STAFF REPORT

Meeting Type:	Board of Directors
Title:	FY 2026 Purchase of Water Treatment Chemicals
From:	Darren Machado, Operations Director
Through:	Shaun Horne for Ben Horenstein, General Manager
Meeting Date:	May 20, 2025

TYPE OF ITEM: X Action Information

RECOMMENDATION: Authorize the General Manager to negotiate and execute agreements for the purchase of water treatment chemicals in an amount not to exceed $2,540,293

SUMMARY: The District annually solicits competitive bids for the supply and delivery of eight bulk water treatment chemicals needed to treat water at the District's treatment plants and the Ignacio Water Quality pump station. Five of the chemicals were bid through the Bay Area Chemical Consortium (BACC). Staff solicited competitive bids for four other water treatment chemicals, Zinc Orthophosphate, Cationic Polymer, Anionic Polymer and Ferric Sulfate. The total estimated costs for the nine water treatment chemicals for fiscal year 2026 is $2,540,293 representing a 8.5% increase over the prior year bids.

DISCUSSION: The District utilizes water treatment chemicals to treat water from its reservoirs and water imported from the Sonoma County Water Agency to ensure the water delivered to District customers meets all federal and state water quality requirements. These chemicals help remove sediment from the water, kill disease causing organisms, and reduce corrosion in the District's piping system as well as our customers' household piping, among other benefits.

The District participates in Bay Area Chemical Consortium (BACC) to obtain bids for the supply and delivery of water treatment chemicals. The BACC is a collection of over 52 water and wastewater agencies around the greater San Francisco Bay Area ranging from Sacramento to Gilroy that work together to leverage their combined purchasing power and achieve better chemical pricing. The District obtains competitive quotes for chemicals (Zinc Orthophosphate, Cationic Polymer, and Ferric Sulfate) that are not available through the BACC. Staff also have received a quote for a proprietary Anionic Polymer from Nalco, which is not available through the BACC. The bid and quotation results for each water treatment chemical is included in the table below.

Bid and Quotation Results for Furnishing Water Treatment Chemicals

July 1, 2025 – June 30, 2026

CHEMICAL	COMPANY	ESTIMATED QUANTITY	UNIT PRICE	TOTAL ESTIMATED COST
Liquid Ammonium Sulfate	Industrial Solutions	8,000 gal	$1.76	$14,080
Aqua Ammonia	Hills Brother Chemical Co.	16,200 gal	$3.81	$61,722
Ferric Sulfate	Thatcher Chemical	1,500 dry tons	$598.78	$898,170
Hydrofluosilicic Acid	DuBois Chemicals	28,000 gal	$2.72	$76,160
Caustic Soda	Brenntag Pacific, Inc.	626 dry tons	$800.00	$500,800
Sodium Hypochlorite	Univar USA Inc.	220,000 gal	$3.29	$723,800
Zinc Orthophosphate	Brenntag Pacific, Inc.	135 wet tons	$1,595	$215,325
Cationic Polymer	Nalco Company	40,000 lbs.	$1.24	$43,400
Anionic Polymer	Nalco Company	2,790 lbs.	$2.45	$6,836
Total Estimated Cost:				$2,540,293

The total estimated cost of $2,540,293 is 8.5% higher than the prior year bids.

A brief review and explanation of water treatment chemicals (ferric sulfate, polymers, sodium hypochlorite, ammonia, caustic soda, zinc orthophosphate, and fluoride) used by MMWD follows.

Specifications and Standards

In addition to the District's own requirements, standards published by the American Water Works Association are used in the purchase contract. Also, since 1994, California has required that all drinking water "direct additive" products be certified by a testing organization that is accredited by the American National Standards Institute (ANSI). The two major testing organizations are the National Sanitation Foundation (NSF International) and Underwriter's Laboratory (UL). These organizations provide independent quality control oversight to the producers of drinking water treatment chemicals.

Removal of Particulate Matter (Coagulation/Flocculation/Sedimentation)

The treatment plants will continue to use Ferric Sulfate this year as out primary coagulant, because it works well and remains a more cost effective alternative to Ferric Chloride.

All surface waters contain naturally-occurring suspended and dissolved matter such as clays, decayed organic matter, metal oxides, and minerals like silica. These particles are too small to be removed by gravity settling alone, partly due to the negative charge of the particles which helps keep them in suspension. The District adds a coagulant, ferric sulfate, which acts to disrupt the natural particle charge so that dissolved matter comes out of solution to form particles and these particles as well as suspended solids are attracted to each other to form larger particles. Flocculation is the process of applying mixing energy to the water containing the small particles to promote particles coming into contact with each other thereby enabling the formation of larger particle groups (called flocs). The floc particle groups are heavy enough to settle and be removed through sedimentation from the drinking water. Each of these processes (coagulation, flocculation and sedimentation) takes place in the large circular clarifiers at District treatment plants.

