

DUBLIN SAN RAMON SERVICES DISTRICT BIENNIAL REPORT

July 1, 2019 - June 30, 2021



**Dublin San Ramon
Services District**

Water, wastewater, recycled water



Pictured here: Lake Oroville, late July 2021. Lake level is at just 34% of average.

Cover photo: Construction of the primary sedimentation tanks, March 2021, at the Regional Wastewater Treatment Facility.

WELCOME TO OUR BIENNIAL REPORT. THIS REPORT HIGHLIGHTS KEY DISTRICT EFFORTS AND ACCOMPLISHMENTS DURING THE PERIOD OF JULY 1, 2019 TO JUNE 30, 2021. ON BEHALF OF THE DUBLIN SAN RAMON SERVICES DISTRICT BOARD OF DIRECTORS, I HOPE YOU FIND IT INFORMATIVE.

GENERAL MANAGER'S MESSAGE

Serving the Community

DSRSD has served this community 24/7 while enduring more than two years of emergencies. On Veterans Day weekend in 2018, a fire sprinkler pipeline broke in the District Office building on Dublin Boulevard flooding it with water. Fifty staff had to be relocated to the District's Field Operations Facility while the District Office building was restored and renovated. In mid-March 2020, just as staff were scheduled to move back into the District Office, Bay Area health officers issued a shelter-in-place order in response to the COVID-19 pandemic, and most of the office staff began remotely working from home. In addition, the District managed through multiple PG&E-initiated Public Safety Power Shutoffs and wildfire smoke.

Throughout it all, the District provided uninterrupted service to our customers and major construction projects stayed on schedule. We used these emergencies to improve our level of service by offering online plan checks, hosting an award-winning Virtual Citizens Water Academy, and investing in emergency power generators. As the General Manager, I am impressed with staff's ability to adapt and adjust to multiple crises and honored to lead such a dedicated team. I am also pleased to announce that the District Office reopened to the public on July 6, 2021.

Drought

In 2020, we saw the return of drought conditions to Northern California. At the time this report was printed in August 2021, we were asking customers to voluntarily reduce water use by 15% compared to 2020. We expect we will mandate conservation in the coming months. The District is here to help and offers a range of water conservation

rebates and programs that can help you save water and money. Please visit our website for more information, www.dsrds.com/rebates.

The current drought is also a reminder that the Tri-Valley's current water supplies are vulnerable to droughts and other natural disasters that are being exacerbated by climate change. To address these challenges, the region must continue to pursue a diversified water portfolio and make investments in additional water supply, storage, and conveyance projects. In 2021, the Board adopted a Water Resiliency Policy to guide DSRSD efforts to build a resilient and sustainable water future for District customers.

Area-Based Elections

In 2020, we continued our transition from at-large elections to area-based elections to comply with the California Voting Rights Act. Previously, all five members of the Board of Directors were chosen by constituents from the District's entire service area. Under area-based elections, DSRSD has been divided into five separate election areas, referred to as divisions, and voters residing in each individual geographic division select one representative to serve on the DSRSD Board for four years.

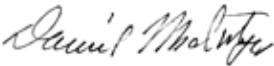
The 2020 election was the first to elect Directors to represent specific voting divisions: Richard Halket represents Division 3 and Marisol Rubio represents Division 1. No candidates ran from Division 5, so after the election, the Board solicited applications and selected Arun Goel to represent Division 5. The remaining Directors serve at-large until 2022. In the 2022 election, Directors will be selected by voters to represent Divisions 2 and 4.

However, before the next election the current boundaries between divisions are likely to change, due to new data from the 2020 census. The current boundaries are based on the 2010 census. Visit www.dsrds.com/area-based-elections.

Strategic Plan

Annually the Board adopts a strategic plan that sets the District's priorities and strategic plan the next five years. Visit www.dsrds.com/about-us/strategic-plan.

Sincerely,



Dan McIntyre
General Manager

Regular Board meetings are held the first and third Tuesday of each month at 6 pm (subject to change). At present, meetings are held online. Please call District Secretary Nicole Genzale at (925) 828-0515 to confirm dates, times and location.

Board of Directors

President Ann Marie Johnson
Vice President Richard (Rich) Halket
Director Arun Goel
Director Marisol Rubio
Director Georgean Vonheeder-Leopold



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Nextdoor.com/pages/dublin-san-ramon-services-district

www.dsrds.com/about-us/news/pipeline-newsletter

The full version of this report can be found at www.dsrds.com/biennial-report

Investing in the future

EXPANSION AND IMPROVEMENTS AT PRIMARY SEDIMENTATION TANKS

CONSTRUCTION ON THE \$19 MILLION PRIMARY SEDIMENTATION EXPANSION AND IMPROVEMENTS PROJECT IS EXPECTED TO BE OPERATIONAL BY THE END OF SEPTEMBER 2021. "THE EXPANSION AND IMPROVEMENTS IN THIS EARLY STEP OF THE WASTEWATER TREATMENT PROCESS WILL ENABLE THE REGIONAL WASTEWATER TREATMENT FACILITY TO INCREASE SOLIDS REMOVAL BY 20%," SAYS SENIOR ENGINEER JACKIE YEE, WHO IS OVERSEEING THE PROJECT.

Contractors from Anderson Pacific Engineering work on constructing two new primary sedimentation tanks.



Project Overview

The first half of the project involved constructing a new primary sedimentation tank and partially demolishing and expanding an existing one. In November 2020, the two new tanks went into service. When the project is completed, there will be five primary sedimentation tanks, which split the sewage into two streams: solids and liquids.

This project also constructed a new grit tank and modified an existing grit tank. Both are now operational. Grit tanks remove sand and rocks from the wastewater. If not removed, grit damages equipment used throughout the treatment process.

The second half of the project includes replacing internal mechanisms in the three remaining primary tanks and replacing the motor control center. To prep the existing primary tanks for their new parts, DSRSD Operations staff and contractor Anderson Pacific had to drain and clean the tanks and repair damaged parts before applying a protective coating to the concrete walls inside each tank.

In addition to replacing and reconfiguring the troughs in the primaries that carry wastewater along to the next step, the existing tanks are receiving new mechanisms that scrape solids from the bottom of the tanks where they have settled. Then these solids are sent to the dissolved air flotation thickener where water is squeezed out before the solids are piped to digesters. The project is also adding baffles, or barriers, that will encourage more solids to settle to the bottom of the tanks.

Why Improve Treatment at the Primaries?

The more solids that can be removed in the primary treatment step, the better. “We’re trying to relieve the burden on the downstream process,” says Yee. The solids removed from the primary tanks are energy rich and broken down by the plant’s digesters, which convert the solids to biogas. The biogas is captured and used to fuel cogeneration engines, which in turn produce electricity and heat to offset electricity costs at the facility.

How Wastewater is Treated

Treating wastewater is a biological process. After bar screens remove large objects from the wastewater, grit tanks remove smaller inorganic material and non-degradable organic material. This protects equipment and prevents clogged pipes at the plant. The wastewater continues to the primary sedimentation tanks, where scum is skimmed from the water’s surface and solids are scraped from the bottom of each tank.

Solid Stream

The solids are thickened and transferred to a digester where bacteria decompose the organic solids and destroy pathogens. The solids are then sent to facultative sludge lagoons for about six years, after which they are scraped from the bottom of the lagoon and injected 18 inches under the surface into the dedicated land disposal site.

Liquid Stream

The liquid stream continues on from primary treatment to secondary treatment, which includes aeration and clarification. Aeration basins provide oxygen for the beneficial microscopic organisms that break down remaining dissolved organic material in the liquid.

Secondary clarifiers work similarly to the primary tanks, skimming scum from the surface and scraping solids from the bottom. As the liquid stream moves through the process, it gets cleaner and clearer.

The treated wastewater is then disinfected and either discharged to the San Francisco Bay or to be used as recycled irrigation water. To learn more about how long it takes to turn wastewater into recycled water, visit www.dsrtd.com/treatment-process.

EASIER TO CONTROL PLANT WITH UPGRADED COMPUTER

A \$4.66 MILLION PROJECT WILL IMPROVE A SET OF INDUSTRIAL COMPUTERS AND A MONITORING SYSTEM DSRSD STAFF USE TO OPERATE THE REGIONAL WASTEWATER TREATMENT FACILITY. THE PROJECT INCLUDES UPGRADING THE SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) SYSTEM THAT ISSUES COMMANDS AND REPORTS DATA AT THE FACILITY SUCH AS FLOW READINGS, TEMPERATURES, AND TANK LEVELS.

This project replaces about 35 (almost half) of the plant's programmable logic controllers (PLCs) that act as computers to process information from devices such as flow meters and chlorine analyzers. The PLCs alert operators if something is wrong and can automatically control processes, such as adjusting the dosage rate of chemicals added to influent (sewage coming into the wastewater treatment plant).

"Without PLCs, running the plant would be very challenging," Associate Engineer Jason Ching says. "We would need more operators, each one assigned to a specific process. But each process is connected to another, so operators would still need to communicate with each other, which would be challenging since adjusting one process potentially affects others. PLCs talk to one another and make calculations and adjustments in almost real-time. Without them, operators would need to make calculations by hand."

