one year later, in January 2023. The GSA was tasked with implementing the GSP upon its submittal and continues these efforts to this day.

The GSA was initially funded by a combination of grants and member agency contributions. The Agency has received more than $8 million in grant funding since 2017, helping to offset costs borne at the local level. The Agency's Joint Powers Agreement established the initial agency funding commitments of member agencies.

In 2017, the Board initiated a Rate and Fee Study, conducted by Raftelis Financial Consultants, to develop a Groundwater Sustainability Fee. For nearly a year the GSA conducted various public meetings and workshops. However, the Board ultimately decided to halt the Raftelis Fee Study, and in August 2018, agreed to a new member funding arrangement to fund the Agency through the development and adoption of the GSP. The Board's stated decision to halt the study was based on the relatively high rates associated with a pumping fee. This allowed the Agency to put full fee implementation on hold while it continued its community outreach and GSP development.

In the Fall of 2020, the Agency engaged a consultant team led by SCI Consulting Group ("SCI Team") to develop rural community engagement strategies, polling, and revenue recommendations. To develop these strategies and recommendations, the SCI Team conducted a survey of rural well owners in the Petaluma Valley Basin in January 2021. This community engagement project helped to better define the perspective of the community and guide community outreach efforts as the Agency has worked to update its fee structure.

In November 2021, the GSA engaged SCI to develop a Rate and Fee Study for the Basin. This effort included comprehensive data analysis, review of funding options for groundwater sustainability agencies, evaluation of rate structure alternatives, and the development of rate and fee schedules. Additional input and modification were provided by GSA staff. The scope of work also included a series of community meetings in order to incorporate community perspective and engagement into the Rate and Fee Study. The GSA adopted this fee program in July 2022.

In June 2022, the Sonoma County Board of Supervisors voted to contribute funding to "equalize" the Petaluma Valley GSA and Sonoma Valley GSA rates with the Santa Rosa Plain GSA rate of $40 per acre foot per year. This contribution has allowed most rate payers (excluding public water systems) to pay a reduced rate in fiscal years 2022-23 and 2023-24. The Board of Supervisors recently committed to continue this contribution through at least fiscal year 2026-27, which will maintain the equalized rate across all three GSAs in Sonoma County.

In the fall of 2022, a systematic inaccuracy related to the fee calculation was discovered. The correction of this inaccuracy, along with feedback from groundwater users in the Basin through the Groundwater User Information Data Exchange ("GUIDE") Program, produced changes in groundwater extraction estimates. These extraction estimate changes led to a reduction in the fee program's expected revenue. These changes, along with an evolving revenue need in support of GSP implementation, are the primary impetuses behind a Rate and Fee Study update.

In January 2024, the GSA engaged SCI Consulting Group to update the fee program based on several factors. These factors included reduced revenue from the systematic inaccuracies referenced above, increased GSP implementation costs, new state regulatory requirements, and a grant award received from DWR. While these factors necessitated certain changes to the fee's base calculations, the overall structure and methodology of the fee program will be maintained.

This Study outlines the development of an updated fee program for funding GSA operations and GSP implementation in the coming years. It summarizes the efforts of the GSA, Member Agencies, and consultants in determining the financial, legal, and policy decisions best suited to funding groundwater management in the Petaluma Valley Basin. This summary includes considerations of legal authority, financial analysis, and fee methodology.

Objectives

The objectives for this Rate and Fee Study Update ("Study") include the following:

- Development of a five-year budget
- Development and refinement of parcel-scale data and extraction estimates
- Development of fee methodology and rates

Agency Characteristics

The Petaluma Valley Groundwater Sustainability Agency was created by a Joint Powers Agreement in May 2017 to serve as the official Groundwater Sustainability Agency for the Petaluma Valley Groundwater Basin, as required by the Sustainable Groundwater Management Act. The Joint Powers Agreement consists of five Member Agencies: The City of Petaluma, the Sonoma Resource Conservation District, Sonoma County Water Agency ("Sonoma Water"), the County of Sonoma, and the North Bay Water District. The Agency is governed by a Board of Directors ("Board") consisting of one Director from each of the five agencies. Each Member Agency also appoints an Alternate Director. Additionally, the Agency maintains an Advisory Committee for the purpose of providing input and recommendations to the Board and encouraging community participation in the GSA.

Basin Characteristics

The Petaluma Valley Basin encompasses approximately 46,000 acres underlying southern Sonoma County. The population of this area is approximately 60,000 and includes the City of Petaluma as well as unincorporated rural communities.

Groundwater Use in the Petaluma Valley Basin

The Basin 's GSP includes detailed discussion of groundwater use in the Petaluma Valley Basin and includes a water budget which describes inflows and outflows to the Basin during the current period. Included in the water budget is an estimate of annual groundwater pumping.

The annual groundwater extraction estimate for this Rate and Fee Study Update, while similar to that in the GSP, varies slightly. This is largely due to the approach utilized in determining unmetered groundwater use. While the GSP takes into account the Basin as a whole, this Study utilizes a parcel-scale approach, which is necessary in order to allocate costs at the parcel level. The GSP estimated annual extraction to be between 2,200 and 2,850 acre feet per year ("AFY"), while this Rate Study estimated groundwater extraction at 2,299 AFY. Further discussion of this estimate is included in Section III of this Study in the description of methodology.

Basin Prioritization

The Department of Water Resources assigns each of California's 515 groundwater basins a prioritization rating. The Basin Prioritization rating dictates whether a basin is designated very low, low, medium, or high priority as shown in Table 1.

Table 1 – SGMA Priority Ranking Criteria

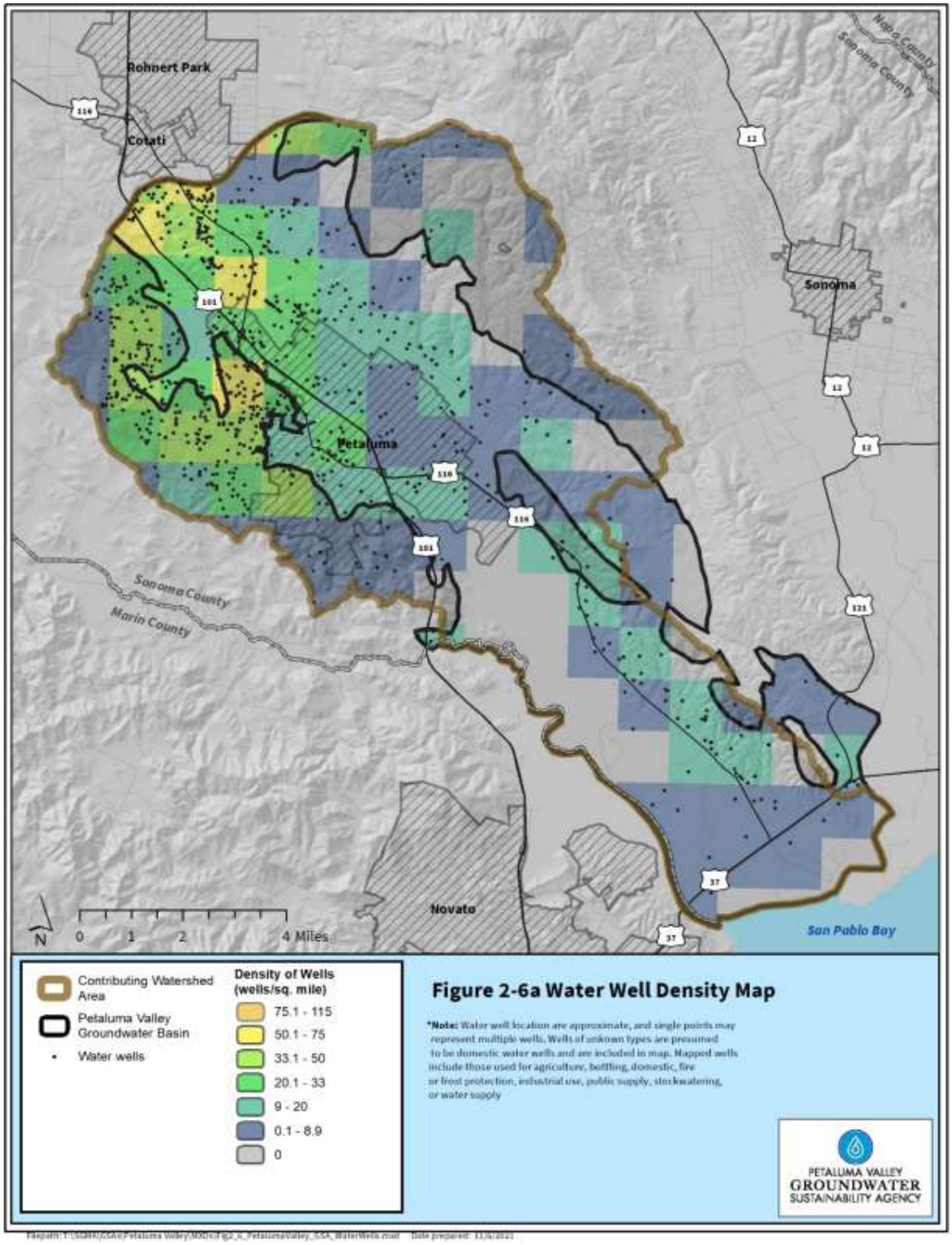
Priority	Total Priority Point Ranges			
Very Low	*over*	zero	*up to*	7
Low	*over*	7	*up to*	14
Medium	*over*	14	*up to*	21
High	*over*	21	*up to*	42

Medium and high priority basins are required to establish a groundwater sustainability agency and develop a groundwater sustainability plan. With a priority ranking score of 17.5, the Petaluma Valley Basin is classified by DWR as a medium-priority basin. The Basin's priority point allocation is illustrated in Table 2.

