

Date: July 29, 2021

To: Drew McIntyre, Chair Technical Advisory Committee

From: Jay Jasperse, Sonoma Water

**Re: Santa Rosa Plain Drought Resiliency Project**

On May 11, 2021, Sonoma County Water Agency (Sonoma Water) presented to its Board of Directors (Board) an overview of the status of the drought in Sonoma County, and specific actions underway or planned by Sonoma Water in response to the drought emergency. The Board directed Sonoma Water to return to the Board to seek authorization and funding to expedite design and environmental review for activating one of its Santa Rosa Plain wells to assist in addressing drought impacts. As described below, Sonoma Water has three groundwater wells in the Santa Rosa Plain groundwater basin that were installed to provide supplemental water supply during droughts and as a backup during other emergencies such as seismic events. These wells have been inactive since 2016 due to changes in state regulations regarding disinfection contact time requirements. On May 18, 2021, the Board approved a budget resolution providing \$400,000 of funding from the County of Sonoma to support this effort. The proposed project will bolster water supply reliability for Sonoma Water's water contractors, and address water shortages impacting the agriculture sector and domestic uses in areas where groundwater supplies are diminished. In addition, it will help advance implementation of the Sustainable Groundwater Management Act by promoting conjunctive management of surface and groundwater in the basin.

**Background – Santa Rosa Plain Wells**

The three Sonoma Water Santa Rosa Plain production wells -- which were originally drilled in 1977 in response to the historic 1976-77 drought -- are a critical component of the regional drought and seismic emergency water shortage resiliency strategy. All three Sonoma Water production wells are located in the Santa Rosa Plain. One well is near Sebastopol Road, one well near Todd Road and one well is near Occidental Road. The Sebastopol and Occidental Road wells were re-drilled in the 1990's. The wells have been used during times of drought since 1977 and, in addition, were operated on a continuous basis from 1999 to 2009. The most recent use of the wells was during the recent 2012-2015 drought. During previous time periods when Sonoma Water's Santa Rosa Plain production wells were in more consistent use, no impacts to the City of Sebastopol's wellfield is known to have occurred. This includes the 1999 to 2009 time period when pumping from Sonoma Water's wellfield averaged approximately 3,600 acre-feet each year. In recent years, the wells have not been used given new state regulatory requirements related to chlorine disinfection contact time.

## **Drought Resiliency Project**

In general, the Santa Rosa Plain Drought Resiliency Project (Project) consists of two phases: (1) Phase 1 will utilize the aforementioned County funding and entails completing the necessary engineering, permitting and construction activities to activate the Todd Road well to meet new state disinfection requirements; and (2) Phase 2 involves developing the planning and pre-design activities necessary to seek anticipated state drought emergency funding to activate the remaining two Santa Rosa Plain wells in addition to adding recharge capabilities via groundwater banking. Sonoma Water intends to pursue State drought emergency funding for Phase 2 project activities. It is important that a recharge component be included as part of the project to ensure that groundwater sustainability is maintained. These collective activities are intended to result in increased drought resiliency by helping drought impacted communities and assist in longer-term groundwater management activities under the Sustainable Groundwater Management Act. Based on historical water production data, the Todd Road well is estimated to provide about 1.4 million gallons/day (MGD), of which up to approximately 1 MGD could be used to support water contractor operations. Sonoma Water has formed an internal team to coordinate its activities in addition to facilitate collaboration with partners in implementing the project. A document detailing project information is attached to this memo.

## Santa Rosa Plain Drought Resiliency Project

The Santa Rosa Plain Drought Resiliency Project would provide water to Sonoma Water customers by re-establishing the functionality of a groundwater production well in the Santa Rosa Plain. In addition, the project will help drought-impacted farmers by providing supplemental water to the City of Petaluma (a Sonoma Water customer) for its water-hauling program.

Through a policy known as ‘conjunctive use’, Sonoma Water increases its use of groundwater during droughts to offset declines in surface water. During wet or normal water years, Sonoma Water reduces groundwater use to allow aquifers to recover. Increasing water conservation efforts during droughts is a third component of conjunctive use.

The project would also add recharge capacity for at least one of the production wells. This would allow the well to work in ‘reverse’. Instead of pumping water out of the ground, the well would receive treated, high-quality drinking water when it’s plentiful. The water would be stored in underground reservoirs known as aquifers. This water would recharge the aquifer, and would be available for use during future droughts and emergencies.

### Frequently Asked Questions about the Project

#### What is the purpose of the Santa Rosa Drought Resiliency Project?

The Santa Rosa Plain Drought Resiliency Project has several goals, including:

- Providing emergency water to agriculture and people whose water sources have dried up;
- Providing additional drinking water to cities and water districts in the North Bay, as they reduce reliance on Russian River water during this unprecedented drought period; and
- Adding the capability to recharge the Santa Rosa Plain basin with winter/spring water to ensure that sustainable groundwater conditions are maintained and to provide increased resiliency during future droughts or other emergencies.