The project also upgrades the fiber optic-communications network and will replace nine variable frequency drives that operate the facility's largest pumps, including the influent and effluent pump stations. (Effluent is treated sewage leaving the plant.)

Senior Wastewater Treatment Plant Operator Anna Garcia uses SCADA to monitor the facility.



"We're ensuring that our new SCADA system will be reliable by upgrading our fiber-optic communications network, optimizing our SCADA server architecture, and replacing older equipment with new equipment that meets current industry standards," Associate Engineer Jason Ching says.

The SCADA system allows wastewater treatment plant operators to monitor the facility not only from a control room, but also when they are out at various locations throughout the District's 29-square-mile service area.

"Nowadays, we have SCADA in our cell phones," Wastewater Treatment Plant Operations Superintendent Virgil Sevilla says. "Even if we're walking around the plant or at other facilities, we can still know what's going on. That's a good feature for us."

Operators can receive alarms via SCADA that tell them the location of an alert, then they can address the issue manually when needed by physically examining the equipment—listening to the noise of a pump and how it vibrates, for example. The improvements include developing a more user-friendly interface that will be intuitive for staff. Each PLC has an uninterruptible power supply with about 30 minutes of temporary power. In the event of a power loss, SCADA automatically switches to backup generators.

The project also involves having a contractor develop SCADA standards as part of preliminary design concepts. DSRSD hired engineering and operations firm Woodard & Curran as the design-build contractor in early 2021. They are working with DSRSD staff—Engineering; Instrumentation, Controls & Electrical; Plant Operations; Information Technology; and Mechanical Maintenance—to assess various parts of the SCADA system including the design of a user-interface to help Operations staff more efficiently and effectively monitor and control the various components of the treatment process. "The project will provide the capability to upgrade later and have more flexibility in the future," Ching says.

District staff make educated guesses on what challenges may lie ahead in the next 10 to 20 years, such as regulatory requirements, emerging contaminants, biosolids, and nutrient removal. Upgrading older equipment will make future replacements easier and allow engineers to better understand how the plant has been operating over time.

Having a design-build contractor, instead of separate contractors for the design and construction, makes it easier when planning how to install the new equipment and computer systems once construction begins.

Because the facility is operational 24/7/365, "We want the designer to think about how to perform construction while, for example, taking the aeration basin blowers offline for any period of time," Ching says. "We want them to be thinking about how we 'cut-over' from the existing system to the new infrastructure, while also minimizing impacts to the treatment plant operation."

Construction is expected to start in early 2022 and span about six to nine months based on seasonal variations. The District considers the demand on different parts of the plant throughout the year. For example, the best time to replace the PLCs that affect the water recycling portion of the facility is when demand is lower during rainy winter months. The design-build contractor will also consider the best ways to integrate these upgrades while keeping the plant running 24/7/365. Temporary pumps, generators, and diverting water to holding basins may all be part of installing the new systems and keeping the plant operational.

"The big push is to get work going in early 2022 so we can tackle any upgrades on the recycled water side when consumption is the lowest," Ching said. "We want recycled water full steam in the summer, and then we can work on the wastewater treatment plant upgrades. We don't want to touch everything at once. Each of the 35 new PLCs will be installed and tested to make sure all stakeholders are comfortable."

WATER INFRASTRUCTURE IMPROVEMENTS

KEEPING ONE STEP AHEAD IS SOMETHING DSRSD IS CONSTANTLY STRIVING FOR WITH ITS LONG-RANGE MASTER PLANS, 10-YEAR CAPITAL IMPROVEMENT PLANS, AND 2-YEAR CAPITAL IMPROVEMENT BUDGETS. ENSURING THE DISTRICT CAN PROVIDE POTABLE WATER TO CUSTOMERS NOT ONLY NOW, BUT ALSO IN THE YEARS AHEAD, REMAINS A CORNERSTONE. ENGINEERING STAFF HAVE BEEN OVERSEEING MULTIPLE PROJECTS TO ENSURE THE WATER DISTRIBUTION SYSTEM WILL PROVIDE WATER FOR YEARS TO COME.

As the population continues to grow at a brisk rate, DSRSD plans ahead to meet the increased demands of new homes and multi-family dwellings. Construction in developments such as Tassajara Hills fills the Valley.

\$7.7M Reservoir to Store Drinking Water

DSRSD engineers look at long-range buildout for the service area, currently anticipated to occur in 2035, and use recommendations from the Water System Master Plan. Based on future growth, the District will need a 1.3 million gallon reservoir to provide drinking water storage capacity for eastern Dublin and San Ramon's Dougherty Valley.

The District began design in December 2020 on the new reservoir that includes assessing the best location based on elevation, hydraulic modeling, and land acquisition. The design will also determine whether the reservoir is above ground, below ground, or partially above and below ground.

"Water demands have varied, and we do not want to over- or under-size this new reservoir," says DSRSD Associate Engineer and project manager Sukhpreet Mann. "The District is planning to meet future 2035 buildout water demand conditions with this new Reservoir 20B."

Construction may be completed at the end of 2022 on this \$7.7 million project.

\$6.7M Rehab of Pump Station to Increase Efficiency

Another way the District plans to meet future water supply demands is to rehabilitate Pump Station 1A, which pumps water from wholesaler Zone 7 Water Agency to DSRSD's distribution system on the west side of DSRSD's service area. The existing pump station is undersized: Zone 7 is able to provide 5,000 gallons per minute (GPM) at the turnout, but due to the number and type of pumps at this station, the District can only pump a maximum of 3,600 GPM.

"We're not taking advantage of the full amount of flow coming out of the turnout because we're limited in pumping capacity," says Assistant Engineer Jose Oropeza. "That's one of the things this rehab will address." DSRSD hired an engineering firm to model different scenarios and

prepare a preliminary design report that outlines options. Construction is expected to begin late 2022 or early 2023.

\$9.5M Turnout for System Redundancy

DSRSD engineers are planning a new turnout. Turnouts are essentially large meters that measure the amount of water the District receives from wholesaler Zone 7 Water Agency. This new turnout will provide redundancy and reliability for the water distribution system. The District currently has four active turnouts (Turnouts 1, 2, 4, and 5). Turnout 3 is disconnected from the system and has no fluoridation facilities.

"Building Turnout 6 is ultimately for redundancy," says Associate Engineer Jason Ching. "If you look at the existing turnouts, we have enough capacity to get the District through the projected 2035 buildout. However, when we take a turnout offline for maintenance, this new Turnout 6 will allow us to meet our water demands."

An engineering firm is designing Turnout 6, which requires fluoridation facilities and enough space for a possible future pump station.

The goal is to be able to pump 6,000 gallons per minute, or 8.64 million gallons a day. Engineering staff expect to complete surveying and investigating the geotechnical characteristics of the site by the end of 2021.

\$3.25M to Replace Aging Valves

From July 2019 through June 2022, DSRSD is repairing and replacing isolation valves, blow-off valves, and fire hydrant valves throughout the water distribution system.

Isolation valves are critical components of the water distribution system that allow District operators to turn segments of pipes on and off. Repairing or replacing isolation valves is an important

part of maintaining a water distribution system and essential to operating the system efficiently. When replacing valves, the District looks for opportunities to add valves at tee and cross intersections. Having additional valves reduces the number of customers affected by any water main shutdowns in the future.

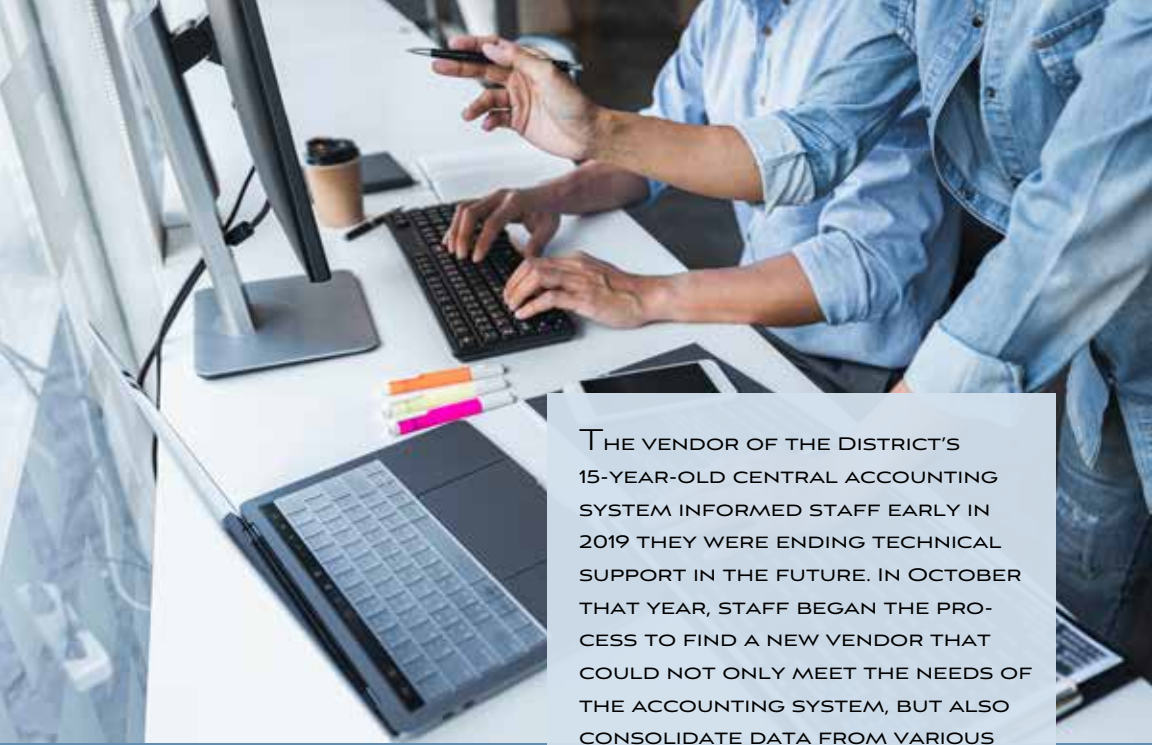
Blow-off valves, located at the end of cul-de-sacs or other water system dead-ends, are being replaced with larger diameter valves to improve water main flushing. Water main flushing is when operators force water through the pipes at up to 2,000 gallons per minute, which removes sediment and cleans the pipes. This is done to improve water quality. Increasing the diameter of blow-off valves from 2 inches to 4 inches allows operators to increase water main flushing velocities and improves cleaning efforts.