Table 2 - Petaluma Valley Basin Priority Points

	Criteria	PV Priority Points
1	Population	2
2	Population Growth	3
3	Public Supply Wells	3
4	Total Wells	4
5	Irrigated Acres	2
6	Reliance on GW	1.5
7	Basin Impacts	2
8	Habitat & Other Information	0
	TOTAL PRIORITY POINTS	17.5

Figure 1 – Basin Boundary and Well Density



Groundwater Fees

Just as SGMA envisions groundwater basins being locally governed, it also envisions GSAs to be locally funded. The intent of this Fee Study is to update the rate and fee schedule for the Petaluma Valley Basin, providing a reliable stand-alone revenue source to ensure the Agency's ability to implement its GSP. While the Agency has received grant funding in recent years, and will actively pursue future grant solicitations, the need for independent revenue is apparent.

The 2022 Rate and Fee Study established a fee program that has supported the GSA's operations over fiscal years 2022-23 and 2023-24. However, as noted above, a systematic inaccuracy was discovered shortly after the adoption of the 2022 Rate and Fee Study. Initially, feedback from property owners indicated that changes to groundwater extraction estimates may be necessary. This feedback necessitated a thorough review of certain elements of the Rate and Fee Study, through which these inaccuracies were identified. This process is discussed in detail below.

Changes in Groundwater Extraction Estimates

GUIDE Program

As previously indicated, feedback from property owners brought about the realization of a systematic inaccuracy present in the estimation of groundwater use utilized in 2022. This feedback came in the form of surveys submitted through the Groundwater Users Information Data Exchange ("GUIDE") Program,[1] implemented in 2021. This program aims to aid in the improvement of groundwater use data and the exchange of well registration information. The GUIDE Program offers community members the opportunity to determine whether their parcel is within the Basin boundaries, to view the current data held by the GSA regarding their parcel, and to complete a survey requesting alteration of this data if applicable.

GUIDE surveys received shortly after the adoption of the 2022 Rate and Fee Study indicated that there may be inaccuracies in the estimation of groundwater use in the Petaluma Valley Basin related to turf irrigation. Approximately 31 GUIDE surveys have been submitted since the implementation of the fee program in the Petaluma Valley Basin. Of those submitted, approximately 28 required adjustments to groundwater use estimates.

Systematic changes

While GUIDE surveys are individually reviewed and addressed based on submitted information and corroborating data, these initial surveys brought about a thorough review of one element of the fee program: turf irrigation.

[1] https://petalumavalleygroundwater.org/guide/

Feedback from property owners suggested that areas designated as having turf irrigation identified by DWR's crop maps were in fact non-irrigated. All parcels documented with turf irrigation were further audited using aerial imagery that resulted in 43 parcels adjusted to zero water demand and 36 parcels validated as accurate and not changed.

The above-referenced reductions in groundwater extraction estimates produced a reduction in the total estimated groundwater use within the Basin by approximately 102 AF. The overall reduction in estimated groundwater use resulted in a revenue reduction of approximately $14,994 per year. Although it is believed that the systematic inaccuracy has been addressed, additional GUIDE surveys continue to be submitted. For this reason, an appeals allowance has been utilized in this Updated Rate and Fee Study, as discussed in more detail below.

An Updated Groundwater Fee Program for the Petaluma Valley Basin

The 2022 Rate and Fee Study was established through extensive research and numerous discussions with staff, legal counsel, and the SCI Team. Ultimately, a regulatory fee in accordance with Water Code § 10730 and Proposition 26 was selected as the optimal funding mechanism for the Petaluma Valley Basin. This type of fee is the mechanism used by the 2022 Rate and Fee Study and the subsequent fee program in place today.

Consistent with past practice, the methodology of the fee program established by this Study is based on apportioning costs according to the known or estimated amount of groundwater extraction for each property. Several factors make this the optimal basis on which to allocate the costs of a groundwater sustainability program in the Petaluma Valley Basin:

- Proportional: The fee is equitable in that properties that extract more groundwater (and have more at stake in ensuring a sustainable groundwater supply) would pay more while properties that extract less would pay less.
- Easy to Understand: Proportionality based on estimated groundwater extraction is relatively easy for the average property owner to understand.
- Common: This type of fee is the most common one seen among groundwater sustainability agencies across the State.
- Easy to Administer: Once extraction amounts are estimated, there will be few changes from year to year making the fee calculation and implementation easier.
- Legally Compliant: This type of fee conforms with the California Water Code as well as Proposition 26.

Rate Components: Groundwater Usage and Revenue Requirements

Precise groundwater extraction data is largely unavailable or non-existent. Public water agencies and certain private entities operating wells are required to report extraction data to the California Department of Drinking Water, which makes this data publicly available. This publicly available data accounts for approximately 11% of all water extracted in the Basin. However, the remaining 89% of the extraction comes from wells whose extraction data is not public or have no meters. Thus, precise measurement of extraction is impossible at this time. The process of installing meters on all Basin wells introduces financial, legal, and policy complexities that prohibit such an approach at this time. Therefore, this Study will estimate extraction for those non-public wells through a process that is described herein. The total groundwater extraction for the Basin is estimated to be 2,299 AFY.

It is worth noting that, while the proposed fees are based on groundwater extraction, the fees are not intended to charge for groundwater extraction itself. Instead, the use of extraction estimates is intended to equitably allocate the benefits of the Agency's groundwater sustainability plan across all groundwater extractors.

The other primary component of the fee program outlined in this Study is the projected budget of the GSA through the next three years of GSP implementation. This budget was carefully developed by Agency staff and the SCI Team, with input by the GSA Board ultimately deciding several factors. Based on an average annual budget over the next three years, the average annual revenue requirement from a regulatory fee structure is $726,178.

The final calculation of the regulatory fee is a simple equation, producing a rate per acre foot ("AF") as shown below.

$$\frac{\textit{Revenue Requirement (\$\$)}}{\textit{Acre Feet Extracted}} = \textit{Rate (\$\$ / AF)}$$

By applying the estimated extraction and revenue requirement, the recommended rate starting in fiscal year 2024-25 is $315.84 per AF per year as shown below.

$$\frac{\$726{,}178}{2{,}299.2\ \text{AF}} = \$\ \ 315.84\ \ \textit{per AF per Year}$$

While the total extraction estimate has been adjusted in recent years (as discussed above), it is expected to be relatively stable going forward, within the bounds of the included appeals allowance. However, the revenue requirement part of this equation has been the subject of many discussions at the GSA Board and staff level in recent years. While the Petaluma Valley Basin and Sonoma Valley Subbasin produce less groundwater extraction each year, they are still subject to the same regulatory requirements of SGMA, and thus have similar revenue needs related to groundwater management. In the rate determination equation, less extraction (the numerator) but a similar revenue requirement (the denominator) produces a higher rate. This has presented challenges related to efforts to produce relatively consistent rates across the three Sonoma County GSAs.

In 2022, the Petaluma Valley GSA Board made the decision to reduce the revenue requirement to a "bare bones" budget, thereby reducing the rate to lessen the financial burden on groundwater users. Nonetheless, this reduced rate of $146.70 was still much higher than the $40 rate of neighboring Santa Rosa Plain GSA.

On June 17, 2022, the Sonoma County Board of Supervisors approved a budget that included an appropriation of funds to be split between Petaluma Valley GSA and Sonoma Valley GSA. This has enabled those GSAs to charge rates for groundwater extractors (not including the municipalities and major public water service providers) equal to those adopted by the Santa Rosa Plain GSA ($40 per AF). The goal was to "even the playing field" while the two former GSAs utilized the subsequent years to explore more funding options including grants. The County has contributed more than $1,500,000 to fee equalization over the last two fiscal years, across the Petaluma Valley and Sonoma Valley GSAs, including $500,000 in fiscal year 2022-23 and $1,000,000 in fiscal year 2023-24.

In late 2023, the County committed to continue this contribution through the next three fiscal years. This will allow the Petaluma Valley GSA rate to be adjusted for most users according to the updated Santa Rosa Plain GSA rate of $43.65 per AF per year. The Santa Rosa Plain rate equation is shown below for reference:

$$\frac{\$811,797}{18,598\ AF} = \$43.65 \quad per\ AF\ per\ Year$$

Rate equalization will allow Petaluma Valley GSA to reduce their rate for most users from $315.84 to $43.65 for the next three years.

This Rate and Fee Study provides a detailed outline of the efforts to establish a reliable revenue source to fund GSP implementation in the Petaluma Valley Basin and represents the culmination of years of effort by the Petaluma Valley GSA Board, staff, and consultants.

II. Context

Many factors contribute to an effective fee methodology and a successful fee implementation. Staff and consultants worked together with legal counsel to establish a comprehensive understanding of the applicable legislative and legal factors and the viability of various funding mechanisms. The GSA Board and Advisory Committee played integral roles in guiding this process, placing priority on equity, fairness, and fiscal responsibility. Additionally, a priority has been placed on community engagement throughout the process, with public outreach efforts playing an important part in developing the groundwater sustainability fee.

Legislative and Legal Understanding

Water Code § 10730

Groundwater Sustainability Fees

Within SGMA, two revenue paths are specifically described to fund a groundwater sustainability agency: Water Code § 10730 is aimed at general GSA management and GSP implementation excluding major capital investments for improvements; and Water Code § 10730.2 is aimed at the full spectrum of GSA costs including major capital investments and facility operations and requires more rigorous and lengthy adoption procedures. Since the Scope of Water Code § 10730 fully embraces the activities described in the current GSP, the GSA has chosen to apply the Water Code § 10730 fee, as described below:

> *A groundwater sustainability agency may impose fees, including, but not limited to, permit fees and fees on groundwater extraction or other regulated activity, to fund the costs of a groundwater sustainability program, including, but not limited to, preparation, adoption, and amendment of a groundwater sustainability plan, and investigations, inspections, compliance assistance, enforcement, and program administration, including a prudent reserve.*

The fee developed for this Study is based on estimated groundwater extraction and is intended to primarily fund program administration, and as such falls within the categories described by this code section. Nonetheless, any fee imposed by a government agency must comply with the California Constitution. Further discussion of compliance with Proposition 26 is included below.

Public Meeting Requirements

Water Code § 10730 also provides requirements regarding a public meeting prior to imposing a fee program:

Prior to imposing or increasing a fee, a groundwater sustainability agency shall hold at least one public meeting, at which oral or written presentations may be made as part of the meeting. Notice of the time and place of the meeting shall include a general explanation of the matter to be considered and a statement that the data required by this section is available. The notice shall be provided by publication pursuant to Section 6066 of the Government Code, by posting notice on the Internet Web site of the groundwater sustainability agency.

