

Groundwater Sustainability Plan – Napa County Synopsis for the Membership – Friends of the Napa River

Recently, the Napa County Board of Supervisors, acting as the Napa County Groundwater Sustainability Agency (NCGSA, or GSA), consistent with State requirements, unanimously approved and adopted the Napa Valley Sub-Basin Groundwater Sustainability Plan (GSP) and forwarded the Plan to the California Department of Water Resources (DWR) for its review.

What does that mean for you, for the Napa community, the aquifer, the Napa River, its tributaries, and its watershed? What triggered this effort? Does the Napa Valley have a groundwater problem? Are we adequately prepared for climate change, for growth, and the current drought? What is the process and what happens next? What might be the impacts of the implementation of the Plan? We will try to answer these and other questions in a few brief pages. More detail is available at the County's Groundwater website and at the California Dept. of Water Resources' website.

In 2014, the Legislature enacted the **Sustainable Groundwater Management Act (SGMA)**, which provides a framework for the sustainable management of groundwater resources, preferably at the local level. The SGMA mandated that **Groundwater Sustainability Plans (GSP's)** be prepared for State-defined groundwater basins and sub-basins in California. (Out of a total of 515 Basins, 94 were deemed high-and medium-priority by DWR, as determined by the number of wells, their importance as a source of water, and the value of the crops grown with groundwater in each Basin.) One of those identified aquifers is the "Napa Valley Sub-basin", which encompasses the floor of the Napa Valley. Further, the SGMA mandates that a **Groundwater Sustainability Agency (GSA)** be established to prepare and manage an adopted GSP. The Napa County Board of Supervisors appointed itself to act as the requisite local GSA, as allowed by the California Water Code. Here is a link from DWR to explain more: <https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Groundwater-Sustainable-Agencies>.

The Board of Supervisors then appointed a **Groundwater Sustainability Planning Advisory Committee (GSPAC)** comprised of twenty-five (25) citizen stakeholders. Two Friends' Board Members served on the GSPAC: David Graves was elected Chair and represented the Napa Sanitation District; and Bob Zlomke, retired Resource Conservation District (RCD) hydrologist, represented Friends. The GSPAC met roughly twenty times over a nineteen-month period to deliberate Plan content. By Committee member agreement, all actions taken during the drafting of the Plan and adoption of the Draft Plan itself required a super-majority vote of 2/3 of the member present. (In fact, many votes on Plan elements were unanimous.) The Committee approved its final plan by a super-majority vote of 18-4.

A central feature of SGMA is that all Plans must consider all uses and users of groundwater in devising their Plans. In this framing, the environment is a 'user' with claims as legitimate as farmers or homeowners, and one of the 'uses' of groundwater that must be considered is for the sake of the environment e.g. to maintain stream flow and to nourish groundwater-dependent ecosystems. This, of course, is a key concern for Friends as related to the health of the river, its streams, and the natural environment.

Groundwater: What is it and Why is it Important?

Groundwater is water that exists underground in saturated zones beneath the land surface. The upper surface of the saturated zone is called the water table. Contrary to popular belief, groundwater does not form underground rivers. It fills the pores and fractures in underground materials such as sand, gravel, and other rock, much the same way that water fills a sponge. If groundwater flows naturally out of rock materials or if it can be removed by pumping (in useful amounts), the rock materials are called aquifers.

Groundwater in the NV Sub-basin serves agriculture, wineries, residences, groundwater dependent ecosystems, municipal and public water systems, and disadvantaged communities.

Napa Valley Sub-basin; Its Limits and Why Chosen:

California Department of Water Resources (DWR) defined the limits of the Sub-basin for purposes of the GSP and identified it as a high priority sub-basin. [The designation as a high priority basin reflects DWR's numerical score of the importance of the aquifer to the local community based on the number of wells, the importance of groundwater economically, the number of households dependent on groundwater for domestic purposes, and its use for municipal purposes. The designation is *not an indication of the state of the aquifer*. It covers the Valley floor from Soscol Creek on the south to Kimball Reservoir north of Calistoga. The hydro-geology of the Sub-basin determines its boundaries. The water in the aquifer of the Sub-basin is to a greater or lesser extent interconnected; the groundwater in the hillsides may flow toward the Sub-basin as subsurface flow or it may be connected by "gaining" streams that flow into the Sub-basin.

Groundwater Level Measurements / Wells:

Groundwater levels are currently monitored in 77 (+/-) wells with an additional 16 wells planned. Levels in many of the wells have been measured and recorded for decades by Napa County, the Department of Water Resources, and the US Geological Survey, which help provide historical data for long term assessments of the groundwater conditions.