In addition, water distribution pipelines are often in soils with high salinity. The high salt content is corrosive to iron valves and other pipeline materials, so this project is introducing cathodic protection to the valves that includes special corrosive-resistant coatings, high-quality stainless steel materials, and sacrificial anodes. The sacrificial anodes protect District valves from corrosion because they are made from materials that have more active voltage than the iron, steel, and brass pipeline materials. Cathodic protection will extend the life of newly installed valves. "We're doing everything we can to make sure those valves do not corrode for a long time," Associate Engineer Sean O'Reilly says. "It's all about reliability and protecting customers' water supply and water quality."

The District contracted with West Valley Construction Company and McGuire and Hester to replace the valves. In order to replace valves, operators have to shut off the water temporarily. DSRSD staff hang notices on front doors 24 to 48 hours in advance of water shutoffs for impacted customers.

A contractor attaches a sacrificial anode while performing a valve replacement.





*I*ncreasing efficiency

THE VENDOR OF THE DISTRICT'S 15-YEAR-OLD CENTRAL ACCOUNTING SYSTEM INFORMED STAFF EARLY IN 2019 THEY WERE ENDING TECHNICAL SUPPORT IN THE FUTURE. IN OCTOBER THAT YEAR, STAFF BEGAN THE PROCESS TO FIND A NEW VENDOR THAT COULD NOT ONLY MEET THE NEEDS OF THE ACCOUNTING SYSTEM, BUT ALSO CONSOLIDATE DATA FROM VARIOUS BUSINESS MANAGEMENT PROCESSES OPERATING IN OTHER PARTS OF THE ORGANIZATION.

MULTIPLE COMPUTER APPLICATIONS CONSOLIDATED INTO ONE SYSTEM

For example, the human resources team needs a way to store employee records and track employee training. The finance team needs to run payroll, collect payments, and make payments. The field service workers need a more streamlined way to receive and track work requests. And the engineering team needs to track and permit developments within DSRSD's service area. Essentially, the District was looking for a computer software system that would streamline processes and eliminate duplicate data entry across many departments.

"Consolidating all the applications under one system will improve our efficiency tremendously," says Financial Services Manager Herman Chen.

"This new system also improves our business processes and reduces the number of separate systems we have to support," says Information Technology Manager Renee Collins. "For example, we were using several, individually created, Access databases which can be corrupted easily, can only be used by one person at a time, are not scalable, and cannot connect into other information systems. Originally these Access databases were designed to be used by a small group of people, but the District has grown beyond these home-grown tracking databases to an actual computer software system that integrates all the information."

Three vendors submitted proposals to replace the old accounting system with a more robust system. Tyler Munis won the \$1.5 million contract that is being implemented in phases beginning in November 2020 and continuing through summer 2022. Tyler Munis is a part of Tyler Technologies headquartered in Plano, Texas, and specializes in integrated Enterprise Resource Planning (ERP) solutions for government agencies.

FOUL AIR REHAB REDUCES ODORS

DUBLIN SAN RAMON SERVICES DISTRICT HAS BEEN USING DIRT TO CLEAN FOUL-SMELLING AIR FOR A COUPLE DECADES. ONE 18-YEAR-OLD PIPE THAT PUSHES THE SMELLY AIR THROUGH THE DIRT (ALSO KNOWN AS BIOFILTER BEDS) HAD DETERIORATED BEYOND REPAIR.

In spring 2019, the District began the \$2.2million Foul Air Rehabilitation project to replace 405 feet of the 42-inch-diameter, corrugated plastic, foul air pipe that runs from the center of the Regional Wastewater Treatment Facility and along I-680 in Pleasanton.

To perform the replacement, a contractor removed the old pipe and replaced it with a new, 42-inch-diameter, fiber-glass-reinforced pipe that pushes foul air through 70 feet of three smaller pipes (24 inches in diameter). From there, the foul air is pushed through 2,350 feet of even smaller pipes (10-inch diameter, perforated pipes) that disperse the air through five feet of microbially coated soil media.

In addition, the construction crew repaired cracks in the holding basin and

roadway under which the 42-inch pipe travels.

"This project enables us to reduce future odors from our bar screens and grit tanks," says Associate Engineer Rudy Portugal.

When the wastewater arrives at the plant, the bar screens (steel bars with quarter-inch gaps) filter out inorganic objects like pieces of wood, metal, and rags. At the next stage in the process, the grit tanks remove gravel from the process. In both cases, the foul air is sent 405 feet through the pipe and pushed through the biofilter beds, removing odor from the air.

The treatment plant began using the rehabilitated foul air line system in August 2019, with the project's final completion in October 2019.

The biofilter bed before it was covered with a 5-foot layer of biofilter media (special soil). Microbes in the soil consume the odorous gas.



RECYCLED WATER DEMAND GROWING

Situation: Large green spaces in Dublin, San Ramon, and Pleasanton soaked up a record 10.1 million gallons of recycled water on a single sweltering day in July 2017. With more customers connecting to the recycled water distribution system all the time, peak demand on hot summer days is expected to nearly double by 2020.

Solution: Expand and improve the Jeffrey G. Hansen Water Recycling Plant, at a total cost of \$18.2 million, to boost water recycling capacity from 9.7 million to 16.2 million gallons per day.

Water Recycling is Resource Recovery

The water recycling process applies tertiary treatment and ultraviolet disinfection to secondary effluent (wastewater that has undergone primary and secondary treatment).

Regional Investment in a Reliable Water Supply

DSRSD and East Bay Municipal Utility District (EBMUD) partnered in building the facility more than a decade ago. As a result of agreements to share and expand this valuable local resource, now the plant also supplies recycled water to the City of Pleasanton. DSRSD operates the water recycling plant and the backbone distribution system on behalf of the partnership.

City of Pleasanton Tennis and Community Park is irrigated with recycled water.



RECYCLED WATER
USED FOR IRRIGATION
DO NOT DRINK
No tome agua del sistema de riego
CITY OF PLEASANTON 925-931-5500

BAY AREA CHEMICAL CONSORTIUM

SINCE 2010, DSRSD HAS SAVED MORE THAN \$1 MILLION BY PARTNERING WITH OTHER BAY AREA WATER AND WASTEWATER AGENCIES TO COOPERATIVELY PURCHASE CHEMICALS IN BULK QUANTITIES USED TO TREAT AND TRANSPORT WATER AND WASTEWATER.

In 2010 the District created the Bay Area Chemical Consortium, the informal cooperative that seeks competitive bids for chemical contracts. These savings are passed along to water and wastewater customers of the participating agencies.

For the first ten years, DSRSD staff administered the program on behalf of all the agencies. Then during fiscal year 2021, the District transitioned administration of the program to the Bay Area Clean Water Agencies (BACWA).

In the FY2021 cycle of bidding where DSRSD was training BACWA, 61 agencies participated. Some years have as many as 70 agencies, with the number fluctuating depending on each agency's needs year to year. The program's popularity has allowed it to expand to include agencies throughout the Bay Area, as well as Sacramento and the Central Valley.

With administration transferred to BACWA, the District paid a participation fee of \$2,000 for the first time. Some agencies pay as much as \$5,000 to participate or as little as \$600. Fees are based on the number of chemicals needed by each agency and the number of bids. The

bidding process starts in November and December, with bids typically awarded in April. Then agencies have time to work on contract purchase orders with suppliers and start deliveries in the new fiscal year beginning July 1.

For FY2022, DSRSD is working with a new supplier for aluminum sulfate, or alum that is used in the wastewater treatment process. When a new supplier comes on board, wastewater operators work with the supplier on an initial site visit, which includes details such as the route of the truck through the plant, how to unload the chemical to holding tanks and details about their tanks and capacity. While the District has saved more than \$1 million bulk buying chemicals used in the treatment process, the savings gap has slowly been narrowing. Each agency has special requirements that can affect the pricing for all agencies.