At least 20 days prior to the meeting, the groundwater sustainability agency shall make available to the public data upon which the proposed fee is based.

In addition to the required public meeting currently scheduled for June 20, 2024, the Petaluma Valley GSA held an additional community meeting on Wednesday March 6, 2024, and three additional public meetings during the process of updating this fee program in the spring of 2024. The GSA also took additional steps to alert members of the public of the public meeting where the fee update would be considered, including posting on social media, covering the fee update in the quarterly newsletter, and emailing stakeholders on the interested parties list.

De Minimis Extractors

De minimis extractors are defined by Water Code § 10721 as those who extract, for domestic purposes, 2 acre feet ("AF") or less of groundwater per year. An important distinction is made by § 10730 regarding de minimis extractors:

A groundwater sustainability agency shall not impose a fee pursuant to this subdivision on a de minimis extractor unless the agency has regulated the users pursuant to this part.

This indicates that in order to charge de minimis extractors, a GSA must have regulated these users according to their GSP.

For the Petaluma Valley GSA, the regulation of de minimis users was accomplished by Ordinance 22-01 (adopted in July 2022), Article 2, Section 1, Registration, and Section 3, De minimis Extractors:

Section 1, Registration

All groundwater extraction facilities within the boundaries of the Agency shall be registered with the Agency within thirty (30) days of notice given to the operator.

The Operator of an Extraction Facility will be registered by the Agency and provide at a minimum the following information on a form provided by the Agency. The Agency form may ask for, and the Operator may supply additional information if requested.

A. Name, mailing address, and email address of the operator.

B. Name and address of the owner of the land upon which the Extraction Facility is located.

C. A description of the equipment associated with the Extraction Facility.

D. Location of the water Extraction Facility.

Section 3, De minimis Extractors

A. It is the intent of the Agency to regulate De Minimis Extractors by this Ordinance, as provided for in Water code section 10730(a).

By initiating the regulation of de minimis users supplemented by the GUIDE Program, the Agency moved to regulate these users pursuant to Water Code § 10730. This assures that the fee program outlined by this Rate and Fee Study maintains compliance with § 10730.

Fee Collection

Another stipulation of Water Code § 10730 authorizes a GSA to collect fees pursuant to this section of the Water Code on the property tax bills furnished by the County in which its jurisdiction lies. If passed and adopted, the Agency intends to utilize the tax bill method of collection to the extent possible.

Proposition 26

Proposition 26 was passed by voters in 2010, providing a broad constitutional definition of the term "tax", which was necessary in the wake of Proposition 218's limitations on local taxes. Proposition 26 is best understood in the context of Propositions 13 and 218.

Proposition 218 was passed by California voters in 1996, adding Articles XIII C and XIII D to the State Constitution. The purpose of this legislation was primarily to address the effects of Proposition 13, passed in 1978, which limited the ability of local governments to impose taxes. While Proposition 218 outlined substantive and procedural guidelines for the imposition of taxes, benefit assessments, and property related fees, the definition of the term "tax" was not succinctly defined.

Proposition 26, as included in Article XIII C of the California Constitution, defines a tax as "any levy, charge, or exaction of any kind imposed by a local government," with certain exceptions. Among these exceptions are:

(1) A charge imposed for a specific benefit conferred or privilege granted directly to the payor that is not provided to those not charged, and which does not exceed the reasonable costs to the local government of conferring the benefit or granting the privilege to the payor.

(2) A charge imposed for a specific government service or product provided directly to the payor that is not provided to those not charged, and which does not exceed the reasonable costs to the local government of providing the service or product to the payor.

(3) A charge imposed for the reasonable regulatory costs to a local government for issuing licenses and permits, performing investigations, inspections, and audits, enforcing agricultural marketing orders, and the administrative enforcement and adjudication thereof.

Article XIII C goes on to stipulate that the governing agency must establish that any charges imposed by a government agency are not taxes:

The local government bears the burden of proving by a preponderance of the evidence that a levy, charge, or other exaction is not a tax, that the amount is no more than necessary to cover the reasonable costs of the governmental activity, and that the manner in which those costs are allocated to a payor bear a fair or reasonable relationship to the payor's burdens on, or benefits received from, the governmental activity.

Regulatory Fees

The three exceptions listed above provide the basis for a regulatory fee on estimated groundwater extraction. Implementation of the Petaluma Valley GSP provides a benefit or service to groundwater users in the Basin. Additionally, costs incurred by the GSA's groundwater sustainability program are regulatory costs, as they represent the regulation of groundwater in the Basin.

This Fee Study provides the rationale for how the fee program for the Petaluma Valley GSA will comply with the requirements of Article XII A, including the fees charged to groundwater extractors in the Basin:

1. Are not taxes.
2. Will not generate more revenue than the reasonable cost of the governmental activity.
3. Are allocated to the payor in a manner that bears a reasonable relationship to the benefits received from the governmental activity.

Funding Methods Considered

There are a number of funding mechanisms available to local agencies in California, several of which were thoroughly explored in compiling the initial Rate and Fee Study in 2022. Although SGMA does provide some guidance on funding GSAs, this guidance is not particularly detailed. Additionally, given the relatively short timeline since the passage of SGMA, there is not a significant amount of legal precedent for GSA funding mechanisms. A lack of clarity on how to proceed is common among GSAs across the State. For these reasons, it was important to vet several potential options for funding the Petaluma Valley GSA.

Regulatory Fees

A regulatory fee in accordance with Water Code § 10730 and Proposition 26 was selected as the optimal funding mechanism for the Petaluma Valley Basin. This type of fee is the same mechanism used by the 2022 Rate and Fee Study and enacted by the Agency (Ordinance No. 22-01).

Consistent with past practice, the methodology of the fee program established by this Study is based on apportioning costs according to the known or estimated amount of groundwater extraction for each property or public water system. Several factors contributed to a regulatory fee program being the primary focus for this Study:

- Proportional: The fee is equitable in that properties that extract more groundwater (and have more at stake in ensuring a sustainable groundwater supply) would pay more while properties that extract less would pay less.
- Easy to Understand: Proportionality based on estimated groundwater extraction is easy for the average property owner to understand.
- Common: This type of fee is the most common one seen among groundwater sustainability agencies across the State.
- Easy to Administer: Once extraction amounts are estimated, there will be few changes from year to year making the fee calculation and implementation easier.
- Legally Compliant: This type of fee conforms with Water Code § 10730 as well as Proposition 26.

Outreach Efforts

Outreach played a crucial role in the development of the Petaluma Valley GSA fee program in 2021 and 2022. Stakeholder outreach, as well as broad public outreach through a series of community meetings, provided substantive guidance for GSA staff and the SCI Team in developing the fee methodology and structure. The foundation and structure of this fee program remain unchanged by this updated Rate and Fee Study.

2024 Public Outreach

SGMA Requirements

As noted above, SGMA requires a public meeting prior to the establishment of a fee program. Although this requirement will be met by the meeting in which the fees are adopted, the Agency elected to hold an additional community meeting during the Rate and Fee Study update process in order to incorporate community perspective into the development of the fee program.

Petaluma Valley Community Meeting

A community meeting was held for the Petaluma Valley Basin on March 6, 2024, at the Petaluma Community Center. A presentation was provided which reviewed the fee structure and the need for funding, detailed the changes in groundwater extraction estimates and revenue needs that have motivated the update, and allowed for questions and discussion. Members of the public raised questions related to the changes, projected expenses, and future planning. All questions were heard, and answers were provided by staff and consultants to the best of their ability.

Additional Outreach

In addition to the required public meeting planned to be held in June 2024, the Petaluma Valley GSA held three additional public meetings in which updates to the fee program were discussed during the spring of 2024, including one GSA Board meeting and two Advisory Committee meetings.

Public Meeting Adopting Rates and Fees

In accordance with Water Code § 10730 (b), a public meeting must be held at which oral or written presentations may be made. In addition, notice of the meeting must be 1) published in the local newspaper at least twice in the weeks preceding the meeting, and 2) posted on the Agency's website. The GSA must also make available all data upon which the proposed fee is based at least 20 days prior to the public meeting. The public meeting is tentatively scheduled for June 20, 2024.

Pre-2024 Outreach

Prior to the development of this updated Rate and Fee Study, the GSA conducted an exhaustive community outreach effort in 2021 and 2022 leading up to the adoption of the fee program. A campaign of direct stakeholder outreach, discussions with the Petaluma Valley GSA Advisory Committee, and multiple community meetings contributed to an improved understanding of groundwater use and community perspective regarding groundwater management in the Basin and potential fee structures. The GSA also sent a direct mailer to all groundwater-using parcels at this time.

Board Direction

The GSA Board of Directors played an integral role in refining the approach to updating the fee program in 2024. Staff and consultants provided updates at Board meetings in spring 2024, ensuring the Board's awareness of any progress and requesting input on various decisions. This process allowed staff and consultants to narrow down funding mechanism options, clarify perspective on policy decisions, and ultimately, to update the fee program based on changes in groundwater extraction and revenue requirements.

The Board directed staff to update the fee program based on changes in groundwater extraction estimates and revenue requirements, while maintaining the same methodology and structure of the 2022 fee. The Board also supported the concept of utilizing an inflationary mechanism, by which the budget and rate can be increased each year. This is discussed in more detail below.

III. Fee Determination

With the adoption of the 2022 Rate and Fee Study, the Board made clear its goal of achieving financial independence for the GSA in its management of the Basin, placing priority on fairness, efficient administration, and compliance with California law in developing a funding method. At the March 28, 2024 meeting, the GSA Board concluded that a regulatory fee as developed and adopted in 2022 remained the preferred method in 2024 for future funding. Ordinance 22-01 remains in effect and authorizes the Board to adopt fees by resolution as needed. The GSA Board also directed staff to include a mechanism to adjust fees annually for inflation.

As noted above, the rate calculation is dependent on two major factors: revenue requirements and groundwater extraction estimates. The development of these two factors, updated for 2024 and future years, is outlined below.