Per the GSP, since 2015, groundwater levels have been monitored at 77 wells or sites in the Napa Valley Sub-basin:

“Groundwater trends and conditions in the Napa Valley Sub-basin are largely dependent upon precipitation inputs; therefore, groundwater levels are reviewed in the context of seasonality (spring and fall) and water year types. Groundwater level trends in the Napa Valley Sub-basin are stable in many of wells with long-term groundwater level records, however, several wells located near the Napa Valley Sub-basin margin in the northeastern Napa area, southwestern Yountville area, and southeastern St. Helena area show periods of declines in groundwater levels, particularly during times of drought.”

Monitoring Agency/Program	Well Count	
	Historical (pre-2015)	Recent (2015 to Present)
California Department of Water Resources	95	4
County of Napa	12	60
State Water Resources Control Board, GeoTracker	60	9
U.S. Geological Survey	93	4
<p>Note: Some wells monitored historically may have data reported by more than one agency or program. Historically monitored wells include all wells measured at least once since groundwater level documentation began.</p>		

The GSP noted that, “Groundwater conditions evaluated in this GSP do not account for the drought conditions experienced recently beginning in 2020.” It went on to further note that these will be re-evaluated during annual reporting required by the GSP; the next Annual Report for the Water Year ending Sept. 30, 2021 will be submitted to the GSA and DWR in late March 2022.

Periodic measurement and recording of static water levels (the level after a well’s pump has been idled and the well has equilibrated with the nearby aquifer) in wells whether agricultural, winery, or residential, is a key metric of the state of the aquifer. The GSP recommends, in “*Supplemental Actions*”, to add to the number of production wells that are monitored, in addition to drilling more wells whose sole purpose is to monitor aquifer water levels and the connection between the aquifer and nearby streams. In addition, the Plan calls for the adoption of improved well metering and reporting standards.

It is also important to note that measurements and assessments of groundwater go far beyond just their levels. Here is a listing from the GSP showing the types and numbers (existing and planned) of measuring sites:

1. Groundwater level monitoring: 56 wells (16 more planned)
2. Groundwater quality monitoring: 37 wells (16 more planned)
3. Groundwater storage change monitoring: 26 sites (10 more planned)
4. Seawater intrusion monitoring: 16 wells (2 planned)
5. Surface water quality monitoring: 7 sites (4 more planned)
6. Stream stage and stream discharge monitoring: 20 sites (10 Sites to be upgraded)
7. Interconnected surface water monitoring: 16 wells (8 more planned)
8. Groundwater dependent ecosystem monitoring: 18 wells (3 more planned)
9. Land surface elevation monitoring: 8 land surface elevation benchmark sites and 15 well sites.

Interplay between Napa River & Tributaries and GW Aquifer:

Surface water and groundwater are interconnected throughout much of the Sub-basin. Groundwater discharges into stream channels in the Sub-basin when the groundwater elevation is greater than the elevation of water in the channel. As many of us have noted in these last drought

years, portions of the Napa River and its tributaries have been dry and/or intermittent. This is clearly a combination of lack of surface water flow but also due to a dropping of the groundwater level near the river and its feeding streams. Is that lower groundwater level due only to lack of rainfall or has it also been impacted by groundwater pumping? That, we hope, will be answered as the GSP is implemented over the coming years.

Are these unprecedented conditions? In a comprehensive look at the response of the aquifer to low precipitation years, RE Faye, a USGS hydrologist writing a comprehensive report in 1973 on the Napa Aquifer, analyzes precipitation records and well levels and calculates in effect a break-even amount of annual rainfall—and we have been below that level in the last two water years. Clearly, these are conditions of great concern for Friends.

What is a “Water Budget” and how is it Determined?

A central part of the Plan is the **Napa Valley Integrated Hydrologic Model (NVIHM)**. Here is a link to a full description of its role in the Plan: <https://bit.ly/3rOZsRF>. In very basic terms, the NVIHM is an attempt to account for all the water in the watershed: the rainfall onto the entire watershed, the water that flows out of the Sub-basin in the river as surface and sub-surface flow, the amount used (transpired) by crops and vegetation in the entire watershed, etc. Thankfully, there is a picture in the link to make the reader’s job easier in understanding all that is accounted for.

How is Climate Change Taken into Account?

The following is excerpted from the GSP Executive Summary:

“Projected Sub-basin conditions were evaluated using three scenarios that rely on best-available information for future population, water supplies, land use, and climate change. Climate change projections were informed by discussions and coordination with DWR, USGS, and Pepperwood Preserve staff. The climate projections use outputs from global climate models utilized for the California Fourth Climate Change Assessment (Pierce et al., 2018) that align with climate scenarios referenced in DWR guidance for GSP development.”

Climate change impacts are real as all of us can attest and see for ourselves. Impacts on the natural environment were particularly noted in the Nature Conservancy comment letter dated December 7, 2021:

“The effects of climate change will intensify the impacts of water stress on GDEs (Groundwater Dependent Ecosystems), making available shallow groundwater resources especially critical to their survival. Condon et al. (2020) shows that GDEs are more likely to succumb to water stress and rely more on groundwater during times of drought. When shallow groundwater is unavailable, riparian forests can die off and key life processes (e.g., migration and spawning) for aquatic organisms, such as steelhead, can be impeded.”