"The consortium helps small districts like us," Management Analyst II Gemma Lathi says. "By combining our quantities with other agencies, we get better prices. That was the original intent of the consortium."



Sodium hypochlorite is delivered at the wastewater treatment plant.

\$38,000 SAVED CLEANING UP TREE LINE

Lagoon and tree line photo courtesy of Darren Pillen



Mechanic II Jason Miller feeds branches into the wood chipper at the facultative sludge lagoon.

The Maintenance Facilities Team went out to bid to trim three-fourths of a mile of trees along the east fence line of the Dedicated Land Disposal (DLD) and Facultative Sludge Lagoon (FSL) sites. These sites have been a trouble area for underbrush, hazards, and transient activity. Only one quote was received for \$46,170.

The team decided to do the job themselves and completed the work in less than two weeks at a total cost of \$8,000: \$2,700 to rent a chipper and dumpsters; \$5,300 for labor.

"The Maintenance Facilities Team did an excellent job improving that area and saved the District approximately \$38,000," says Operations Director Jeff Carson.

The team removed almost 320 yards of overgrown and under-landscaped brush and branches from the FSL fence line and mulched the trimmings. Then they used the mulch as ground cover around the facility (mulch discourages weeds and helps the soil retain moisture).

The trees were trimmed for three reasons. The first was to deter the homeless camps that had started to accumulate along Johnson Drive on the north side of the property, visible from the street. In 2019, the District spent about \$20,000 in hazmat removal fees to clean up the homeless encampment at that time. Another reason to trim the trees was due to thick vegetation creating a fire hazard along the property. Trimming the trees created a fire break. A final reason for tree trimming was to improve the appearance of the property.

"Originally the trees were planted to block odor for the businesses around us, and to improve the look of the site," says Mechanical Supervisor Spencer Halliday, who led the project. "We didn't want to remove them, just trim them."

ALUM IMPROVES WASTEWATER TREATMENT PROCESS



Cogen Specialist Loy Riddle (retired) chisels struvite buildup from the digester mixing blade.

The problem: The wastewater treatment process needs wastewater to flow through the plant, but when struvite crystals build up into a concrete-like substance in the pipes and tanks, they clog the way and stop the process.

The solution: Add alum, a.k.a., aluminum sulfate, to the process.

Currently, at the Regional Wastewater Treatment Facility, alum is used in the pretreatment phase of the Jeffrey G. Hansen Water Recycling Plant. Every three to four days, tanker trucks deliver 4,416 gallons of liquid alum (\$4,255 worth) during the peak summer season. Operators add alum to the pretreatment process to increase the efficiency of the sand filters as they make irrigation water from wastewater.

Alum will also be used in the wastewater treatment process once this \$1.64 million alum project is completed in spring 2022. Operators will add alum to the wastewater stream as it enters the treatment plant from the facultative sludge lagoons. Sometimes water is moved from the lagoons back to the treatment plant (during rainy season), and sometimes water is added to the sludge lagoons (during hot summer months).

This alum will bind up phosphates, causing them to settle to the bottom and making it less likely they will release back into the water.

In the wastewater treatment process, when the liquid stream separates from the solids, it moves on to the aeration tanks where oxygen is pumped in to keep the microorganisms alive while they feed on wastes, breaking them down. If plant operators stop pumping oxygen into the aeration basin, the microorganisms that feed on the phosphates thrive, efficiently removing phosphates from the wastewater stream.

However, when these microorganisms move on to the digesters, the next step in the wastewater treatment process, they release those phosphates. If there are too many phosphates released in the digester, they combine with magnesium and ammonium and create struvite, a concrete-like substance that destroys the internal mechanism of the digester and is costly to remove and repair.

Adding alum to the wastewater stream provides three benefits. It makes sludge settle easier in the secondary clarifiers so cleaner, less turbid water moves on to the recycled water treatment plant, making that process more efficient. Alum in the wastewater also helps prevent struvite from building up inside the digesters. And finally, because alum improves the efficiencies of the aeration tanks and clarifiers, it will not be necessary for the District to build a fifth secondary clarifier when the community reaches buildout. This will save ratepayers millions of dollars.

Most of the cost of the alum project is for construction of the tanks that hold and disperse the alum into the water from the sludge lagoons before it is returned to the plant for treatment. The alum project engineer is Associate Engineer Kevin Randeni.



Wastewater Treatment Operator II Kevin Lewis (left) and Scott Amaral (retired) change the bubble filters in the aeration basins.

VALVES IMPROVE AIR FLOW CONTROL FOR AERATION BASINS

THE AERATION BASINS (208 FEET LONG, 30 FEET WIDE, AND 15 FEET DEEP) ARE PART OF SECONDARY WASTEWATER TREATMENT. THEY PROVIDE OXYGEN FOR THE MILLIONS OF BENEFICIAL MICROSCOPIC ORGANISMS THAT BREAK DOWN DISSOLVED ORGANIC MATERIAL IN THE WASTEWATER AFTER IT HAS PASSED THROUGH PRIMARY TREATMENT. THE OXYGEN IS DELIVERED TO THE BASINS VIA THREE HIGH-HORSEPOWER BLOWERS, TYPICALLY ONLY ONE OR TWO BLOWERS ARE USED SIMULTANEOUSLY, WITH THE THIRD FOR BACKUP.

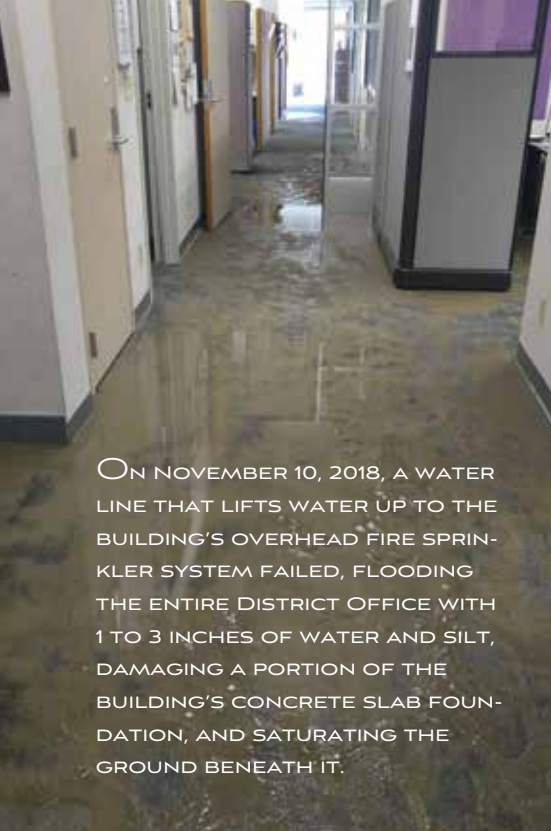
“The blowers are one of the biggest energy loads at the plant,” says Principal Electrical Engineer Maurice Atendido.

Previously, the air flow to the blowers was controlled by pneumatic valves operated under air pressure. The new Rexa brand valves are controlled by electric motors that run hydraulic motors. The new valves provide finer control of the air flow. “We’re not wasting air with the new valves,” Atendido says. “And the less air we use, the less energy we need for operation.”

Two DSRSD divisions—the Mechanical Maintenance Division and the Instrumentation, Controls & Electrical Division—worked together to replace the aging valves for this \$80,000 project. The work began in FY2020 and was postponed until later in FY2021 due to coronavirus precautions with wastewater.

In June 2021, treatment plant staff were still making adjustments in the Supervisory Control and Data Acquisition (SCADA) computer system with the new valves. Wastewater operators monitor and control plant facilities via SCADA. At that time, they had already tracked more than 100,000 different cycles with the new valves showing the adjustments of the new valves versus the old. Previously, the valves would cause delays and could adjust air flow too much or too little. The updated valves respond immediately and allow for more minute adjustments.

“The new ones are exact literally every time,” Mechanical Superintendent Shawn Quinlan says. “We’re anticipating a fairly sizable energy savings.” It will take staff about a year to see trends and determine how much energy is actually being saved, but Quinlan estimates a 10% efficiency gain in use of the blowers based on preliminary research. “We’re already seeing savings because the blowers are running less.”



ON NOVEMBER 10, 2018, A WATER LINE THAT LIFTS WATER UP TO THE BUILDING'S OVERHEAD FIRE SPRINKLER SYSTEM FAILED, FLOODING THE ENTIRE DISTRICT OFFICE WITH 1 TO 3 INCHES OF WATER AND SILT, DAMAGING A PORTION OF THE BUILDING'S CONCRETE SLAB FOUNDATION, AND SATURATING THE GROUND BENEATH IT.



Construction crews cut damaged cement footing into 12" by 18" slabs for removal. All work was done by hand to protect the surrounding structure.