Revenue Requirements

The GSA administrative and technical staff developed a three-year budget of expenditures based on the findings and projections found in the 2021 GSP, knowledge and experience through the first two years of GSP implementation, and considerations of future costs. Some minor updates were done in spring 2024 to arrive at a three-year total estimated expenditure of $7,689,514, including grant funding in the amount of $5,510,979. Revenue requirements intended to be generated through the fee program amount to a three-year total of $2,178,535. From this amount, the average annual expense generated through a combination of fees and the County contribution is expected to be $726,178 as shown in Table 3.

Revenue Sources

In forming the Agency in 2017, the Board determined that the Agency would be self-funding in the future. During the early part of 2022, the Board provided direction that this would be the case beginning in Fiscal Year 2022-23. Since that year, the primary funding source has been regulatory fees for groundwater users and the Country contribution toward fee equalization.

In October 2023, the Department of Water Resources awarded the Petaluma Valley GSA with $6,739,409 in grant funding though the Sustainable Groundwater Management Grant Program. These funds will contribute to a range of GSP implementation efforts, including operational expenses, addressing data gaps, project and management action planning, and groundwater model updates. Grant funding is highly desirable, in part because it offsets the need for groundwater users to pay directly for such efforts. While this grant funding will alleviate the revenue requirement utilized for the fee program, other costs must also be accounted for in order to continue to implement the GSP.

This grant award has been allocated to fiscal years 2023-24, 2024-25 and 2025-26, as it must be utilized prior to fiscal year 2026-27. While the Agency will continue to pursue any applicable grant awards in the future, for the purposes of this Study, it is assumed that it must be self-funded in fiscal year 2026-27 and beyond.

Budget and Revenue Requirement

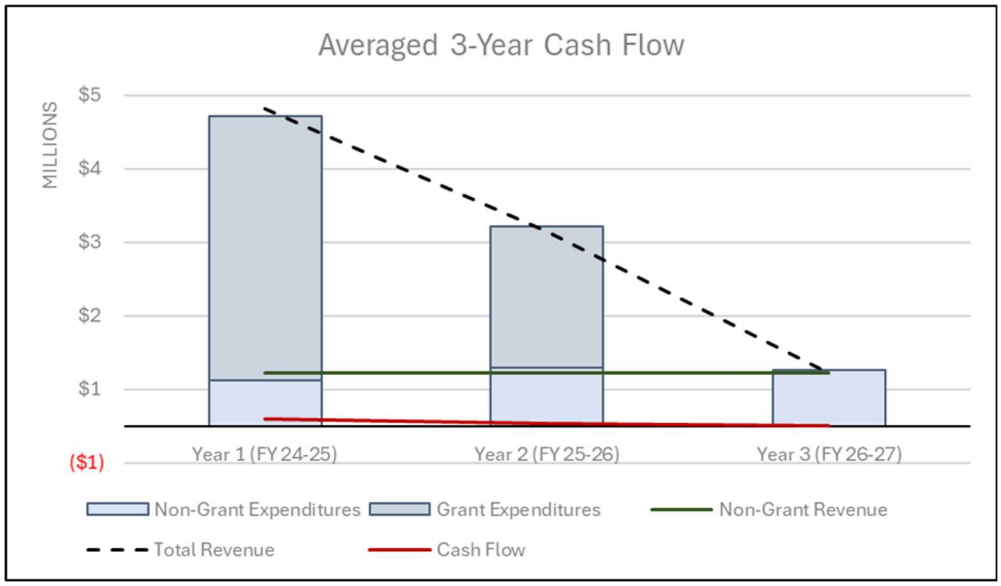
The projected GSA budget is shown in Table 3. As noted above, grant funded items are included pertaining to specific costs. The consolidated budget amount, averaged over a three-year period, is $726,178. This net revenue requirement is used to calculate the fee rate. A more detailed budget table is included in Appendix A – Budget Details.

Table 3 – Annual Costs and Revenue Requirement

Item	Year 1 FY 24-25	Year 2 FY 25-26	Year 3 FY 26-27	3-Year Total	Average Annual Cost
Operational	$ 501,667	$ 516,667	$ 616,667	$ 1,635,000	$ 545,000
Operational *(Grant Funded)*	$ 128,000	$ 193,500	$ -	$ 321,500	$ 107,167
Data Gaps	$ 69,467	$ 34,733	$ 25,000	$ 129,200	$ 43,067
Data Gaps *(Grant Funded)*	$ 1,314,727	$ 657,363	$ -	$ 1,972,090	$ 657,363
Projects & Actions Planning	$ 27,467	$ 13,733	$ -	$ 41,200	$ 13,733
Projects & Actions Planning *(Grant Funded)*	$ 705,400	$ 352,700	$ -	$ 1,058,100	$ 352,700
Groundwater Model Updates	$ 13,333	$ 6,667	$ -	$ 20,000	$ 6,667
Groundwater Model Updates *(Grant Funded)*	$ 106,667	$ 53,333	$ -	$ 160,000	$ 53,333
5-yr GSP Update	$ -	$ 200,000	$ 100,000	$ 300,000	$ 100,000
2.5% contingency	$ 15,298	$ 19,295	$ 18,542	$ 53,135	$ 17,712
Non-GSA Projects *(Grant Funded)*	$ 1,332,860	$ 666,430	$ -	$ 1,999,289	$ 666,430
	$ 4,214,885	$ 2,714,421	$ 760,208	$ 7,689,514	$ 2,563,171
Budget Consolidation					
Grant Funding	$ 3,587,653	$ 1,923,326	$ -	$ 5,510,979	$ 1,836,993
Net Revenue Requirement	$ 627,232	$ 791,095	$ 760,208	$ 2,178,535	$ 726,178
			Net Revenue Requirement		$ 726,178

As can be seen in Table 3, the annual costs fluctuate significantly from year to year. However, to keep annual rates consistent, these costs have been averaged over the three-year period (shown in the right-hand column). Assuming a fund balance of zero at the beginning of Year 1, an analysis of cash flow shows cash flow reaching zero in Year 3, but a deficit is avoided (as shown in Figure 2). It is presumed that the Agency will be able to pace the workflow, expenditures, and use of grant funding adequately to maintain a positive cash flow.

Figure 2 – Three-Year Budget and Cash Flow



Inflationary Adjustment and Future Year Fees

As discussed above, the Board directed staff and consultants to include the option to adjust the budget (and correspondingly, the rate) each year by an inflationary mechanism. The intent of including such a mechanism is to allow for the Board to consider adjusting the budget according to annual inflation as it relates to Agency costs. Public agencies in California commonly use the Consumer Price Index for Urban Consumers ("CPI-U" or "CPI"), as published by the United States Bureau of Labor Statistics (BLS), in order to adjust the budget and rate of a fee program each fiscal year. Regional indexes are available which generally produce more accurate cost inflation statistics for a given area. A percentage limit could also be incorporated that would prevent large adjustments in years that produce particularly high inflation.

This Rate and Fee Study provides the opportunity for the GSA Board to adjust the budget and rate in future years by using the annual change in the San Francisco Bay Area Consumer Price Index-U, measured each December of the preceding calendar year, with an annual adjustment not to exceed 5%. The maximum authorized fee rate each year shall be equal to the previous year's rate, increased by the San Franciso Bay Area CPI or 5%, whichever is less. Incorporation of this inflationary adjustment in this Study provides for this annual increase without the need to adopt an updated fee study or undergo additional procedural requirements.

While the use of an inflationary mechanism is a sound approach to address increases in costs, it should be noted that the budget itself and the benefits provided by the Agency justify the use of a regulatory fee. The use of a CPI increase in any given year must be justified by an increase in the projected GSA budget.

While the projected budget extends out three fiscal years through 2026-27, the GSA may elect to continue the fee program beyond this time frame. There are many unknown elements of the Agency's financial outlook leading up to the required five-year GSP update, which produces a degree of uncertainty regarding the applicability of the current fee program. Should the GSA decide to continue the fee program detailed in this Rate and Fee Study beyond fiscal year 2026-27, updated budget projections will be utilized within the same framework provided herein.

Groundwater Extraction

As noted above, the methodology of the fee program for the Petaluma Valley Basin is based, in part, on estimated groundwater extraction. This is necessitated by the lack of data available for groundwater extraction across most user classes. There are approximately 1,216 parcels in the Basin reliant on groundwater as their primary water source; none of which make their extraction data public (and many of which are not metered). Of this number, there are approximately 1,119 domestic parcels reliant on groundwater.

There are several factors that inhibit the improvement of data by increasing metering of the Basin's wells. While California Water Code § 10725.8 authorizes the GSA to require meters for non-de minimis users, it specifically prohibits it from requiring meters on de minimis users.[2] Furthermore, requiring installation of meters on all non-de minimis wells could be costly, time-consuming, and likely unwelcomed by groundwater users. Timing is a key issue, as any efforts to increase the number of meters in the Basin would likely prevent the GSA from securing funding in the coming fiscal years. At this time, there are no plans to embark on a mandatory metering program. However, under the SGMA grant, the GSA will embark on a voluntary metering program later this year which will provide some additional data on groundwater use for those wells that participate in the program.

Public water systems are the exception to this approach of estimation, as they are required by the State to document and report groundwater extraction. All public water systems in the Basin will be charged according to the average reported groundwater use. This is discussed in more detail below.

[2] De minimis users are defined in the SGMA as properties using, for domestic purposes, less than 2 acre feet of groundwater per year. Most users in this classification are rural residential users.

Data Sources

The estimates used in this Fee Study rely on data from the State, technical studies, and available local data. At this time, using the best available sources to guide estimation of groundwater use is the most optimal path forward for funding the Agency's efforts to implement its GSP. Elements of GSP implementation, including the closing of data gaps, may contribute to a better understanding of groundwater use in the Basin. As better data becomes available, fee calculations may be altered to incorporate any potential improvements to groundwater use data.