#### What is the Santa Rosa Drought Resiliency Project?

This two-phased project will do the following:

- Phase 1 consists of upgrading the water treatment at one of Sonoma Water’s Todd Road groundwater production wells in the Santa Rosa Plain.
- This upgrade will take place in 2021, and will result in an additional 200,000 to 500,000 gallons a day (approximately) to be delivered to Petaluma and potentially other Sonoma Water retail water contractors. Petaluma (and possibly other water contractors) will provide this water to farmers and ranchers to maintain their agricultural operations and to people who have lost domestic water supply and need water for health and safety in areas experiencing severe water shortages. The well could also produce an additional 1 million gallons daily (approximately) for Sonoma Water’s water contractors to help alleviate drought impacts to their customers.
- Phase 2 will consist of:
  - Upgrading the water treatment and piping for the other two wells so they can be used during extreme droughts or times of emergency (for example, earthquakes); and
  - Adding recharge capabilities to one of Sonoma Water’s three wells (or constructing a new recharge aquifer storage and recovery [ASR] well). This step will allow the Santa Rosa Plain groundwater basin to be recharged with drinking water from the Russian

River during winter and spring (when its plentiful) to replace water pumped during the emergency. This water will be stored underground until it's needed.

The initial activities of Phase 2 will be to develop the details of the project components in order to apply for emergency drought funding opportunities. The ASR project requires planning, design, permitting and funding. In response to the severe drought conditions, Sonoma Water is initiating the planning portions of Phase 2 now to determine the information needed to design the project, address permitting requirements, and pursue funding opportunities.

#### Why is Sonoma Water proposing to use groundwater wells during a drought?

The three Santa Rosa Plain production wells – which were originally drilled in 1977 in response to the historic 1976-77 drought – are a critical component of the regional drought and seismic emergency water shortage resiliency strategy.

Known as 'conjunctive use,' this strategy increases groundwater use during dry years while relying more heavily on Russian River water during wet and normal years. Conjunctive use allows the groundwater aquifers to recover and recharge during wet years. To that end, the production wells were last relied upon during the 2012-2015 drought years when they provided an average of 766 acre-feet per year to help reduce Russian River water usage during those dry years.

Since 2015 the wells have primarily been offline and averaged only 20 acre-feet of production each year, allowing the local aquifer system to fill back up and be ready to help us get through future dry times like now. The current project is expected to pump less than the average annual amount pumped during the 2012-2015 drought period. For comparison purposes, Sonoma Water delivers an average of about 45,000 acre feet of Russian River water to its customers.

#### Where are the production wells located?

All three Sonoma Water production wells are located in the Santa Rosa Plain. One is near Sebastopol Road, one near Todd Road and one is near Occidental Road.

#### Will pumping from the Santa Rosa Plain groundwater wells affect the well that I use for my home?

Most home wells are connected to the shallower aquifer in the Santa Rosa Plain Basin. Sonoma Water's production wells are deep (794 feet to 1,060 feet), and draw water from the deep aquifer, not the shallower aquifer. Monitoring from Sonoma Water's network of 18 monitoring wells during the last drought period when the production wells were more consistently in use found that shallower wells weren't affected by the pumping.

#### How will pumping from the Santa Rosa Plain production wells affect the city of Sebastopol's wells?

During previous time periods when Sonoma Water's Santa Rosa Plain production wells were in more consistent use, no impacts to the City of Sebastopol's wellfield is known to have occurred. This includes a time period from approximately 1999 to 2009 when pumping from Sonoma Water's wellfield averaged approximately 3,600 acre-feet each year.

### Will pumping from the Santa Rosa Plain production wells affect the Laguna de Santa Rosa?

Creeks, streams, and the Laguna de Santa Rosa are connected to the shallower aquifer. Sonoma Water's production wells are deep, and draw water from the deep aquifer, not the shallower aquifer. Because groundwater-levels in the shallow aquifer system (which is connected to surface water sources like the Laguna de Santa Rosa) are not anticipated to be impacted by drought year pumping from these wells, streams and associated habitats are not expected to be affected.

### What is Aquifer Storage and Recovery (ASR)?

As proposed in this project, Aquifer Storage and Recovery would store treated, high quality surface water in underground reservoirs, known as aquifers, during wet periods when Russian River water is plentiful. The stored water can be used in summer months or during droughts. ASR is a common water management strategy employed in California, the United States, and the world to increase water supply reliability.

### When will the ASR project be up and running?

In 2013, Sonoma Water, and local partners conducted a feasibility study for a regional groundwater banking program that would store surplus Russian River water produced at existing drinking water facilities in aquifers beneath the Santa Rosa Plain or in Sonoma Valley. Sonoma Water and the City of Sonoma piloted a successful, small-scale ASR project in 2018-2019.

The feasibility study and the pilot project found that ASR is possible, but before the Santa Rosa Plain ASR project is operational, Sonoma Water must:

- Conduct tests to monitor any potential water quality changes and the local aquifer's hydraulic response to recharge;
- Receive a permit from the North Coast Regional Water Quality Control Board; and
- Make changes to one of the existing production wells (or drill a new ASR well) to allow water to be sent into the ground (rather than being pumped out).

The types of information that is needed include assessment of the water quality compatibility of the recharge water and the native groundwater, evaluation of equipment and operational changes needed for the well, focused evaluation of the local aquifer systems, and potential impacts to nearby wells. Data collection for the planning phase will likely include design and permitting of a short-term pilot-scale demonstration test, which allows for incremental testing of the technology prior to operating at full-scale.

The completion schedule for Phase 2 will depend upon the outcome of the planning work and identification of funding sources to complete the planning, design, permitting, construction and operational components of the project.