

Bayside Frequently Asked Questions

Updated June 27, 2023

Bayside

1. Bayside background and injection/extraction capacities

- The Bayside Facility (Bayside) was constructed in 2009.
- The Bayside well is 650 feet deep and stores and extracts water from the Deep Aquifer.
- The facility can store up to 0.5 million gallons a day (MGD) of surplus drinking water into the underground sand layers of the basin during wet years. Details about the well and the 2022 Bayside Annual Report are available at ebmud.com/bayside.
- During an extreme drought or major emergency, the facility could extract up to 2 MGD over a period of up to six months.
- EBMUD partners with the U.S. Geological Survey (USGS) to monitor Bayside for subsidence to ensure it remains geologically sound.

2. How does Bayside fit into EBMUD's long-term water supply strategy?

EBMUD has been and will continue to develop a diversified water supply portfolio that will improve resiliency to changing climate and regulations. The diversified portfolio will include local groundwater in addition to water conservation, recycled water, water transfers, and storage.

3. Have you extracted from Bayside?

EBMUD has only extracted from Bayside for startup testing in 2009 and to conduct an 8-week aquifer test in 2010. However, this water was discharged to the storm drain and not used to meet demand.

EBMUD has secured other supplemental water supplies including recycled water, purchases derived from the Sacramento River, and is exploring a partnership for an expansion of Los Vaqueros Reservoir. In addition, EBMUD must obtain approval from Division of Drinking Water to extract from the well. Bayside is the last option in supplemental supplies and is the backup to the backup supplies in extreme conditions. It has not been needed during the last two droughts, but we want to have it available just in case we need it.

4. Are you planning to expand Bayside?

The East Bay Plain Subbasin Groundwater Sustainability Plan (GSP) highlighted the need for additional data collection and analysis to help inform future local groundwater programs before any plans for expansion, including other future potential phases of Bayside.

5. How much water has been injected and extracted from Bayside?

Bayside Frequently Asked Questions

Updated June 27, 2023

See the table below from the 2022 Bayside Annual Report. Note that the recovered (extracted) volumes in 2009 and 2010 were for testing only and not used as potable supply.

Year	Injected Volume, gallons	Recovered Volume, gallons
2009	445,000	4,545,000
2010	0	113,000,000
2011	28,432,401	0
2012	0	0
2013	0	0
2014	0	0
2015	0	0
2016	0	0
2017	1,310,000	0
2018	8,340,000	0
2019	8,390,000	0
2020	0	0
2021	0	0
2022	0	0
Total	46,917,401	117,545,000

Total (AF)

173

360

6. Will water be injected into the aquifer in 2023?

To be determined. EBMUD is evaluating the possibility of storing water in the aquifer in 2023. Although surplus water is available, EBMUD is assessing whether operational conditions can support injections.

7. What is the source of water being stored in the aquifer?

The water source for Bayside is treated surface water from EBMUD’s Upper San Leandro Water Treatment Plant (USL WTP). It is the same high-quality potable water that is used by the communities near Bayside.

8. What is the status of EBMUD’s lease with Oro Loma Sanitary District for the Bayside Facility?

EBMUD’s lease with Oro Loma for a parcel of property that contains the Bayside well and four monitoring wells will expire on August 30, 2024. Prior to the lease expiration, EBMUD will need to remove the existing wells on Oro Loma’s property. EBMUD is planning to install a replacement well on EBMUD’s nearby property.

9. How and when were the aquifers initially discovered?

The aquifers in the East Bay Plain Subbasin (Subbasin), the groundwater basin where Bayside is located, have been known and used for water supply over 150 years. The earliest documented

Bayside Frequently Asked Questions

Updated June 27, 2023

use of groundwater occurred around 1860. Between 1860 – 1930, groundwater was a major part of the water supply in the East Bay, supplying up to 15 million gallons of water per day and served as the sole water supply when local surface water supplies were unavailable during droughts ([Norfleet Consultants, 1998](#)). In the early 1900s, the majority of the wells were shallow (< 50 feet), but some wells were between 200 - 500 feet deep and a few were up to 1,000 feet deep. Groundwater use in the East Bay Plain Subbasin significantly decreased after 1930 when EBMUD brought Mokelumne River water to the area. Currently, about 3,600 acre-feet of groundwater is estimated to be used annually throughout the Subbasin, primarily for domestic and commercial irrigation along with some industrial uses.