A variety of data sources were used to develop the parcel model. Below is a complete list of data used, followed by the source of the data in parenthesis, and a short description of the data. At the time of publishing this Study, the most recent groundwater use estimates were developed for fiscal year 2023-24 and the datasets used for these estimates are listed below. GSA staff and consultants are currently preparing groundwater use estimates for fiscal year 2024-25 with updated datasets where available. In the sections that follow, detailed descriptions of each data source are provided with explanations of how the data are used.

- Sonoma County parcel spatial database (Sonoma County): GIS-based spatial database of polygons that delineate parcel boundaries in Sonoma County as of July 2023.
- Petaluma Valley Basin boundaries (Bulletin 118 Groundwater Basin Boundary Assessment Tool): Basin boundary spatial polygons that delineate boundaries of the three Sonoma County GSAs as of October 2021.
- Recycled water deliveries (City of Petaluma): recycled water deliveries to select APNs from 2016-2022.
- Surface water diversions (eWRIMS): Annual reported surface water diversions from 2011-2022; points of diversion from eWRIMS.
- Water system boundary information (State Water Resources Control Board): spatial polygons that delineate water system service boundaries as of October 2021.
- Well locations (Sonoma County): refined spatial well database more accurate than the California Department of Water Resources (CA-DWR) Online State Well Completion Report Database, accessed October 2021.
- Explicit connection data from the City of Petaluma.
- Crop mapping (CA-DWR): Crop layer polygons from the Department of Water Resources as of 2023.
- Land Use mapping (CA-DWR): Land use layer polygons from the Department of Water Recourses as of 2013 for mapping of irrigated turf areas.
- Public Water System Use (Division of Drinking Water): reported groundwater extraction per PWSID, between 2013-2021.

Administrative Data

The database includes general parcel characteristics including parcel area (acres), County Assessor information (i.e., Use Code Description, Use Code Category), and owner information (i.e., Current Owner's Name and Mailing Address). These administrative datasets are associated with each parcel and were obtained from the Sonoma County Assessor's Office.

GSA Jurisdiction and Basin Boundary Parcels

Basin boundary parcels are parcels that intersect the Basin boundary. Parcels that intersect the Basin are included in the Fee Study and subject to regulation by the Agency; however, a limited subset of basin boundary parcels intersect both the Petaluma Valley Basin and the Santa Rosa Plain Subbasin (75 parcels), and both the Petaluma Valley Basin and the Sonoma Valley Subbasin (10 parcels).

Ultimately, Agency regulation is based off the location of the water well(s) on the parcel. If a boundary parcel does not have a water well within the Basin, then the parcel will not be subject to Agency regulation or the regulatory fee for groundwater extracted from a well outside the Basin. If a well location is known, the location of the well determines which GSA has jurisdiction over a parcel's groundwater use.

In many cases exact well locations are not known. For parcels where this is the case, the parcel was assigned to the GSA that a larger fraction of the parcel resides within. For example, if 7 acres of a 10-acre parcel lies in the Petaluma Valley Basin, and 3 acres lies in the Santa Rosa Plain Subbasin, then the parcel is assigned to the Petaluma Valley GSA.

Water Sources

Water source data are composed of the following:

- Groundwater from the Basin
- Recycled water deliveries
- Surface water diversions
- Public water systems provide water from a mix of groundwater and surface water sources, unique to each system. Many major public water systems provided lists of parcels with a connection to their system.

Recycled Water and Surface Water Deliveries

Best available information for per-parcel recycled water deliveries come from 2022 and were provided by the City of Petaluma. The best available data for per-parcel surface water deliveries are reported by eWRIMS for the period spanning 2011-2022.

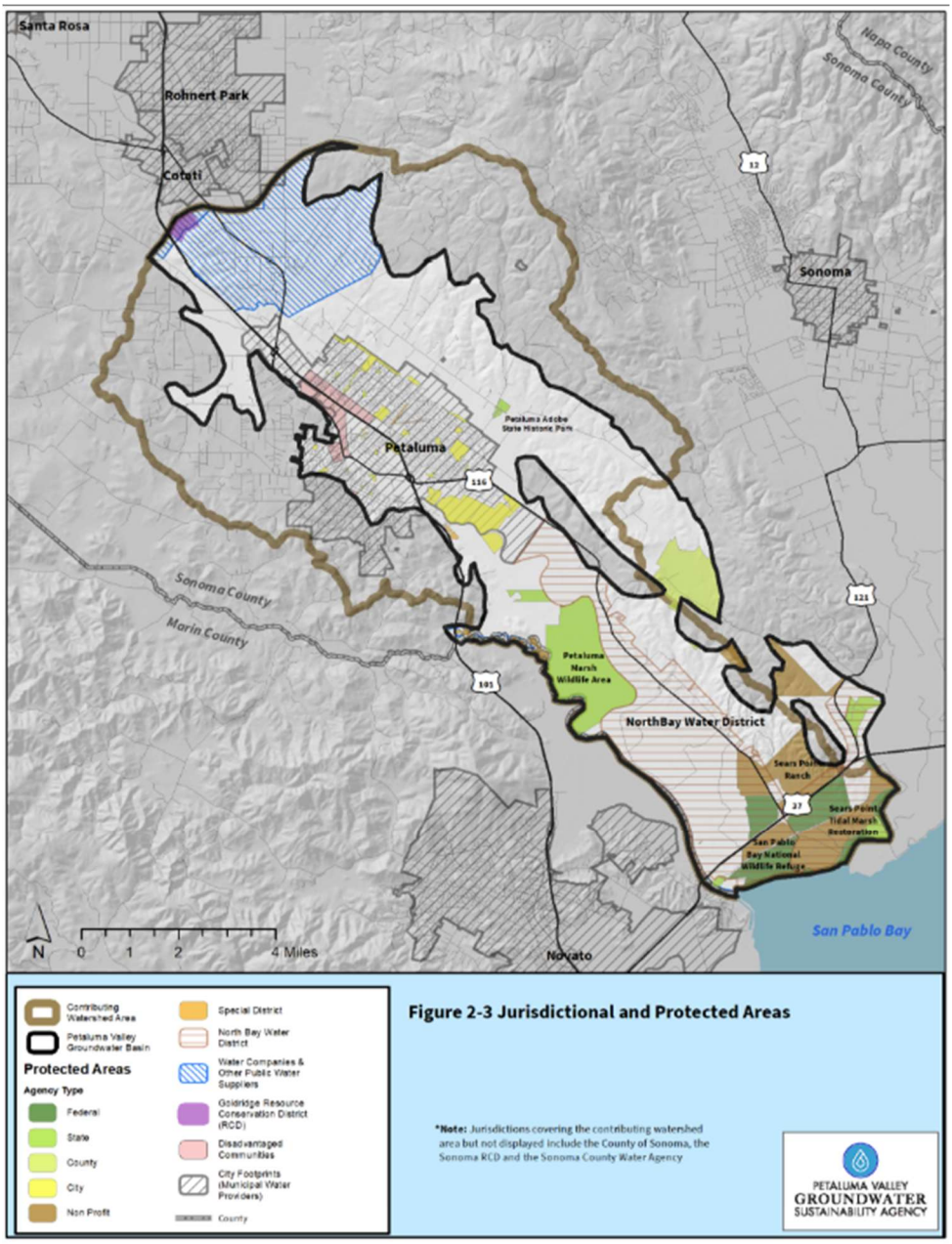
Parcels that receive recycled water or surface water deliveries tend to be zoned “agricultural.” All recycled and surface water data units were converted to AF/year per parcel and assigned to the respective parcels. Surface water use is estimated by processing the annual reported uses for the period from 2011 to 2022. The average value for years in which diversions are reported is used as the surface water available for parcel use. Though the data is commonly incomplete, an attempt was made to identify the place of use for each water right and apportion the diversion volume to the appropriate parcel or parcels.

These recycled and surface water deliveries count as a credit towards estimated groundwater use for agricultural or turf irrigation because it is assumed that these water deliveries offset water demand otherwise met by groundwater extraction.

Water Service Areas

Water service boundary areas for public water systems (Figure 3) were obtained from the State Water Resources Control Board and intersected with the parcel database to label parcels with a public water system connection. Municipalities and large public water systems within the GSA boundary provided a list of parcels that are connected to the water system where feasible, and this data was deferred to if available. It is assumed that residential and commercial water use demand determined from Assessor codes are met by the parcel’s water system connection if one is present, otherwise, it is assumed this water demand is met by groundwater. In other words, we assume that parcels outside of water system boundaries or without an explicit water system connection use groundwater to meet residential and commercial water demand. Furthermore, certain Use Codes (e.g., “Condominium Unit”, “City Building”, “Municipal Utility Property”, and so on) were assumed to be connected to public water.

Figure 3 – Public Water Service Areas



Urban Wells

The City of Petaluma provided a list of parcels within their service areas that are connected to public water, but also known or suspected of having a private water well. To calculate urban irrigation (a negligible fraction of the overall groundwater budget), we assume that if an urban well and public water connection are present, urban irrigation is 0.1 AF/year, in-line with prior assumptions from Raftelis, 2019.

Future Data Updates

Throughout this process the Agency has maintained an openness to improve data wherever possible. This perspective will provide an ability in the future to alter estimates, when possible, to better estimate groundwater use. The GUIDE Program is one example of this potential, as it may be used to improve the Agency's understanding of groundwater use on individual parcels and in user classes overall.

Another avenue for updating data is through the appeals process included in the Agency's rate ordinance. This process allows for property owners to furnish additional data that can be incorporated into future extraction estimates and fee levels for specific parcels.

Groundwater User Classes

To optimally organize groundwater use estimation, groundwater users are grouped into five primary rate classes in the Basin. Different approaches were used to estimate groundwater use for each rate class to achieve the most accurate estimation possible as discussed below.

Municipal and Other Public Service Providers

Public water supply systems are the only user class in the Basin for which reported data is available regarding groundwater extraction. The Division of Drinking Water (DDW) collects and reports annual surface and groundwater extraction for public water systems (DDW, 2021). This data, summarized in Table 7, was obtained and analyzed to obtain groundwater extraction from the period from 2013-2022 per water system. The full dataset of annual municipal extraction per public water system that was used to generate aggregate statistics are provided in Appendix C – Public Water System Extraction Data.