DISTRICT OFFICE RESTORED AND RENOVATED AFTER BUILDING FLOOD

Once the extent of the flood damage was understood, a decision had to be made: Should the building be restored as it was, or should the District take advantage of the disaster—now that the building was empty and all the furnishings were removed—to make more efficient use of the space? The Board of Directors chose the latter.

The total cost to repair the flood damage, make a few renovations to use the space more efficiently, and bring the 29-year-old building up to code was \$6.4 million. The District was reimbursed \$3.1 million from insurance.

Renovations

A few walls were moved to improve workspaces. For example, when customers walk into the District Office, the Customer Services counter is now located straight ahead, not off to the right. The kitchen and dining break room area is now one large space with new appliances. New roller shades were installed on exterior windows, and to save energy, LED lighting was installed throughout the building with vacancy switches that automatically turn off lights after not detecting motion for 20 minutes.

The heating, ventilation, and air-conditioning (HVAC) system was improved. The water boiler, thermostats, and control valves were replaced. The computer that controls the system was replaced, and a new air conditioner was installed in the server room so the networking equipment will be more reliable. Also, the communication network throughout the building was upgraded to Category 6 cabling. This will improve communication via phones, computers, and wireless connections.



New audio-video equipment was installed in the Boardroom to improve the quality of Board meeting videos.



To reduce the shortage of meeting spaces, the former library was converted to a conference room.

Boardroom improvements included the following: new lighting, sound, and video equipment that will enable streaming and recording of Board meetings; new acoustic paneling on the walls and ceiling will make it easier for people in the Boardroom to hear what is being said; and new curtains.


Conference rooms were modernized: conference tables are now wired for laptops and tablets, and television monitors are mounted on the walls. And even though the ceiling tiles were not damaged in the flood, new tiles replaced the old, shabby ones.

Code Compliance

To bring the building up to code per the Americans with Disabilities Act (ADA), all restrooms had to be retrofitted: toilets had to be moved 12 inches left or right, and two showers were reduced to one shower to enable the turning radius of a wheelchair; doors had to be hinged correctly; and fixtures had to be retrofitted. These changes required the underground plumbing to be moved.

Other changes necessary to be ADA compliant included the following: electrical outlets throughout the building had to be moved higher up the walls (between 15 and 48 inches instead of the 13.5 inches where they were before the flood); new technology replaced the outdated fire alarm system; and the west parking lot added three ADA accessible stalls and rebuilt the grade of the adjacent sidewalks, so it does not exceed the maximum slope of 5 percent.

In mid-March 2020, the District had planned to move back into the newly renovated District building. However, the COVID-19 pandemic was sweeping across the country and Governor Gavin Newsom issued a shelter-in-place order. The scheduled move back into the District Office was postponed. By the end of July, employees' boxes were moved into the District Office, but only a skeleton crew was working in the office; 80 percent of the employees who would normally be working in the District Office were either partially or fully working at home.



IN THE SUMMER OF 2021, THE SAN RAMON VALLEY RECYCLED WATER PROGRAM (SRVRWP) STARTED RECEIVING A TEMPORARY BOOST TO THEIR SUPPLY FROM THE CENTRAL CONTRA COSTA SANITARY DISTRICT (CENTRAL SAN).

CENTRAL SAN WASTEWATER DIVERTED TO MAKE IRRIGATION WATER FOR SAN RAMON PARKS

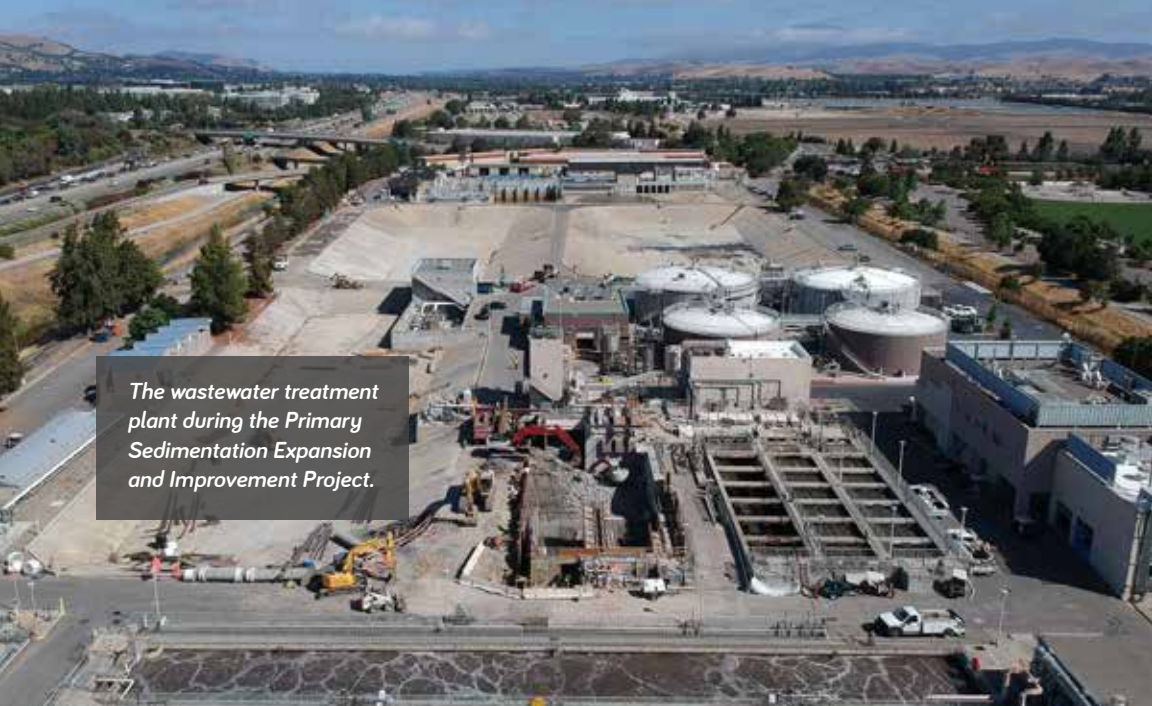
Temporary Demonstration Project

Located "up-hill" from the Jeffrey G. Hansen Water Recycling Plant, Central San is diverting about 700,000 gallons a day of wastewater to the Jeffrey G. Hansen Water Recycling Plant. It enables SRVRWP to irrigate more landscapes in the San Ramon Valley, just in time for the drought.

The diversion is in response to maxed-out supply. On hot summer days, the water recycling plant uses every drop of wastewater coming into the plant to make irrigation water for school grounds, parks, golf courses, and roadway medians. This temporary diversion enables the SRVRWP to promote conservation of our limited supply of recycled water and to develop other sources. SRVRWP is a partnership between East Bay Municipal Utility District and DSRSD.

Wastewater from Central San is a temporary supply during consecutive hot summer days, so SRVRWP can make more irrigation water when it is needed most.

San Ramon's Central Park remains a verdant green - even in a drought thanks to recycled water. San Ramon City Hall flanks the park on the south side.



The wastewater treatment plant during the Primary Sedimentation Expansion and Improvement Project.

*P*rotecting public health & the environment

ON A NORMAL DAY, THE REGIONAL WASTEWATER TREATMENT FACILITY OFF JOHNSON DRIVE IN PLEASANTON MAY SEEM LIKE A WELL-OILED MACHINE. BUT THERE AREN'T MANY NORMAL DAYS FOR DSRSD OPERATORS RUNNING THE PLANT WHEN THE DISTRICT IS FREQUENTLY REPAIRING, REPLACING, OR EXPANDING THE FACILITY.

OPERATING A WASTEWATER TREATMENT PLANT DURING CONSTRUCTION

Levi Fuller, who retired in 2021 as the Wastewater Treatment Plant Operations Superintendent, spent 17 of his 21 years as a District employee with the plant under some type of construction. "Operating a treatment plant during construction is like tuning up your car while driving down the road," Fuller says.

Construction projects at the plant often impact one or more steps in the treatment process and occasionally involve temporarily taking operational sections out of service. Before that can occur, operations staff must assess if backup systems are needed so the plant can continue meeting the parameters of its National Pollutant Discharge Elimination System permit. This permit essentially limits what the plant can discharge to natural waterways. Operators, mechanics, and electricians also work with DSRSD engineers during the design phase of construction projects.

"We give input on our preferences, what we've seen at other plants, and our instincts and intuition about what works best," Fuller says. "That's very important to any successful capital improvement project. It helps to have all disciplines involved."

"It does make for a more exciting, satisfying career if you have construction and are constantly improving the plant because you work for an organization that wants to be on the cutting edge of treatment technologies," Fuller says.

DISTRICT INVESTS IN EMERGENCY GENERATORS

WHEN HIGH TEMPERATURES, EXTREME DRYNESS, AND RECORD-HIGH WINDS CREATE CONDITIONS WHERE A SPARK MIGHT LEAD TO A MAJOR WILDFIRE AND THREATEN A PORTION OF THE ELECTRIC GRID, PG&E TURNS OFF THE ELECTRICITY. THIS IS KNOWN AS A PUBLIC SAFETY POWER SHUTOFF (PSPS). WHEN PG&E SHUTS OFF THE POWER AT CRITICAL PUMP STATIONS, THE DISTRICT IS UNABLE TO PUMP WATER INTO RESERVOIRS—WATER THAT MAY BE NEEDED TO FIGHT FIRES.

