



FISCAL YEAR 2020-21

OPTIMIZATIONS PROGRAM ANNUAL REPORT



**CELEBRATING 75 YEARS
OF INNOVATION**





This report provides a look back at the history of innovation at Central San, followed by the status of optimizations completed and in progress between July 1, 2020 and June 30, 2021. Optimizations can create efficiency, save time, be cost effective, improve safety, innovate new ways of doing things, or all the above.

Completed projects have been categorized by their main objective or benefit, as follows:

- **Business Processes** - new ways of working to streamline and modernize operations, manage costs, and provide exceptional customer service
- **Infrastructure** - improvements to assets made to enhance performance and lifespan, increase resiliency, and improve operations; studies and pilots to assess ways potential optimizations to infrastructure; and maintenance practices to monitor asset conditions and perform work orders effectively and efficiently.

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ACHIEVEMENTS IN NUMBERS

- 23 OPTIMIZATIONS COMPLETED
- 22 PROJECTS IN PROGRESS



CELEBRATING 75 YEARS OF OPTIMIZATION AND INNOVATION

A MESSAGE FROM THE GENERAL MANAGER

As we celebrate our 75th anniversary this year, it is a timely opportunity to reflect upon Central Contra Costa Sanitary District (Central San)'s history of embracing optimization. We believe optimizations can come in all sizes and that even the smallest of adjustments can have a significant impact. Each of the optimizations in this report has helped us become a highly efficient and effective utility with a focus on continuous improvement.

As the COVID-19 pandemic continues, we continue to ask more of our employees: to ensure each others' safety, preserve our high level of service to the public, be agile and flexible in these changing times, and discover creative ways to find cost savings to pass along to our customers during a difficult time in our economy.

Our team's ingenuity, teamwork, and dedication to continue to yield award-winning results for Central San. To help show our gratitude, we launched our first Innovations Fair in fall 2020, which celebrated and shared stories of innovation at Central San over the previous three years. We will continue to honor our employees' achievements. Through this report, we continue to recognize and thank the many individuals and workgroups who champion futuristic thinking and innovations, on top of competing priorities and the challenges of day-to-day operations.

GENERAL MANAGER

Roger S. Bailey

ABOUT CENTRAL SAN

Established in 1946, Central San is a special district responsible for the collection and treatment of wastewater for nearly 500,000 residents and more than 3,000 businesses. It is headquartered in Martinez, California, approximately 30 miles east of San Francisco.

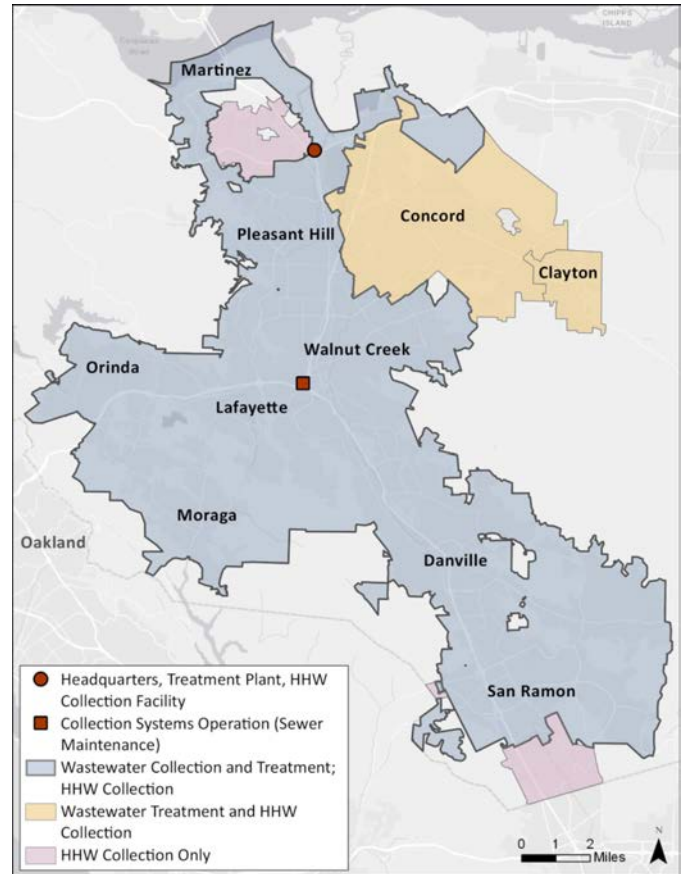
Central San serves the communities pictured in the service area map on the right. Central San operates and maintains about 1,540 miles of sewer pipelines and cleans more than 13 billion gallons of wastewater each year.