Importantly, reported public water system uses are not typically captured at the parcel scale, and are hence added to overall basin extraction estimates in the results. This two-step process (i.e., calculate parcel-based groundwater use, then add reported public system extraction) is preferred for two reasons: (1) we lack a sensible approach to spatially disaggregate reported DDW municipal extraction to individual parcels, and (2) within a fee and rate billing structure, public water systems will be directly charged for groundwater use rather than the parcels connected to those systems, which in turn pay the water purveyor.

As the methodology of this fee program was developed, the question remained of how to utilize these ongoing annual data to charge municipal and other public groundwater extractors. The municipal extraction can vary greatly in the Basin, dependent on rainfall, surface water availability, and other factors. Ultimately, a five-year average[3] was selected as the optimal method for allocating charges in this case. There are several benefits to this approach. First, using an average smooths out charges so that public water service suppliers do not incur large charges relative to previous years. Second, this contributes to revenue stability for the GSA, as changes in the cost allocation for this user class would not change as drastically from year to year as they would if a shorter range was used. As used in this report, "major" public systems are those that are either GSA member agencies or entities that extract more than 150 AF per year. Other public systems are grouped into the "minor" public system category.

Table 4 – Public System Extraction

Public System Extraction (AF)

NAME	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	5-Year Average
City of Petaluma	163.6	129.6	351.4	327.6	114.2	0.0	0.0	37.3	370.0	333.4	299.3
Minor Public Extractors	80.9	70.0	81.2	94.1	104.3	92.2	87.8	98.2	81.3	90.0	90.0
PUBLIC SYSTEM TOTAL	244.5	199.7	432.6	421.8	218.5	92.2	87.8	135.4	451.3	423.4	389.4

Table Notes:
- - Green highlight: years used for 5-year average; anomolous years omitted
- - Blue highlight: 5-year average is taken individually for each small system, then totaled. Value shown is not the average of the five recent years aggregate totals shown.

Agricultural and other Irrigation Users

Crop irrigation use represents a substantial portion of the total groundwater extraction in the Basin. The best available crop map (CA-DWR, 2020) information was used to assign crop-specific acreage to each parcel.

Groundwater extraction rates for crops are assumed to be equivalent to published values of crop consumptive demand for each crop. Crop consumptive demand parameters are based on agricultural practices specific to Sonoma County. Crop-specific consumption rates are shown in Table 5 including examples of the types of crops in each category. These consumption rates are multiplied by the acreage of each crop to arrive at the annual crop demand per parcel per crop (in AF/year). Note that pasture irrigation rates are negligible, and grain rates are zero because grain tends to be dry farmed in Sonoma County. Vine, grain, and pasture are the predominant crops in Sonoma County.

[3] A review of the municipal extraction data showed some anomalies. For instance, municipal wells may be shut down at times for servicing, repairs, or rehabilitation. To better represent the ongoing demand on the groundwater basin by municipal users, the rolling five-year average omitted anomalous years.

Table 5 – Sonoma Crop Types and Applied Water per Acre

Crop Classifications	DWR Definition	Sonoma Average Applied Water (AF / Acre)
Citrus & Subtropical	Grapefruit, lemons, oranges, dates, avocados, olives, kiwis, jojoba, eucalyptus and miscellaneous subtropical fruit	1.85
Deciduous Fruits & Nuts	Apples, apricots, cherries, peaches, nectarines, pears, plums, prunes, figs, walnuts and miscellaneous deciduous	1.83
Grain	Wheat, barley, oats, mescellaneous grain and hay, and mixed grain and hay	0
Pasture	Clover, mixed pasture, native pastures, induced high water table native pasture, miscellaneous grasses, turf farms, bermuda grass, rye grass and klein grass	0.04[A]
Truck Nursery & Berry Crops	Artichokes, asparagus, beans (green), carrots, celery, lettuce, peas, spinach, flowers nursery and tree farms, bush berries, strawberries, peppers, broccoli, cabbage, cauliflower and brussel spouts	1.78
Vinyard	Table grapes, wine grapes and raisin grapes	0.60[B]
Cannabis Outdoor[C]		2.00
Cannabis Indoor[C]		4.00

Table Notes:

A - This estimate applies for most pastures in the Subbasin. Pasture land that is irrigated is typically irrigated with recycled water. However, some Dairies in the subbasin use small amounts of groundwater for their operations. This amount is estimated at 0.04 AF per acre per year. This number was provided by a study completed by UC Co-Op Extension. This study is included as an appendix to the Raftelis 2019 Study.

B - GSA staff and staff from U.C. Cooperative Extension Staff consulted with a workgroup comprised of area vineyard owners and discussed whether this was a reasonable estimate of irrigation need for vineyards. While actual use varies from year to year, there was a consensus that this figure was within reason.

C - Cannabis crops were not included in the Raftelis 2019 Study and they are not yet mapped or defined by DWR. These categories have been included and acreage information is being compiled by GSA and member agency staff.

Parcels with large, irrigated turf or lawns were identified and incorporated into the Rate Study. This includes uses such as golf courses, schools, cemeteries, and other large landscape uses. The rural residential assumptions include irrigation of turf areas, and so small turf areas were not included as part of the turf calculations. This is accomplished by including no additional turf irrigation demand to rural parcels with mapped lawn areas smaller than 0.2 acres. Similarly, there is no additional turf irrigation for urban parcels with mapped lawn areas less than 0.5 acres. The 2012 DWR land use data was used to map irrigated turf areas. Mapped irrigated turf polygons with recycled water or surface water sources were removed. These estimates were refined by Agency staff contacting many of these parcel owners to confirm our assumptions of groundwater use. They were further refined in dealing with the systemic corrections that were addressed in the fall of 2022 and continue to evolve based on submitted GUIDE surveys. This information was incorporated into the extraction estimates on an individual parcel basis.

Offsets for the use of recycled water or surface water (discussed above) for agricultural and turf irrigation purposes are also presented in Table 6, referred to as "Alternative Water Sources." These offsets were deducted from the overall crop and turf demand estimates to determine the net extraction.

Table 6 – Agricultural and Turf Irrigation Extraction

Irrigation Demand Estimates

CROP TYPE	Acres	Irrig Rate (AF/acre)	Irrig Demand (AF)
Citrus & Subtropical	33.1	1.9	61.1
Deciduous Fruits & Nuts	22.1	1.8	40.5
Grain	4,596.9	0.0	0.0
Pasture	616.1	0.0	24.6
Truck Nursery & Berry	97.5	1.8	173.5
Vineyard	2,489.6	0.6	1,493.8
Cannabis (outdoor)	0.0	2.0	1.3
Cannabis (indoor)	0.0	4.0	0.0
Idle or Unknown	619.0	0.0	0.0
Multi-Crop Parcels	*(included above)*		
Turf Irrigation	49.3	3.5	172.5
Alternative Water Sources	*NA*	*NA*	*(644.6)*
IRRIGATION TOTALS	8,523.6		1,322.8

Note: Cannabis groundwater use is metered and reported.

Rural Residential, Commercial and Urban Well Users

Residential and Commercial water demand was determined by analyzing all unique Assessor Use Codes in the Sonoma County parcel database and assigning reasonable water uses (provided in Appendix B – Use Codes and Groundwater Assumptions). These determinations were made by Permit Sonoma agency staff and informed by prior fee and rate studies (Raftelis, 2019).

For residential uses, the primary assumption is that a single residence has a demand of 0.5 AF/year. This is based on the Raftelis Rate and Fee Study (June 11, 2019) for the Santa Rosa Plain GSA. That report states in Section 5.2.4:

> *Raftelis and staff used an estimate of 0.5 AF of water use per year for each developed rural residential parcel. This estimate is consistent with estimates for rural residential from several published sources and studies, as show [below].*

- *0.19 AFY per capita (assuming 2.5 residents per household = 0.48 AFY): Simulation of Groundwater and Surface Water Resources of the Santa Rosa Plain Watershed, Sonoma County, California (U.S. Geological Survey, 2014)*
- *0.5 to 0.75 AFY: County of Napa Water Availability Analysis Guidance Document (County of Napa, 2015)*
- *0.53 AFY: Canon Manor West Subdivision Assessment District Groundwater Study (Todd Engineers, June 2004)*
- *0.40 to 0.55 AFY (average of 0.47 AFY): Reported Groundwater usage per connection for nine public water suppliers, including mutual water companies, within Santa Rosa Plain Groundwater Basin (California State Water Resources Control Board – Division of Drinking Water, 2011 to 2017)*

For parcels containing more than one residential unit, additional units were assigned 0.25 AF/year (e.g., duplexes are assigned 0.75 AF/year of water use, 100-unit buildings are assigned 25 AF/year of water use, and so on).

Examples of commercial uses range from warehouses at 0.5 AF/year, to churches at 2.0 AF/year, dairies at 5.0 AF/year and hospitals at 10.0 AF/year. Similar assignments were made for all residential and commercial use codes and applied across the parcel database. It is assumed that parcels connected to a water system meet their demand via the water system. For parcels not connected to a water system, water demand for commercial and residential water use is assumed to be provided by a private water well. Note, unlike water demand for agricultural irrigation, surface water diversions or recycled water deliveries are not assumed to offset residential and commercial water use.

As discussed previously, for parcels with urban wells (parcels with a public water connection and a known or suspected private well) a small water use of 0.1 AF/year is assigned for landscape irrigation. This is consistent with the assumption made in Section 5.2.5 of the Raftelis Report:

> *The urban residential groundwater user class represents residential properties in areas served by water service providers that also have a well on the property. Raftelis and staff assumed that these wells would primarily be used for irrigation purposes. Based on the City of Santa Rosa's most recent water rate study, average residential winter usage is roughly 4,000 gallons per month. It is generally assumed that winter water usage correlates to indoor water demand due to the reduced irrigation needs in winter months. Santa Rosa's average residential year-round use is roughly 7,000 gallons per month. Indoor residential use is assumed to be constant rear-round, so the difference between average year round usage and average winter usage extrapolated to an annual amount of usage can be assumed to be average irrigation demand. This amount, roughly 36,000 gallons, corresponds to roughly 0.1 AF. Thus, it is assumed the urban residential groundwater users extract an average 0.1 AF per parcel per year for irrigation purposes.*

While the cited study was performed in the City of Santa Rosa, this adequately serves as a regional estimate of urban well usage.