In 2019, the District experienced a few brief power shutoffs at pump stations in western Dublin. At the time, only two pump stations in the District's water distribution system were equipped with emergency generators. Operations and Engineering staff went to work. They identified 7 of the District's 17 pump stations as critical to operating the water system. These seven pump stations move water to reservoirs on the edges of the water distribution system and are critical to providing water to all pressure zones.

"Our goal is to be able to handle any threat to the water distribution system in an emergency and to maintain water service for most, if not all, of our customers," says Associate Engineer Sean O'Reilly, the project manager responsible for designing and installing six of the emergency generators and portable generator tap boxes. Tap boxes are the electrical wiring connections outside of the pump stations which enable operators to quickly plug in the emergency portable generators and provide power to the pump stations.

Cost Savings

This \$3.42 million dollar project saved approximately \$50,000 by purchasing emergency portable generators via SourceWell, a procurement resource that enables bulk buying for public agencies. Of the three emergency generator vendors, only Cummins Inc. (Columbus, Indiana) provides the size of generators the District needs that match the power demand for the District's critical pump stations.

Associate Engineer Sean O'Reilly, Mechanic II Ron Freitas, and Senior Mechanic II Jason Miller receive training on how to operate the new Cummins generator.





WORKING TOWARD A GREENER FLEET

Senior Instrumentation/Controls Technician Jerry Miller charges one of the carts from our fleet of green vehicles.

THE DUBLIN SAN RAMON SERVICES DISTRICT OWNS, MAINTAINS, AND OPERATES A TOTAL FLEET OF 165 VEHICLES AND PIECES OF EQUIPMENT: 59 ON ROAD VEHICLES (REGISTERED AND LICENSED); 23 ELECTRIC CARTS; 1 ELECTRIC FORKLIFT; 31 PIECES OF TRAILERED SPECIALTY EQUIPMENT (EMERGENCY GENERATORS, PORTABLE PUMPS AND COMPRESSORS); AND 51 PIECES OF SPECIALTY EQUIPMENT (A DREDGE, A CRANE, AND PERMANENT GENERATORS TO NAME A FEW). ANYTHING WITH AN ENGINE OR MOTOR, STATIONARY OR MOBILE, IS CONSIDERED PART OF THE FLEET. VEHICLES RANGE IN SIZE AND COMPLEXITY FROM THE 66,000-POUND (WHEN FILLED) VAC-CON TRUCK THAT VACUUMS AND JETS CLOGS OUT OF PIPES TO A 3,300-POUND HYBRID SEDAN.

The Fleet Management Program has three objectives: 1) to operate uninterrupted in normal and emergency situations; 2) to comply with all regulations; and 3) to purchase and maintain a cost-effective fleet.

Provide Uninterrupted Service

To ensure uninterrupted service, Fleet plans their budget 10 years out and evaluates the replacement of vehicles using nine criteria: 1) safe to operate; 2) mechanical life span (the age at which large mechanical components—engines, transmissions, suspensions—start to fail, which is usually at the 10-year or 100,000-mile range for a standard duty vehicle and 15 years or 150,000 miles for a heavy duty vehicle); 3) cost to operate; 4) business need; 5) availability of parts; 6) environmental impacts and compliance with ever-changing regulations; 7) energy efficiency; 8) fuel source (diesel, biodiesel, gas, hybrid, natural gas, electric); and 9) mileage and age of vehicle.

Comply With All Regulations

In the fall of 2020, California Governor Gavin Newsom issued Executive Order N-79-20 requiring the following:

- By 2035, 100 percent of in-state sales of new passenger cars and trucks will be zero-emission vehicles (ZEVs);
- By 2035, 100 percent off-road ZEVs and equipment, where feasible; and,

- By 2045, 100 percent of medium- and heavy-duty vehicles in the state will be ZEVs for all feasible operations, including ZEV buses and long-haul trucks.

For ten years, DSRSD has been working toward a greener fleet by replacing its vehicles with smaller vehicles and replacing small pickup trucks used at the Regional Wastewater Treatment Facility (RWTF) with solar-charged, battery-powered electric carts.

Today, the District has 23 electric carts. Most are equipped with toolboxes for plant mechanics and electricians. One cart is equipped with portable welding equipment. These carts are a more energy-efficient and cost-efficient way for plant operators, mechanics, and electricians to move about the 22-acre Regional Wastewater Treatment Facility and 50-acre land disposal site located across the street from the RWTF.

This is a good beginning, but the fleet is much bigger than 23 electric carts that move about the facility. Of the 59 vehicles traveling on the roads, 46 are gas-powered, 10 diesel, and 3 hybrid. Of the 83 pieces of specialized equipment, 26 are gas-powered, 25 diesel, 4 propane, one solar, one electric battery, 10 are stationary pieces of equipment that use plant electricity, and 16 do not require any power (trailers, etc.).

Challenges to Achieving a Green Fleet

While the District intends to work toward a greener fleet, many factors are involved. Greener vehicles are not currently available to do the tasks required for some of the District's specialty vehicles and equipment. Greener vehicles may exist but are not yet available on the market. Greener vehicles need to be clean-air certified. And finally, greener vehicles need to be not only energy efficient, but also cost efficient.

"Often the technology is not available to satisfy the District's business needs with zero-emission vehicles," says Mechanical Superintendent Shawn Quinlan. "But we do what we can: we reduce the total number of vehicles, replace heavier vehicles with lighter ones, and replace vehicles with more fuel-efficient, lower emission ones."

Regulations

The California Air Resources Board (CARB) regulates mobile sources of air emissions from on-road vehicles because they move throughout the state. Vehicles and mobile equipment are subject to numerous regulations, depending on the type of equipment and the fuel used. The District's gas-powered vehicles are constantly monitored (via software built into the vehicle) for smog emissions. Whereas District diesel-powered vehicles undergo SNAP tests (Sudden Neutral Application of Power) conducted by staff to determine how clean they are running.

Regulations impact many aspects of a fleet. For example, regulations place limits on emissions which may force the District to replace older equipment. Currently, the District has a crane with a 28-ton lifting capacity used to maintain and remove pumps and rooftop equipment. This crane must operate at Tier 4 (essentially it must pass the smog test) or it has to be retired and replaced.

Regulations impact purchasing requirements, as detailed in the Governor's Executive Order N-79-20. Regulations impact operations. For example, the District is limited in the number of hours it can operate portable generators. However, during Public Safety Power Shutoffs, such limitations are waived. With all government regulations, there are reporting requirements (e.g., which are mostly online these days and easier to complete).

In addition to CARB regulating the District's on-road vehicles, the Bay Area Air Quality Management District regulates stationary sources of air emissions like the District's emergency diesel standby generators and cogeneration engines. These are essentially locomotive engines that mix digester biogas, methane, with natural gas to produce electricity and power the treatment plant.

OPERATORS SEARCH FOR A HARD-TO-FIND LEAK IN WESTERN DUBLIN

Most leaks are repaired the same day, except in the case of scheduling conflicts or crews working during the night to avoid causing traffic delays on busy roads. DSRSD staff repaired more than 100 leaks in 2020, but this leak was a 1-in-100 event.

The operators initially tried to locate and isolate the leak, which turned out to be difficult. Crews used acoustic hydrophones, which magnify the sound of water flowing through pipe and dirt, but they still were unable to locate the leak. Five days later, after several unsuccessful attempts, a special leak detection company was brought in.

Three homes were affected. Staff installed a jumper to provide water, but the water pressure was low. Once crews narrowed down the section of street that contained the leak, they installed an additional water main valve midway down the block. This made it possible for them to isolate the leak and restore two of the homes to normal service. One home remained on a jumper line throughout the 11-day repair.

Once crews had access to the leak, they discovered a section of pipe needed to be replaced. A 15-foot section of 8-inch diameter water main was replaced, and field staff had to flush high velocity water through the new pipe to ensure it was scoured clean. The replacement also included checking water pressure to confirm there were no leaks and disinfecting the new pipe by “super chlorinating” it with a high concentration of chlorine. Operators dechlorinated the flushed water before it flowed to the storm drain.

The new pipe had to sit for 24 hours after super chlorination. Then crews could measure chlorine residuals to make sure disinfection was successful. The line was flushed once more before connecting it to the drinking water system.