Water Quality

10. Are the aquifers near Bayside polluted?

No. The Bayside well and the Bayside monitoring wells have shown no evidence of Deep Aquifer contamination. During the development of the 2022 [East Bay Plain Subbasin Groundwater Sustainability Plan](#) (EBP GSP), environmental site information was evaluated from the [Department of Toxics Substance Control](#) (DTSC) and San Francisco [Regional Water Quality Control Board](#) (RWQCB) that demonstrated that contaminant plumes throughout the Subbasin, including those near Bayside, are limited in size and are limited to the upper portion of the Shallow Aquifer which is separate from the Deep Aquifer. Most of the cleanup sites within two miles of Bayside are now closed. The largest plume (DWA Plume) near Bayside is located in San Leandro about three miles northeast of Bayside in the Shallow Aquifer. The results presented in the [DWA Plume Groundwater Monitoring Report](#) from May 2023 indicates that the plume extent has been stable to shrinking since the 2014 and is limited to the upper portion of the Shallow Aquifer and has no impact to the Deep Aquifer where the Bayside well is located.

11. How do you know that water from the Shallow Aquifer is not mixing with the Deep Aquifer?

In addition to the environmental site information from DTSC and RWQCB and water quality data demonstrating that no water quality concerns are observed in the Deep Aquifer at and near the Bayside well, an age dating study conducted previously by the [USGS](#) demonstrated that (1) young groundwater (< 50 years old) is only found in the Shallow Aquifer and not the Deep Aquifer and (2) old groundwater is present at Bayside with an age of around 9,000 years. The study provides evidence that groundwater from the Shallow Aquifer has not reached the Deep Aquifer and therefore no potential shallow contamination has impacted Bayside.

Bayside Frequently Asked Questions

Updated June 27, 2023

If the Bayside well were pumped, groundwater modeling conducted in the 2022 EBP GSP demonstrated that the pumping results in minimal changes to the groundwater levels in the Shallow Aquifer and the clay layer below the Shallow Aquifer restricts vertical downward movement of water.

12. Will the water that is stored in the aquifer still be safe to drink if it is several years or more before the water is pumped and used as a drought supply source?

Yes, it will be safe to use as a drinking water source. The treated surface water from the USL WTP that is stored in the Deep Aquifer will continue to be a high-quality source of water even if it remains in the aquifer for years or even decades before Bayside is used to extract water. Native groundwater that is suitable for potable purposes can often be hundreds to thousands of years old. At Bayside, the native groundwater is around 9,000 years old and is protected in the Deep Aquifer. When water is pumped from Bayside for potable use, it will undergo treatment to meet or exceed all State and Federal water quality standards.

13. Have you tested for PFAS at Bayside?

Not yet but EBMUD plans to test soon. In July 2023, EBMUD is planning collect water samples from 2 monitoring wells within the Bayside monitoring network and test them for PFAS. One monitoring well is located immediately adjacent to the Bayside well and the other is located about a half mile southeast of Bayside.

14. What treatment will the water undergo prior to delivery to customers?

First, EBMUD would need to obtain approval from Division of Drinking Water to extract from the well. Like all of EBMUD's other water sources, the Bayside water will undergo treatment for corrosion control and monochloramine will be added for disinfection. In addition, treatment for manganese, iron, and radon can be added as needed to the Bayside Water Treatment Facility. Treatment for PFAS can also be added as needed. EBMUD will treat potable water source to meet or exceed all regulatory requirements for safe drinking water.

15. Will changes in the San Francisco Bay have any effect on the Deep Aquifer?

No, changes are not expected to impact the Deep Aquifer. The Deep Aquifer is protected from seawater intrusion and sea level rise because of the presence of a thick and continuous clay layer located below the San Francisco Bay and the Shallow Aquifer. Another continuous clay layer also exists between the Intermediate and Deep Aquifer. In addition, chloride

Bayside Frequently Asked Questions

Updated June 27, 2023

concentrations measured in monitoring wells located in the Deep Aquifer have consistently remained low and stable, demonstrating that seawater intrusion is not occurring.

16. Have you tested for radon in the Bayside well?

Yes, the Bayside well has been tested for radon along with general parameters, minerals, alkalinity, haloacetic acids, trihalomethanes. The radon results are presented in the [Bayside Annual Reports](#) and have ranged between 102 – 855 picocuries per liter between 2015 - 2020. The radon analysis could not be conducted in 2021 because of an analytical instrumentation issue and the Bayside well could not be sampled in 2022 because of mechanical issues with the pump.

Water Distribution and Equity

17. Is there a difference in the water sources that EBMUD customers receive?

EBMUD customers are served from a combination of three primary sources of drinking water: Mokelumne River, Sacramento River, and local runoff. All our customers receive high-quality drinking water from these sources which meets or exceeds all State and Federal standards. Seasonally, and during droughts, communities receive different portions of each. Details are shown in the District's annual Water Quality Report.