Table 7 summarizes the estimated Rural Residential, Commercial, and Urban Well extraction.

Table 7 – Estimated Residential, Commercial and Urban Well Extraction

Other Classes						
Jurisdiction	Rural Residential		Commercial		Urban Wells	
	Parcels	AF	Parcels	AF	Parcels	AF
City of Petaluma	15	9.3	11	178.8	103	10.3
City of Rohnert Park	1	0.5	0	0.0	0	0
Unincorporated	1,103	639.5	86	253.0	4	13.4
TOTALS	1,119	649.3	97	431.8	107	10.7

Summary of Estimated Groundwater Extraction

Table 8 shows a summary of estimated groundwater extraction from the Basin by classification. In addition to the data shown in earlier tables, the overall extraction estimate includes an allowance for a reduction in overall extraction based on anticipated appeals by property owners and other updates and corrections to data that are likely to occur in the coming months and years. Due to the nature of the Basin producing a relatively small amount of groundwater extraction (and the resulting heightened effect of changes in extraction amount), this allowance is estimated to be 18% of overall extraction.

Table 8 – Summary of Estimated Basin Extraction

Extraction Summary (AF)	
Large Public Extraction	299.3
Small Public Extraction	90.0
Agriculture	1,150.3
Turf Irrigation	172.5
Rural Residential	649.3
Commercial	431.8
Urban Wells	10.7
Appeal Allowance (18%)	(504.7)
TOTAL BASIN DEMAND	2,299.2

Fee Calculation

The final rate calculation is the following:

$$\frac{\textit{Revenue Requirement (\$\$)}}{\textit{Total Extraction (AF)}} = \textit{Rate (\$\$ / AF)}$$

Including the revenue requirement and extraction data noted above, the rate is calculated to be $315.84 per acre-foot per year, as shown below.

$$\frac{\$726{,}178}{2{,}299.2\ \text{AF}} = \$\ 315.84\ \textit{per AF per Year}$$

The County contribution toward fee equalization is expected to bring this rate down for most groundwater users to the Santa Rosa Plain GSA rate of $43.65.

Fee Impacts

In the two following tables, two fee examples are shown; one for each of the two rates stated above (the initial $315.84/AF and the $43.65/AF pursuant to the Sonoma County Board of Supervisors commitment to fee equalization in this fiscal year).

Some examples of how this fee will impact property owners are shown in Table 9. Some rural properties may include a combination of agricultural irrigation and commercial or residential uses.

Table 9 – Annual Rate Examples

Annual Rate Examples				*@ $315.84/AF*	*@ $43.65/AF**
50-Acre Vineyard	*30*	*AF*	=	*$9,475*	*$1,309*
100-Acre Pasture	*4*	*AF*	=	*$1,263*	*$175*
100-Acre Grain	*0*	*AF*	=	*$0*	*$0*
5-Acre Food Crop (Truck)	*8.9*	*AF*	=	*$2,811*	*$388*
Rural Residential	*0.5*	*AF*	=	*$158*	*$22*

**$43.65 rate achieved through County Contribution / Fee Equalization*

A summary of fees is shown in Table 10 for major groundwater users and other user classes. Note that the difference in revenue produced by the full rate and the equalized rate will be made up through the County contribution to fee equalization[4].

Table 10 – Rate Impacts on Groundwater Users

User / Class	Extraction	% of Total	*@ $315.84/AF*	*@ $43.65/AF**
City of Petaluma	299.3 AF	13 %	$ 94,534	$ 94,534
Minor Public Extractors	90.0 AF	4 %	$ 28,438	*$ 3,930*
Agricultural Irrigation	1,150.3 AF	50 %	$ 363,295	*$ 50,208*
Turf Irrigation	172.5 AF	8 %	$ 54,491	*$ 7,531*
Rural Residential	649.3 AF	28 %	$ 205,059	*$ 28,340*
Commercial	431.8 AF	19 %	$ 136,388	*$ 18,849*
Urban Wells	10.7 AF	0 %	$ 3,379	*$ 467*
Appeal Allowance	(504.7) AF	(18) %	$ (159,405)	*$ (22,030)*
TOTAL	2,299.2 AF	100 %	$ 726,179	*$ 181,829*

** The $43.65 rate is subject to fee equalization and does not include the Valley of the City of Petaluma as currently proposed by the County Board of Supervisors. The exact contribution structure will be decided during June 2024 County budget hearings.*

[4] The County contribution for FY 2024-25 is predicted to be approximately $544,350 to equalize fees with the Santa Rosa Plain GSA. This amount will be determined during the June 2024 County budget hearings.

Appendices

Appendices include the following:

A. Budget Details

B. Use Codes and Groundwater Assumptions

C. Public Water System Extraction Data

Appendix A – Budget Details

The following table shows greater detail for the estimated costs of operating the GSA and implementing the Groundwater Sustainability Plan.

Table 11 is color-coded as follows:

- Green rows indicate costs that are expected to be funded by the fee program.
- Blue rows indicate costs that will be funded by grant awards.

Table 11 – Detailed Three-Year Implementation Budget

GSA Implementation Budget Catgory / Task	Year 1 2024-25	Year 2 2025-26	Year 3 2026-27	3-Year Total	Average Annual Cost	Notes
Operational Costs	$ 501,667	$ 516,667	$ 616,667	$ 1,635,000	$ 545,000	*Includes administration, insurance, accounting and auditing, GUIDE program, office supplies, legal services, community engagement, AC coordination, fee management, Agency coordination and consultations, GW level data collection (data management, compilation, evaluation; seepage runs; annual reporting; technical project management), seepage runs, reserve funds, legislative advocacy services, Rate and Fee Study refresh, fee study for permit review, grant administration, and grant applications.*
Operational Costs (Grant Funded)	$ 128,000	$ 193,500	$ -	$ 321,500	$ 107,167	
Addressing Data Gaps	$ 69,467	$ 34,733	$ 25,000	$ 129,200	$ 43,067	*Data gaps include Improving Data on Existing Water Wells; ISW/GDE Studies; GWL Network (Voluntary Wells); Aquifer System Properties Assessment; GWL Network (dedicated wells); ISW Monitoring Network.*
Addressing Data Gaps (Grant Funded)	$ 1,314,727	$ 657,363	$ -	$ 1,972,090	$ 657,363	
Planning for PMAs	$ 27,467	$ 13,733	$ -	$ 41,200	$ 13,733	*PMAs include WUE/Alternate Water Sources, RW Expansion Coordination & Study, ASR Coordination, Policy Options Development & Coordination, ASR Investigations, Farm Plan Coordination, SW capture and Recharge.*
Planning for PMAs (Grant Funded)	$ 705,400	$ 352,700	$ -	$ 1,058,100	$ 352,700	
GW Model Updates	$ 13,333	$ 6,667	$ -	$ 20,000	$ 6,667	
GW Model Updates (Grant Funded)	$ 106,667	$ 53,333	$ -	$ 160,000	$ 53,333	
5-Year GSP Update	$ -	$ 200,000	$ 100,000	$ 300,000	$ 100,000	
Contingency (2.5%)	$ 15,298	$ 19,295	$ 18,542	$ 53,135	$ 17,712	
Non-GSA Projects (Grant Funded)	$ 1,332,860	$ 666,430	$ -	$ 1,999,289	$ 666,430	
TOTAL	$ 4,214,885	$ 2,714,421	$ 760,208	$ 7,689,514	$ 2,563,171	
Grant Funded Costs	$ 3,587,653	$ 1,923,326	$ -	$ 5,510,979	$ 1,836,993	
Net Revenue Requirement	$ 627,232	$ 791,095	$ 760,208	$ 2,178,535	$ 726,178	*CPI Optionally Applied to Net Revenue Requirement Each Fiscal Year.*

Appendix B – Use Codes and Groundwater Assumptions

The following two tables show County Tax Assessor use codes, use code descriptions, and the total groundwater use applied to each use code.

Some of the use codes may be duplicated. This is due to the use code descriptions being entered into the County's database using different syntax and spelling.

Table 12 is for residential groundwater use, and Table 13 is for commercial groundwater use. For use codes that indicate agricultural land uses, the agricultural groundwater use is not included; it is included in the agricultural use calculations shown in previous tables.

Table 12 – Residential Use Codes and Groundwater Assumptions

Petaluma Valley - Residential Use Codes and Groundwater Assumptions		
Use Code	**Residential Use Code Desctiption**	**Use Assummptions (AF)**
	TOTAL - All Categories	
4	Wildcat subdivision lot	0.5
10	Single family dwelling	0.5
11	Condominium unit	0.5
13	Sfd non-conforming use	0.5
14	Sfd secondary use	0.5
15	Attached unit	0.5
16	Manufactured home on urban lot	0.5
17	Detached unit in a pud	0.5
18	Duet	0.75
19	Enforceably restricted dwelling	0.5
21	One duplex (one structure)	0.75
22	Two sfd on single parcel	0.75
23	Sfd w/granny unit	0.75
31	Single triplex 3 units/1 structure	0.75
32	3 units/2 or more structures	0.75
34	Single fourplex	1
35	4 units/2 or more structures	1
41	5-10 res units/1 structure	2.5
41	5-10 residential units/1 structure	2.5
42	5-10 res units/2+ structures	2.5
42	5-10 residential units/2+ structures	2.5
43	11-20 residential unit/1 structure	5
44	11-20 res unit/2+ structures	5
44	11-20 residential unit/2+ structures	5
45	21-40 units	10
46	41-100 units	25
47	Over 100 units	25
49	Enforceably restricted apts	5
51	Rural res/single res	0.5
51	Rural res/single residence	0.5
52	Rural res/2 or more res	1
52	Rural res/2 or more residences	1
54	Rural res w/misc res imp	0.5
54	Rural residential w/misc residential imp	0.5
55	Rural res/secondary use	0.5
56	Rural res/manufactured home	0.5
57	Rural res sfd w/granny unit	0.75
57	Rural residential sfd w/granny unit	0.75
63	Motel/50 units or less w/kitchen	10