Ferric sulfate also enables the District to continue meeting the stringent regulations limiting total organic carbon (TOC), a surrogate parameter for the precursors of disinfection by-products. The use of ferric sulfate has significantly reduced TOC and lowered disinfection by-products in treated water and puts the District in good position to continue to meet regulations and reduce health concerns about disinfection by-products. As an added benefit, ferric sulfate is less sensitive to changes in raw water conditions typically encountered when changing supply from one reservoir to another.

Polymers

To further control particle charge, and thereby improve the removal of particulates and filtration processes, polymers or polyelectrolytes may be added. Polymers are high molecular weight, long-chained organic compounds. Polymers that create a positive charge are referred to as cationic polymers, and those polymers that create a negative charge are referred to as anionic, and a third variety that provides an overall neutral charge are referred to as nonionic. Polymers added to enhance coagulation are referred to as a *coagulant aid* while those added to enhance filtration are called a *filter aid*.

Destruction of Disease Causing Organisms (Disinfectants)

Chlorine in the form of sodium hypochlorite (bleach) is used to inactivate disease causing bacteria, viruses, and, to some extent, protozoa. The District uses two forms of chlorine: free and combined.

Free chlorine is used as the primary disinfectant; with appropriate doses and contact time this strong disinfectant virtually eliminates the risk from bacteria, viruses, and most protozoa. The use of chlorine in water treatment is largely responsible for the near-elimination of waterborne disease in the U.S. However, free chlorine has some drawbacks such as limited ability to penetrate the thick walls of the *Cryptosporidium* oocyst, which can cause gastrointestinal illness, has little effect on biofilm in the distribution system, creates disinfection by-products with regulatory limits and health concerns by reaction with naturally occurring matter in the water, has poor persistence, and imparts a chlorinous taste and smell to drinking water.

Combined chlorine or chloramine (chlorine combined with ammonia) is too slow-acting to use as a primary disinfectant but is an excellent secondary disinfectant. Chloramine doesn't create THMs or

other chlorine by-products, has excellent persistence and ability to penetrate biofilm, and does not have a chlorinous taste or smell. Recent research has indicated that chloramine following chlorine disinfection can achieve significant inactivation of *Cryptosporidium.*

In FY2025, the District completed a study at Bon Tempe Treatment Plant where the source of the Ammonia used to create chloramines was changed from 30% Ammonium Hydroxide (liquid ammonia) to Liquid Ammonium Sulfate. The study was able to maintain optimal chloramine formation and maintain all other water quality parameters. Ammonium Sulfate is a non-hazardous chemical that still provides an ammonia source for the creation of the chloramines. This year Ammonium Sulfate was bid through the BACC for Bon Tempe Treatment Plant only. Operations staff will continue to work directly with Engineering staff to facilitate this chemical changes at all of our facilities over time.

Free chlorine is used within the treatment plant where its strength and kinetic advantage is needed. Once primary disinfection has been achieved, the free chlorine is converted to chloramine before the water leaves the plant to provide a long-lasting disinfectant residual providing bacterial protection throughout the distribution system and results in better tasting water.

Corrosion Control (Caustic Soda & Zinc Orthophosphate)

The current FY2026 price is $1,595/wet ton. This represents a 4% increase from last year's annual contract unit cost. Corrosion control is important in maintaining the longevity of the District's pipe network as well as consumer household piping and helps to maintain compliance with lead and copper water quality regulations. The District uses two chemicals to provide corrosion control to the water: pH adjustment using caustic soda (sodium hydroxide) and zinc orthophosphate. The two chemicals have a synergistic effect that protects both the customers' and the District's piping without the scale build-up of other techniques. Corrosion control also minimizes the lead and copper that can leach from customers' soldered copper piping and brass faucets. The District has one of the lowest lead/copper corrosion rates in the Bay Area as measured by first-draw testing at customers' faucets. New and existing plumbing components still contain small amounts of lead, therefore the District's corrosion control program is critical to minimizing the amount of lead in drinking water.

Fluoride

Fluoride in the form of hydrofluosilicic acid is added to boost the naturally-occurring fluoride level (0.1 mg/L) to the optimum level for cavity prevention (0.7 mg/L). Fluoride addition was implemented following the passage of a voter initiative in 1972, which was reconfirmed by the District's voters in 1978. In California, legislation was enacted in 1995 which requires fluoridation after 1997 for all public water agencies serving populations over 10,000 if there is an external source of funding.

ENVIRONMENTAL REVIEW: Not applicable.

FISCAL IMPACT: The purchase of water treatment chemicals is essential to the production of safe drinking water and the cost of water treatment chemicals is included in the budget for FY 2026.

ATTACHMENT(S): None.

DEPARTMENT OR DIVISION	DEPARTMENT MANAGER	APPROVED
Operations Division	Darren Machado **Darren Machado** **Operations Director**	Shaun Horne **Shaun Horne for Ben Horenstein** **General Manager**