18. How is it equitable that only a few communities will get water from Bayside when it is used for drought supply?

The area that would receive water from Bayside extends approximately two to four miles away from the well. Bayside is a backup to the backup supplies and it will only be used as a drinking water source under very extreme conditions when all supplemental water supply options need to be utilized to meet demand. During an extreme drought, a portion of EBMUD's service area will already be receiving drought supplies from the Sacramento River rather than Mokelumne River supply. If EBMUD needs to extract water from Bayside under extreme conditions in the future, the water will be treated to meet or exceed the same regulatory standards for drinking water just like all of EBMUD's other water supply sources.

19. How much Orinda (Mokelumne) versus USL water do customers receive within the Bayside service area?

Over the past 10 years, about 20% of the demand is met by USL and 80% by Orinda. Year to year operations can cause the percentage of USL used to meet demand to range between 6% - 65% (Orinda would be between 35% - 94%).

Bayside Frequently Asked Questions

Updated June 27, 2023

20. Why do certain communities get water from the Mokelumne River and others get water from local reservoirs or the Sacramento River?

As referenced above, customers in EBMUD's service do not all receive the same water from the same source at the same time due to limitations in our existing infrastructure. EBMUD's long term plan is to be able to better treat variable quality raw water at each treatment plants so all customers experience similar aesthetic qualities of treated water. For example, EBMUD has plans to upgrade the water treatment plant at Walnut Creek so customers east of the hills can also have access to Sacramento River water. Even after these treatment investments, customer will still receive water from different sources because of existing infrastructure and various physical limitations. However, all potable water supplies will be treated to meet or exceed the same regulatory standards for drinking water.

Customer Notification

21. Will customers be notified before Bayside is used?

Yes, customers will be notified via email, Nextdoor, and through the San Leandro Times. Customers who have provided mailing addresses will receive a postcard. The notifications will also ask whether the customers would like EBMUD to hold a public meeting.

Permitting Requirements

22. Which permits does EBMUD still need to obtain to run Bayside?

EBMUD obtained a permit to inject water into the aquifer from the San Francisco RWQCB in 2007.

EBMUD still needs to obtain a permit from the Division of Drinking Water before extraction can occur.

Monitoring for Groundwater Levels, Groundwater Quality, and Land Subsidence

23. What monitoring data are you collecting for Bayside?

EBMUD is collecting monitoring data on water levels, water quality, and land subsidence. The data can be viewed at the [East Bay Plain Subbasin Data Management System](#). Additional water level and water quality data are also provided in the [Annual Bayside Reports](#).

Water Levels: EBMUD is collecting and monitoring water level data from 22 wells identified in the Bayside Mitigation Monitoring and Reporting Program. This is accomplished through the

Bayside Frequently Asked Questions

Updated June 27, 2023

East Bay Plain Subbasin Groundwater Sustainability Plan (EBP GSP) and annual reporting required as part of EBMUD's injection permit with the RWQCB. The data indicates that water levels are stable.

Water Quality: EBMUD is collecting and monitoring water quality data from identified sentinel wells per the injection permit with the RWQCB. Data includes general parameters (e.g., pH, TDS, nitrate), minerals (e.g., calcium, hardness), alkalinity, disinfection byproducts (e.g., haloacetic acids and trihalomethanes). No water quality concerns have been observed in the water quality monitoring. Before delivery to customers, the water will be treated to meet or exceed the same regulatory standards for drinking water just like all of EBMUD's other water supply sources.

Land Subsidence: The USGS installed and is monitoring and collecting continuous subsidence data from the extensometer under a Joint Funding Agreement between EBMUD and the USGS. The extensometer monitors both compaction and expansion of the aquifer. The data indicates that no inelastic subsidence has been observed.

24. Is there any risk to buildings over this reservoir as the aquifer is filled? Will it cause land to rise?

No, recharging the aquifer will not cause the land to rise or impact buildings. When water was previously injected into the aquifer, no issues with land rise were observed based on continuous monitoring by the extensometer.

Other

25. Does EBMUD have plans to replenish water in areas where farming has depleted the groundwater?

EBMUD has an existing pilot groundwater banking project called the Demonstration Recharge, Extraction and Aquifer Management ([DREAM](#)) that is being conducted outside of EBMUD's service area with partner agencies in San Joaquin County. The project helps replenish the critically overdrafted aquifer below farmland in the Eastern San Joaquin Groundwater Subbasin while also providing supplemental water supply for EBMUD during droughts. Water that is extracted from this project is blended with surface water in the Mokelumne Aqueduct and then distributed throughout EBMUD's service area after it is treated.