

STATE OF CALIFORNIA  
CALIFORNIA REGIONAL WATER QUALITY CONTROL  
BOARD SAN FRANCISCO BAY REGION

STAFF SUMMARY REPORT – Alec Naugle  
MEETING DATE: September 9, 2015

ITEM: 7

SUBJECT: **Sustainable Groundwater Management in the San Francisco Bay Region – Status Report**

DISCUSSION: The San Francisco Bay Region is home to about 7 million residents, who use about 1.5 million acre-feet of water per year. The Region’s groundwater basins supply about 20% of this total, most of which is pumped from larger supply wells, with a lesser contribution from private domestic and irrigation wells. The Basin Plan identifies 28 groundwater basins in our Region (Figure 1). The most heavily used basins include Santa Clara Valley, Niles Cone (in the Fremont area), Livermore Valley, Napa Valley, Sonoma Valley, Clayton Valley in Contra Costa County, and the Westside Basins in San Francisco and San Mateo counties.

In our 2013 “Groundwater Awareness” update to the Board, we provided information about the nexus between the Region’s groundwater resources and our efforts to protect and restore those resources. This status report summarizes the State’s 2014 sustainable groundwater management legislation and the status of sustainable groundwater management planning in our Region.

Sustainable Groundwater Management Act

In 2014, the State Legislature passed the Sustainable Groundwater Management Act (SGMA) largely to address the threat of over-pumping groundwater and its associated negative impacts, including lowering of water tables, land subsidence, permanent loss of storage capacity, seawater intrusion, and spreading of contaminated plumes of groundwater. SGMA requires the formation of local Groundwater Sustainability Agencies and the development of groundwater sustainability plans (GSPs) to balance long-term pumping and recharge (“safe yield”) in a way that supports beneficial uses and maintains good water quality. SGMA gives the Department of Water Resources authority to develop GSP regulations and gives the State Board authority to enforce over-pumping restrictions and develop GSPs where none exist. Due to the nexus with water quality, Regional Water Boards are to provide input on the adequacy of these plans.

By 2022, each high and medium priority groundwater basin must have developed a GSP, and sustainability must be achieved within 20 years. In the San Francisco Bay Region, seven basins have been identified as needing a GSP: Santa Clara Valley, Niles Cone, Livermore Valley, the East Bay Plain from Hayward to Richmond, and the Napa, Sonoma, and Petaluma valleys.

### Groundwater management planning

These same seven basins voluntarily developed groundwater management plans under the 1992 Local Groundwater Management Act (AB3030). Those plans address the overall groundwater budget for each basin, including groundwater supply/production for municipal and agricultural uses, recharge, safe yield, and monitoring. We anticipate that these existing plans will be revised in accordance with the new regulations to focus on sustainability and water quality concerns. While Board staff has played a minor technical advisory role in the development of some of these plans, funding resources related to Proposition 1 (the Water Quality, Supply, and Infrastructure Improvement Act of 2014) and SB445 could allow closer coordination.

### Salt and nutrient management

The State Board's 2009 Recycled Water Policy requires local agencies to develop salt and nutrient groundwater management plans (SNMPs). SNMPs must identify and quantify existing and potential future salt and nutrient sources, such as agricultural and landscape fertilizer applications, livestock operations, wastewater disposal, irrigation with recycled water, managed aquifer recharge, and seawater intrusion. These plans must also include an evaluation of each basin's long term capacity to assimilate additional salt and nutrient loads, identify any actions that may be needed to restore or protect water quality, and describe a comprehensive groundwater monitoring program.

In December 2014, this Board adopted a resolution of support for the Sonoma Valley SNMP. We anticipate bringing similar resolutions for Board consideration over the next few months for the Livermore Valley and Santa Clara Valley SNMPs. These plans and the planning process are proving to be extremely valuable as they are informing our priority-setting and decision-making in regard to the permitting of wastewater disposal and recycled water projects and the development of onsite wastewater system local agency management plans.

### Managed aquifer recharge

Aquifer recharge is an important component of sustainable groundwater management. Typically, the recharge of groundwater aquifers is done through the use of percolation ponds, spreading basins, in-stream recharge, and injection wells. For large-scale recharge projects, the quality of the source water and its impact on the quality of the receiving water aquifer may cause some concern. For example, treated potable water may contain disinfection by-products that could present a concern when injected directly into an aquifer in large quantities. For recharge with recycled water or urban stormwater, there are concerns about the source water's levels of industrial chemicals, contaminants of emerging concern, and salts and nutrients. Furthermore, the type of source water and how it is recharged could raise concerns about the liberation of naturally-occurring arsenic or chromium in an aquifer.