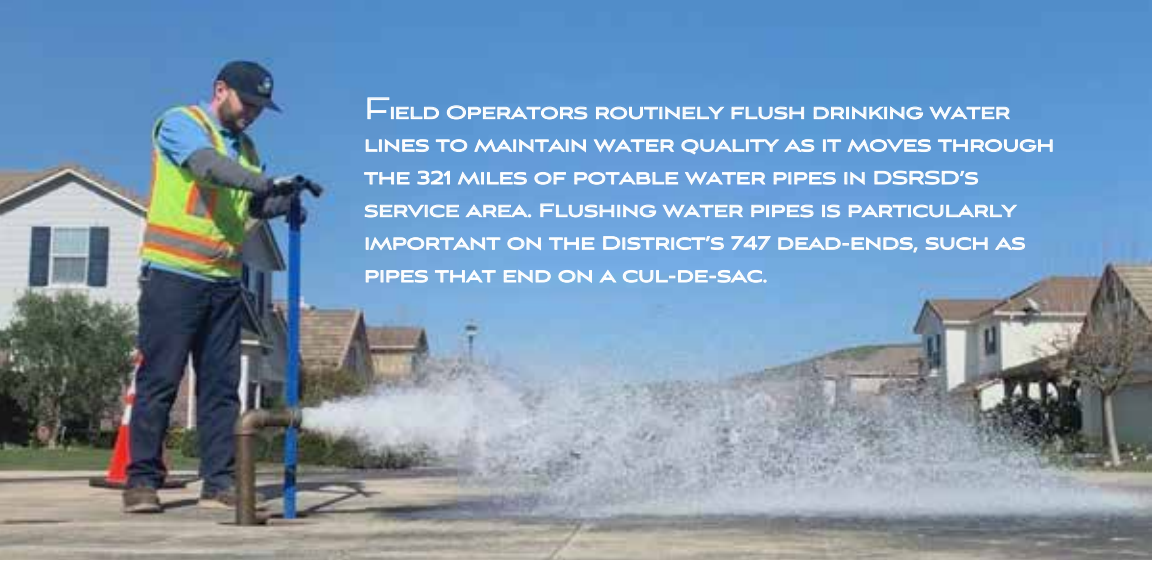
DSRSD appreciates residents who allowed the District to provide water to the few impacted homes. Field operators used a jumper line to connect a customer’s water service to a neighboring home. The District also appreciates the residents who drove carefully around employees at work in the roadway.

“Continuing to provide water during repairs is vital to public health,” said Water/Wastewater Systems Superintendent Dan Martin. “It’s great to work in a community where residents are kind and willing to help out neighbors in these unexpected situations.”

ON OCTOBER 15, 2020, DSRSD FIELD OPERATIONS STAFF LEARNED OF A SIGNIFICANT WATER MAIN LEAK. IT FLOWED UNDER THE ROAD THROUGH THE STORM DRAIN NEAR THE BASE OF THE HILL ON SOUTHWICK DRIVE IN DUBLIN. WHILE THEY WERE ABLE TO STOP THE LEAK THE DAY IT WAS DISCOVERED, REPAIRS PROVED TRICKIER.



Water/Wastewater Systems Operator II Tim Johnson adds chlorine to disinfect a new portion of 8-inch water main on Southwick Drive in Dublin in October 2020.



FIELD OPERATORS ROUTINELY FLUSH DRINKING WATER LINES TO MAINTAIN WATER QUALITY AS IT MOVES THROUGH THE 321 MILES OF POTABLE WATER PIPES IN DSRSD'S SERVICE AREA. FLUSHING WATER PIPES IS PARTICULARLY IMPORTANT ON THE DISTRICT'S 747 DEAD-ENDS, SUCH AS PIPES THAT END ON A CUL-DE-SAC.

Water/Wastewater Systems Operator II (on-call) Dan Pettinichio flushes a dead-end water line. Water is dechlorinated before it flows to the storm drains.

FLUSHING WATER LINES IMPROVES WATER QUALITY

"Over the course of time, there is a natural buildup of biological material in the water main," says Water/Wastewater Systems Superintendent Dan Martin. "Water is full of normal organisms, nonpathogens. By using a chlorine disinfectant, we keep these normal organisms from creating an environment where unhealthy organisms, pathogens, can grow. The naturally occurring organisms will accumulate over time, and we want to keep the population at a normal level by flushing routinely."

Flushing water lines involves scouring the walls of pipes with pressurized water. Since July 2019, the District has been replacing 2-inch blow-off valves, located at dead-ends, with 4-inch blow-off valves. A larger blow-off valve allows operators to increase flushing velocity from 250 gallons per minute up to 900 gallons per minute. "This increase in the speed of water flowing through the pipes improves cleaning," Martin says.

Operators return the flushed water into the sewer system so it can be treated at the Regional Wastewater Treatment Facility and converted to recycled water for irrigation. This is especially helpful during a drought when the summer months are hot and dry.

DSRSD's goal is to flush all dead-ends annually during summer and fall. Operations staff are getting closer to that goal, currently flushing all dead-ends about every year and a half, with no location going longer than two years. The District is also designing water distribution systems differently so there are fewer dead-ends added to the system. Instead, they loop pipes.

System maintenance included with flushing

While performing flushing, crews also exercise fire hydrant and isolation valves to ensure they are in good operating condition. As of summer 2021, there were 12,697 valves. Operators have a goal of exercising valves every four years and are currently able to do so every five years—increasing the number each year. In 2020, the District exercised 2,343 valves.

"Most valves are in the open position, but periodically we may have to shut a valve to isolate a leak," Martin says. "The valves can degrade when not being used, and sometimes when staff go to operate valves, they won't move, will break, or can't seal fully. We have to exercise them on a reasonable interval."

TWO SECTIONS OF SEWER MAIN TO BE RELINED

CLOSED-CIRCUIT VIDEO OF TWO SEGMENTS OF A 60-YEAR-OLD SEWER MAIN SHOWED CORROSION, CRACKING, AND FLAKING. "THE SECTIONS OF THIS 36-INCH-DIAMETER REINFORCED CONCRETE PIPE WERE FAILING, AND WE NEEDED TO RELINE THEM TO EXTEND THEIR LIFE ANOTHER 50 YEARS," SAYS ASSOCIATE ENGINEER RUDY PORTUGAL.

This pipe collects sewage from east Dublin and Parks Reserve Forces Training Area and conveys it to the Regional Wastewater Treatment Facility located in Pleasanton on Johnson Drive.

Between the two sections of this sewer main, there is a 1,400-foot section of pipe in fair condition due to a liner installed in 1993. "We expect this middle section of the sewer main to last another 20 years," says Portugal.

The biggest challenge of this \$1.2 million construction project is that the two sections of pipe that need to be relined (813 feet total) travel through a heavily congested business area: under Interstate 580 and near shopping centers on Johnson Drive at Owens Drive that have businesses with long open hours. "The goal is to minimize impact to vehicles on the roads and pedestrians on the sidewalks," says Portugal.

Other challenges were that some of the work has to be done on private property requiring temporary easements, and most of the work has to be done at night.

The District expects construction of this project to be completed in the fall of 2021.



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Learn how to be a water/wastewater operator and get reimbursed for college-level classes and books thanks to the Bay Area Consortium for Water and Wastewater Education (BACWWE). Dublin San Ramon Services District is one of more than 20 agencies in the BACWWE partnership that encourages new people to join the water/wastewater profession. Instructors are working professionals and courses prepare students for state certification exams. Entry level salaries range from \$73,000 to \$84,000 annually.

View profiles of DSRSD Wastewater Treatment Operators who have taken BACWWE courses at www.dsrdsd.com/careers/career-training/bacwwe-profiles.

Learn about the BACWWE program at www.bacwa.org/education/bacwwe/



PROTECTING GOLDEN EAGLE HABITATS



Eagle photos courtesy of Roger Lee.

DUBLIN IS UNIQUELY LOCATED WITHIN AN AREA SURROUNDING THE DIABLO RANGE, WHICH HAS A ROBUST POPULATION OF RESIDENT GOLDEN EAGLES. EACH YEAR DSRSD ASSISTS IN PRESERVATION AND PROTECTION OF THEIR NESTING HABITAT WITH THE HELP OF A RAPTOR BIOLOGIST.

Colleen Lenihan, who works with the Center for Natural Lands Management to protect nesting eagles from human activity, provides updates to District staff during breeding season beginning in January when resident pairs build nests until July when newly fledged (flying) young are safely on the wing. Lenihan has been monitoring golden eagles in the region since 1990.

This helps the District make informed choices about when to perform work or access reservoirs that are located close to the golden eagle breeding areas. Lenihan communicates with DSRSD and the City of Dublin to ensure the area remains quiet. While the District continues normal maintenance throughout the year, large construction projects that could create a disturbance are scheduled for August through December, outside of breeding and fledging season.

"Golden eagles have a long relationship with humans," Lenihan says. "They are the most widely distributed eagle species in the Northern Hemisphere. Many cultures regard them as sacred."

Golden eagles have three basic habitat requirements for survival and reproduction: abundant prey resource, appropriate nest site, and minimal disturbance by human activity. In the Diablo Range, golden eagles primarily hunt and eat California ground squirrels and jackrabbits. Golden eagles nest predominantly in trees within a landscape

mosaic of oak savanna (grasses and other herbaceous vegetation dominate with oaks as the principal trees), oak woodland (dominant trees are oaks, interspersed with broad-leaf and coniferous trees, grasses, and native plants), and grassland.

Why Protect Golden Eagles?

Golden eagle populations are relatively stable throughout their range, but current threats to survival and reproduction remain. An estimated 70% of eagle deaths are related to human impacts, usually unintentional. Landscape level conversion through urbanization eliminates hunting grounds and suitable nesting areas. In addition, there are threats to the health of eagles from secondary poisoning. Raptors feed on prey animals that may be exposed to rodenticides used to subdue "pest" species. These poisons accumulate in top predators wreaking havoc with their health and reproduction.