Use Code	Residential Use Code Desctiption	Use Assummptions (AF)
65	Motel/50 units or less w/shops	5
66	Bed & breakfast inn	2
80	Common area w/o structures	0
80	Common area without structures	0
90	Manufactured home park	5
92	Manufactured home park w/overnite facilities	5
93	Trailer park (resort type)	5
95	Taxable manufactured home/rented site	0.5
401	Land converting to vineyard/orchard w/residence	0.5
411	Irrigated orchard w/residence	0.5
421	Irrigated vineyard w/residence	0.5
423	Irr vineyd/premium w/res	0.5
423	Irr vineyd/premium w/residence	0.5
425	Irrigated vineyard w/manufactured home	0.5
426	Irr vineyd/premium w/manufactured home	0.5
441	Irrigated truck crops w/res	0.5
461	Irrigated pasture w/residence	0.5
471	Dairy w/residence	0.5
476	Dairy w/manufactured home	0.5
481	Chicken ranch w/residence	0.5
483	Other poultry ranch w/residence	0.5
485	Chicken ranch w/manufactured home	0.5
501	Horse ranch w/res	0.5
501	Horse ranch w/residence	0.5
502	Horse ranch w/2 or more res	1
502	Horse ranch w/2 or more residences	1
506	Horse ranch w/manufacturedhome	0.5
511	Non-irrigated orchard w/res	0.5
511	Non-irrigated orchard w/residence	0.5
521	Non-irrigated vineyard w/res	0.5
521	Non-irrigated vineyard w/residence	0.5
523	Non-irr vineyd/varietals w/res	0.5
523	Non-irr vineyd/varietals w/residence	0.5
531	Field crops w/residence	0.5
531	Field crops with residence	0.5
541	Pasture w/residence	0.5
541	Pasture with residence	0.5
546	Pasture w/manufactured home	0.5
546	Pasture with manufactured home	0.5
555	Mixture w/residence or manufactured home	0.5
561	Hardwoods & chaparral w/residence	0.5
561	Hardwoods and chaparral w/res	0.5
940	School district property	0

Table 13 – Commercial Use Codes and Groundwater Assumptions

Petaluma Valley - Commercial Use Codes and Groundwater Assumptions		
Use Code	Commercial Use Code Desctiption	Use Assummptions (AF)
	TOTAL - All Categories	
110	Single story store	2
111	Multiple story store	2
112	Multiple stores in 1 structure	2
113	Store w/res unit or units	2
114	Convenience store	2
119	Alternate use stores	2
121	Multiple combo/stores & office	2
122	Single live/work unit	2
123	Live/work units	2
129	Alternate use store/off combo	2
140	Grocery store	2
141	Supermarket	2
142	Liquor store	2
150	Regional shopping center	2
151	Community shopping center	2
152	Neighborhood shopping center	2
155	Indiv parcel/neighborhd shop ctr	2
170	One story office building	2
171	Two story office building	2
172	3-or-more story office bldg	2
177	Multi-offices/residential units	2
179	Alternate use office bldgs	2
190	Medical offices	5
191	Dental offices	5
193	Veterinary hospitals	5
199	Alternate use prof bldgs	2
201	Misc multiple use/none dominat	2
201	Misc multiple use/no dominate	2
202	Com'l use/no other category	2
210	Restaurant	2
211	Drive-in restaurant	2
213	Cocktail lounge bar	2
219	Alternate use	2
250	Full service station	2
251	Self service sta/no repair facilities	2
253	Truck terminal	2
254	Bulk plant	2
255	Service station/mini-mart	2
259	Alternate use service stations	2
260	Auto sales w/service center	2
261	Auto sales w/o service center	2

Use Code	Commercial Use Code Desctiption	Use Assummptions (AF)
262	Used car lot	2
263	Other sales: trailers, mbh, rv	2
270	Farm or const mach sales/serv	2
280	Auto & truck repair & maint	2
280	Auto and truck repair & maint	2
281	Specialty shop (tires, brakes)	2
281	Specialty shop (tires,brakes)	2
290	Retail nursery	5
291	Wholesale nursery	5
310	Light manuftg & industrial	2
311	Light manufctrg & warehousing	2
320	Warehousing/active	0.5
321	Warehousing/inactive	0.5
323	Warehousing yard	0.5
329	Mini-warehouse	0.5
330	Lumber mill	2
331	Retail lumber yard	2
332	Specialty lumber products	2
351	Meat products	2
352	Winery	2
353	Winery w/vineyards	2
353	Winery with vineyards	2
354	Other food processing plants	2
360	Feed and grain mill	2
361	Retail feed and grain sales	2
370	Heavy industry	2
380	Mineral processing	10
381	Sand & gravel, shale	10
381	Sand and gravel, shale	10
390	Airport/private	2
391	Industrial common area	2
393	Industr'l in no other category	2
470	Dairy	5
471	Dairy w/residence	5
476	Dairy w/manufactured home	5
480	Chicken ranch	2
481	Chicken ranch w/residence	2
482	Other poultry ranch	2
483	Other poultry ranch w/residence	2
485	Chicken ranch w/manufactured home	2
500	Horse ranch	2
501	Horse ranch w/res	2
501	Horse ranch w/residence	2

Use Code	Commercial Use Code Desctiption	Use Assummptions (AF)
502	Horse ranch w/2 or more res	2
502	Horse ranch w/2 or more residences	2
506	Horse ranch w/manufacturedhome	2
591	Horse Breeders	2
592	Equestrian Facilities	2
602	Health spa or club	2
611	Recreational center	2
631	Arcades & amusement center	2
640	Club/lodge hall	2
660	18 hole public golf course	2
662	Country club	2
690	Privately owned park	2
710	Religious building	2
711	Prop used along w/rel bldg	2
721	Parochial school	2
750	Sfd converted to residential care facility	0.5
750	Sfd converted to res care fac	0.5
751	Rest home	2
752	Home for handicapped (physical, mental, etc.)	2
753	Assisted care facility	2
770	Cemetery	0.5
771	Mortuary/funeral home	0.5
780	Volunteer fire department	0.5
810	Sbe-valued utility	0.5
811	Utility water company	0.5
812	Mutual water company	0.5
813	Cable tv	0.5
814	Radio & tv broadcast site	0.5
903	Miscellaneous federal property	2
911	State building	2
913	State pk/other recreation fac	2
916	Miscellaneous state property	2
921	County building	2
923	County park/other rec facility	2
924	County hospital	10
931	City building	2
933	City park/other rec facility	2
934	Municipal utility property	0
941	Fire district	2

Appendix C – Public Water System Extraction Data

Table 14 contains a list of all public water systems and their groundwater extraction data from 2013 to 2022. The major system providers have been tabulated in a separate 5-year average column from the minor systems. The totals for all columns are shown at the bottom.

Table Notes:

- Public systems are shown with certain entries highlighted in green. These are the years that were included in the 5-year average for each system.
- Public systems are shown with entries highlighted in tan for years in which no data was available. In those cases, the 5-year average omitted those years to the extent possible.
- In some instances where a system used no groundwater in a given year, this number was omitted from the average in order to accurately capture typical use.

Table 14 – List of Public Water Providers

PWSID	System Type	Public System Name	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Minor Systems 5-Year Average	Major Systems 5-Year Average
CA4901214	Minor	ADOBE CHRISTIAN CHURCH	0.71	0.82	0.69	0.44	0.56	0.79	0.65	0.43	0.67	0.67	0.64	
CA4901027	Minor	CINNABAR THEATER	0.61	0.76	0.48	0.49	0.33	0.73	0.40	0.41	0.30	0.21	0.41	
CA4900667	Minor	COLLEGE PARK MUTUAL WATER COMPANY	52.87	44.44	41.71	43.79	55.26	43.69	47.12	60.60	39.99	50.30	48.34	
CA4910304	Minor	CSP-PETALUMA ADOBE STATE HISTORIC PARK	1.00	0.81	0.83	1.03	0.76	3.67	2.07	0.94	0.89	0.68	1.65	
CA4901286	Minor	KELLER ESTATE WINERY		1.02	1.03	1.13	0.88	0.65	0.89	1.12	1.33	1.78	1.15	
CA4900737	Minor	KOA - PETALUMA	20.28	13.34	18.20	23.09	27.24	26.25	24.70	28.20	25.22	25.03	25.88	
CA4901094	Minor	LOMBARDI'S DELI & BBQ	0.00	0.36	2.14	0.65	0.69	0.76		0.80	0.81	0.81	0.77	
CA4901079	Minor	PETALUMA LIVESTOCK AUCTION YARD		0.85	0.72	0.88	0.91	0.90	0.85	0.50	1.39	1.38	1.00	
CA4910006	Major	PETALUMA, CITY OF	163.60	129.62	351.35	327.63	114.22	0.00	0.00	37.26	369.96	333.39		299.31
CA4901297	Minor	PORT SONOMA MARINA	2.23	2.95	10.15	2.15	1.74	1.20	1.55	1.42	1.89	1.56	1.52	
CA4901120	Minor	RAM'S GATE WINERY	2.40	2.49	0.16	2.43	0.00	0.00	1.49	0.97	1.11	1.15	0.94	
CA4901080	Minor	SPEEDWAY SONOMA LLC	0.32	0.67	3.41	5.91	4.72	3.78	4.03	0.00	0.35	0.33	1.70	
CA4901408	Minor	WESTSIDE STORAGE WATER SYSTEM	0.42	0.58	0.76	1.02	0.71	0.26	0.25	0.46	0.36	0.26	0.32	
CA4901139	Minor	WILLOWBROOK ALE HOUSE	0.07	0.07	0.03	0.04	0.04	0.04	0.00	0.24	0.43	0.33	0.21	
CA4901300	Minor	WINDY HILL WINERY	0.00	0.88	0.88	11.08	10.46	9.51	3.76	2.08	6.59	5.49	5.49	
		TOTALS	**244.5**	**199.7**	**432.6**	**421.8**	**218.5**	**92.2**	**87.8**	**135.4**	**451.3**	**423.4**	**90.0**	**299.3**