The four members of the GSPAC who voted against the final plan argued that that GSP did not adequately address climate change and that the data used was outdated, especially given the current drought conditions. The Nature Conservancy comment letter appeared to note that, in its opinion,

the GSP had done an appropriate job of taking climate change into account. It is clear from these divergent points of view that more work needs to be ongoing to incorporate our evolving understanding of climate change impacts as the GSP moves forward. The guidance provided by DWR before the Plan update in 2027 will be very important. In addition, there will be Reports of the condition of the Sub-basin submitted annually; the next one for the Napa Sub-basin will be presented in late March 2022 for the Water Year ending Sept. 30, 2021. Here is a link to past Annual Reports: <https://bit.ly/3BxPXd4>.

How is the GSP enforced?

The Department of Water Resources is the State agency charged by SGMA to evaluate Sustainability Plans and ensure that appropriate monitoring is ongoing to prevent any of the six Undesirable Results (URs). The URs are: decrease in groundwater storage, chronic lowering of groundwater levels, seawater intrusion, land subsidence, significant and unreasonable degradation of groundwater quality, and depletion of interconnected surface waters; in each case they key issue is to identify any significant and unreasonable adverse impacts on beneficial uses of the surface water, e.g. insufficient water for groundwater-dependent ecosystems.

All Groundwater Sustainability Agencies responsible for their respective Basins and Sub-basins in the State were obliged to submit a sustainability plan to DWR that would bring each basin into sustainability by the year 2040. (There are 260 GSA's in California administering over 140 Basins and Sub-basins.) The Basins determined to be in overdraft were obliged to submit their Plans by January 31, 2020; the remainder (like Napa) were obliged to submit their Plans by January 31, 2022. The California Dept of Water Resources has two years after submittal to evaluate the submitted plan. The submitted plans can be viewed at DWR's "SGMA Portal": <https://sgma.water.ca.gov/portal/> and comments from the public or interested parties can be submitted now that it is posted on the Portal; there is a 75-day window for submittal of comments, but DWR has indicated they will accept comments as they are submitted after that time.

Next Steps / Implementation:

The GSP is intended to be a living, dynamic document that will guide expanded monitoring, including efforts to identify and fill data gaps, and implementation of projects and management actions as needed to achieve the Napa Valley Sub-basin sustainability goal. Upon GSP adoption, NCGSA staff will commence the process of forming a Technical Work Group (TWG) with appropriate qualifications to assume the responsibility and the timely opportunity to advise the NCGSA. The Technical Work Group concept, ratified by the NCGSA at its February 8, 2022 meeting, will be involved with implementation of the GSP, and include, among other things, a focus on data gaps and adaptive management. Adaptive management approaches will be used during GSP implementation, including forward looking monitoring, water budget refinements, reporting and outreach, evaluation of sustainable management criteria, and assessments of the effectiveness of projects and management actions.

The role of the TWG, proposed under the draft plan, is crucial; it must have as much independence as its advisory role permits. Indeed, it needs to operate outside of political influence. The TWG needs to take the lead on such issues as the development of an Adaptive Management Protocol, enhanced well and stream monitoring, detailed imposition of Proposed Management Actions, and

possible climate science updates. To be thorough, effective, and transparent, the group should only include experts in the science-based specialized fields.

Points of On-Going Concern:

- DWR's direction for creation and implementation of the GSP was specific to the Napa Valley groundwater subbasin. For long-term sustainability of our water resources, is that sufficient for a fifty-year planning horizon for the Valley and the Napa River watershed? We know that the sub-basin aquifer, the river, its tributary streams, and the overall watershed are intrinsically linked and need to be considered together either directly or indirectly.
- Are we asking the right questions? Is Napa County/the GSA collecting and analyzing all of the information needed to sustainably manage the Sub-basin? Will full monitoring needed to understand the surface-groundwater interaction occur? Will our improving understanding of the Sub-basin require changes in how we manage it?
- As noted above, creation of an independent, science-based Technical Working Group (TWG) is imperative. Friends will continue to monitor and advocate for those high standards.
- The answer to all the above is that adaptive management is at the core of the Plan's success. Having laid out a conceptual framework with the creation of this Plan, the work of collecting and analyzing information on all aspects of the Sub-basin will begin this spring.

Where can one find Additional Information?

Here is a link to the GSP's Executive Summary:

https://www.countyofnapa.org/DocumentCenter/View/23149/GSP_Executive-Summary?bidId=

Attached, as well, is the November 2021 document entitled, "*Napa Valley Sub-Basin Groundwater Sustainability Plan Summary*". We think that it does a good job of explaining the complexities of the GSP in understandable and cogent language.