During breeding season, golden eagles are sensitive to human disturbance making this species susceptible to reproductive failure, especially during the first 10 weeks of the nesting season when eggs and young need constant care. For this reason, nest areas are closed to protect developing chicks. Adult eagles tend to the nestlings for 10 weeks.

Due to these threats and sensitivity, eagles in the United States are protected under the Bald and Golden Eagle Protection Act that addresses protection for both species of eagle and prohibits unauthorized "take" of individual eagles, their nests, or eggs.

Nesting Season

In January, golden eagles build or refurbish nests. Eagles lay eggs from late January to mid-March. Females lay from one to four eggs, and both parents share incubation duty for about six weeks.

From mid-May to mid-June, young eagles fledge from the nest, taking their first short flight gliding to the ground. Flight practice continues through June, and Dublin's young eagles are usually soaring safely by July 1. Eagle parents protect and feed juveniles through summer, and gradually the young birds explore farther afield, slowly becoming independent.

"Dublin eagles are amazing," Lenihan says. "One of the most rewarding times is when the chicks fledge. It is stressful for the eagle family and for me as well. Sometimes a sibling pushes them out or they fall from the nest. But one day the wind just picks them up and off they go. After a couple weeks of practice they are flying well. It's an absolutely gorgeous sight."

Drought, fire, and adult mortality throughout the Diablo Range golden eagle population may have decreased overall nesting success in 2021. Yet, golden eagle pairs in Dublin successfully raised and fledged four chicks thanks to a cooperative community effort to protect them.



BUDGET IN BRIEF

Expand and Improve

- \$19 million to add a new primary sedimentation tank, partially demolish and replace an existing tank, and update internal mechanisms for the other three tanks to increase treatment efficiency and prepare for buildout flows.
- \$7.7 million to add Reservoir 20B to the potable water distribution system. The design phase is anticipated to start in Fiscal Year 2021, with construction work planned for Fiscal Year 2023.
- \$9.5 million for a new turnout in eastern Dublin to create a supplementary connection from Zone 7 Water Agency to DSRSD's water distribution system. The design contract was awarded in summer 2020.
- \$3.42 million to purchase five trailer-mounted portable diesel generators and install wiring so the generators can go online quickly to serve critical pump stations during power outages.

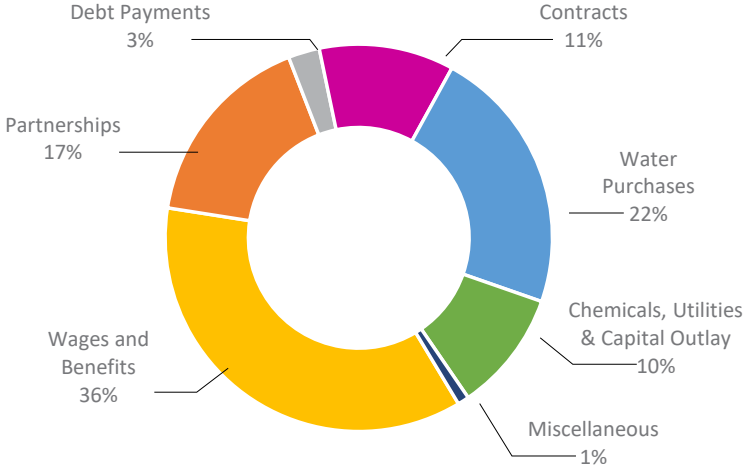
Repair

- \$6.4 million to restore the District Office from flood damage caused by a fire line break in 2018, plus additional renovations to bring the building up to code and to modernize the office. By July 2020, DSRSD received \$2.5 million toward expense recovery from insurance.
- \$1.2 million to reline two sections of sewer main pipeline in Pleasanton with a cured-in-place liner that hardens and creates a structural repair of the pipe. Construction is slated to begin by early summer 2021.

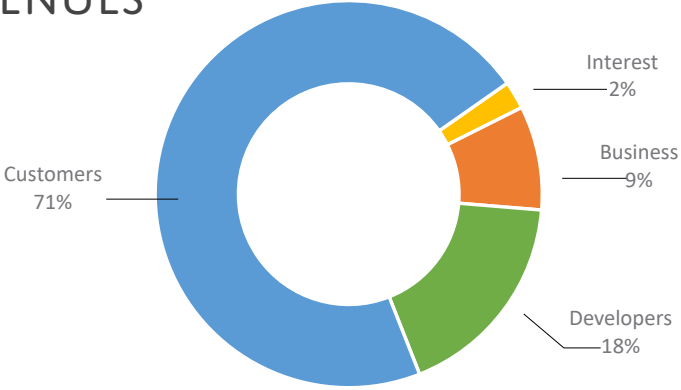
Replace

- \$6.9 million to replace 11,000 feet of potable water main pipeline plus valves and hydrants in Dublin.
- \$3.25 million to replace blow-off valves in the service area to increase 2-inch assemblies to 4-inch assemblies to allow water operators to flow more water through pipes at a higher velocity when removing sediment during water main flushing.
- \$4.6 million to upgrade the SCADA (Supervisory Control and Data Acquisition) communication network at the Regional Wastewater Treatment Facility, including replacing the programmable logic controllers, servers, and installing a new database for historical data. Expected completion is in Fiscal Year 2021.
- \$6.6 million to rehabilitate Pump Station 1A to improve flows to Reservoir 1A and increase water pressure to customers in the Central Dublin area.

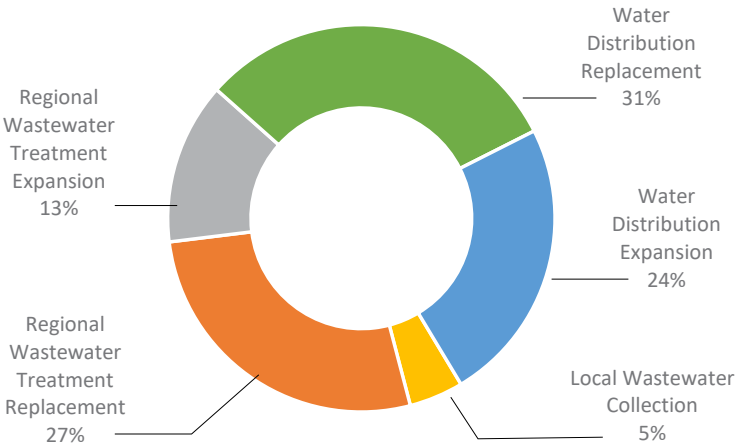
FY2022 BUDGETED EXPENSES



FY2022 BUDGETED REVENUES



FY2022 BUDGETED MAJOR CONSTRUCTION PROJECTS





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WITH THESE SIMPLE TIPS!



Outdoor Residential Water-Saving Tips

Irrigation is 60% to 70% of an average home's water use, and the easiest way to conserve!

- Irrigate between 9 p.m. and 7 a.m. when temperatures are cooler to reduce evaporation
- Reduce the length of time & frequency of irrigation
- Wait until 48 hours after rain to irrigate
- Add mulch to gardens around plants and trees to retain water better
- Use a broom to clean driveways, sidewalks, and patios instead of a hose
- Keep pools covered when not in use to reduce evaporation

Indoor Residential Water-Saving Tips

On average, toilets can account for 11%, laundry 9%, bathing 8%, faucets 6%, and leaks can use up another 6% of indoor water use.

- Run dishwashers and washing machines only at full capacity
- Reduce shower times & collect your warm-up water to use on plants
- Turn off faucets while brushing teeth
- Scrape food off plates and pans or wipe with a paper towel and dispose in green waste
- Keep a pitcher of water in the refrigerator instead of letting the faucet run until cool

Find and Repair Leaks

Catch leaks fast by using the AquaHawk Customer Portal—see your water use in near real-time!

- Sign up for AquaHawk: www.dsrsd.com/aquahawk
- Check sinks for dripping faucets, which can waste 3,000 gallons/year at 1 drip/second
- Check for and fix toilet leaks. Learn how: www.dsrsd.com/leaks

Save Water & Money at the Same Time!

Reward yourself for using less water with rebates available through DSRSD and water wholesaler Zone 7 Water Agency.



Convert your lawn to water-efficient landscaping with drought-tolerant plants. The rebate amount increased July 1, 2021, from a maximum of \$750 to a maximum of \$2,000 for single-family homes and from \$4,500 to up to \$6,000 for a multi-family or non-residential property.



Upgrade laundry day with a high-efficiency clothes washer. ENERGY STAR Most Efficient washers are eligible for a rebate, which increased July 1, 2021, from \$75 to up to \$200. See requirements online to make sure your purchase qualifies before you buy!



Smartphone meets smart irrigation with weather-based irrigation controllers. Many new generation controllers offer easy phone apps and adjust automatically with the weather. Rebates are available on qualifying models: up to \$75 for single-family homes, \$100 for multi-family properties, and \$3,000 for commercial properties.

Learn about these rebates at www.dsrdsd.com/rebates