Five of the seven most heavily used basins in our Region have been relying on managed aquifer recharge for decades. Santa Clara Valley, Livermore Valley, and Niles Cone use old quarries, percolation ponds, and in-stream recharge to

actively replenish groundwater supply. The Alameda County Water District also manages groundwater in the Niles Cone by pumping and treating saline groundwater to control seawater intrusion. Sonoma Valley and the Westside Basins rely on “in-lieu” recharge, delivering excess surface water to golf courses and other groundwater users in exchange for decreased pumping. This allows aquifers to recharge naturally over time.

More recent management efforts include the Bayside Groundwater Project in San Lorenzo, which the Board approved in 2007. This aquifer storage and recovery project has the capacity to inject up to one million gallons per day of treated potable water into the East Bay Plain basin and extract it for emergency or drought use. The East Bay Municipal Utility District is considering plans for expansion. At the same time, the Sonoma County Water Agency is planning a similar project in the Sonoma Valley using treated potable water from the Russian River. While we do not have any pending applications for recharge projects using recycled water or stormwater, agencies such as the Santa Clara Valley Water District are considering them.

Our regulatory approach to permitting recharge projects includes the use of waste discharge requirements or waivers to specify conditions that must be met while recharging. Additionally, in 2012, the State Board adopted general waste discharge requirements specifically for aquifer storage and recovery projects using treated potable water. In 2014, the State Department of Public Health’s drinking water program (now part of State Board’s Division of Drinking Water) adopted regulations for indirect potable reuse that involves recharging highly treated, recycled water into drinking water aquifers.

#### Groundwater monitoring

In 2001, the State developed the Groundwater Ambient Monitoring and Assessment program (GAMA) to evaluate the quality and vulnerability of aquifers tapped for municipal supply. GAMA, along with State Board’s Drinking Water Program, monitors municipal, domestic, and agricultural supply wells. The U.S. Geological Survey implements GAMA with bond funding from Proposition 50 (2002) and, more recently, the State Board’s Waste Discharge Permitting Fund. Monitoring data are stored in the State Board’s GeoTracker-GAMA database:

<http://geotracker.waterboards.ca.gov/gama/>.

GAMA uses ultra-low detection limits in the part-per-trillion range. For comparison, allowable drinking water standards for many toxic compounds are in the part-per-billion range, so GAMA’s detection limits are ten to a thousand times more sensitive. Baseline surveys of the deeper public supply aquifers in the most heavily used basins in our Region are now complete, and “trends” monitoring will occur at three and ten-years after baseline. In 2012, shallower aquifers typically used for private domestic and agricultural purposes were assessed in Napa and Sonoma counties.

Findings indicate that naturally-occurring trace elements such as arsenic and boron are more prevalent than any other constituent above benchmarks. Statewide, this occurs in 15% to 20% of the public supply resource; in our

Region we estimate this to be somewhat less. Nitrate exceeds benchmarks less often but is more likely to occur at shallower depths. Industrial pollutants, such as solvents, petroleum-based compounds and additives, and pesticides, are less prevalent still, with high concentrations occurring in less than 1% of the deeper resource. These findings are extremely relevant and helpful to our efforts to better understand groundwater quality, use, and occurrence in these basins and to improve the basis on which we prioritize our groundwater cleanup and protection actions.

Future groundwater management priorities

Identifying baseline conditions, drinking water well impacts, and localized salt and nutrient hotspots is essential to protecting and restoring the beneficial uses of groundwater. For non-point source impacts, groundwater management plans and salt and nutrient management plans often provide the best summary of available information for the basin. At the same time, they include plans for future groundwater resource development, which can affect our cleanup and restoration decisions, particularly those involving cleanup timeframes. Therefore, engaging the local agency and its planning process while selectively using our regulatory tools to control discharges and to drive further source identification and abatement are important priorities.

To help address these priorities, we have formed a multi-division staff workgroup that will engage with local agencies to identify salt, nutrient, and other contaminant sources, as well as impacted or threatened supply wells and overall baseline groundwater conditions. This “groundwater management” team will share information amongst our regulatory programs and make recommendations for source control efforts and grant funding opportunities for local agencies under Proposition 1 and SB445. The SB445 Site Cleanup Subaccount Program now provides some limited funding for Board staff’s time to cover these previously unfunded activities.

In sum, recent regulatory and legislative initiatives provide us with new tools to help ensure that our groundwater resources are protected and restored and that these resources are sustainably managed and safely used moving forward. The Board will need to review and/or approve some of the products of these initiatives in the future, and we will also regularly update the Board on our efforts to ensure sustainable groundwater management in our Region.

RECOMMEN-  
DATION:

This is an information item only and no action is necessary.

File No. 1210.47 (AWN)

Attachment: Figure 1 – Groundwater Basins in the San Francisco Bay Region

# Figure 1. Groundwater Basins in the San Francisco Bay Region