Central San has 293 budgeted full-time employees led by a General Manager, three Department Directors, and 13 Division Managers.

ENVIRONMENTAL STEWARDSHIP

Since 1997, Central San has operated a Household Hazardous Waste Collection Facility (HHWCF) that serves approximately 24,000 residential and small business customers, keeping more than 2.7 million (M) pounds of hazardous waste per year out of landfills and waterways.

Central San also operates a Residential Recycled Water Fill Station to provide customers with recycled water at no additional charge. Through the fill station and the Recycled Water Program, Central San distributes about 240M gallons of recycled water each year to help augment the potable water supply in the service area.



GUIDED BY A STRATEGIC PLAN

Every two years, Central San adopts a Strategic Plan as a roadmap to accomplish the goals set by the Board of Directors, reflecting the priorities and practices for the following two years. The FY 2020-22 Strategic Plan includes *Goal 6 - INNOVATION AND OPTIMIZATION: Explore new technologies for continuous improvement, setting forth the strategies, initiatives, and key success measures to drive optimizations and innovations to manage costs and embrace technology.* In tandem with the annual Optimization Program Annual Report, the Goal 6 key metrics help track progress in innovations and optimizations across Central San.



MISSION

To protect public health and the environment

VISION

To be an industry-leading organization known for environmental stewardship, innovation, and delivering exceptional customer service at responsible rates

VALUES

PRINCIPLES

- Be truthful and honest
- Be fair, kind, and friendly
- Take ownership and responsibility

PEOPLE

- Respect customers and employees
- Work efficiently and effectively as a team
- Celebrate our successes and learn from our challenges

COMMUNITY

- Collaborate with water sector partners
- Foster community relationships
- Be open, transparent, and accessible
- Understand service level expectations

LEADERSHIP AND COMMITMENT

- Promote a passionate and empowered workforce
- Encourage continuous growth and development
- Inspire dedication and top-quality results
- Provide a safe and healthful environment

STRATEGIC GOALS





75 YEARS OF INNOVATION

SHOWCASING CENTRAL SAN'S LONG TRADITION OF OPTIMIZATION,
PAVING NEW PATHS, AND PIONEERING NEW TECHNOLOGY

Central San's first treatment plant became operational on September 8, 1948. Designed to serve a population of up to **45,000 people**, the plant could process **4.5 million gallons** of wastewater per day to a primary level. In the years since, Central San has upgraded and expanded the plant many times to meet increasingly rigorous water quality standards and serve its growing community. Today, the plant can clean up to **54 million gallons** of wastewater per day and serves nearly **half a million** residents.

Central San continues to evolve its operations to better serve its customers and protect the environment. Over the years, Central San's employees have been instrumental in developing equipment and processes that continue to shape the wastewater industry, and these are just a few of the ways in which Central San has led the way.



OVERFLOW PROTECTION DEVICE



In the 1950s, Central San employees Bob Hinkson and Clyde Hopkins (pictured) came up with a solution to help mitigate overflows. They invented a device that, when installed on the lateral sewer cleanout of homes and businesses, automatically opened in the event of a sewage backup, allowing the overflow to occur outside the building rather than inside. Patented in 1960, the **overflow protection device** has prevented untold property damages and repair expenses, and is still used by wastewater utilities throughout the nation.

COMPUTERIZED PLANT

In 1978, Central San incorporated a computer system into its newly expanded treatment plant to help operators monitor and adjust the treatment processes. This was **one of the world's first computer-controlled wastewater treatment plants**. At the time, the plant's computer system ran on a mere 64 kilobytes of memory (less than 0.0008% of the 8 gigabytes in a typical Central San personal computer today). Thanks to diligent care and maintenance, the system proved remarkably reliable. In April 1978, California Governor Jerry Brown toured the treatment plant (pictured at right), declaring it a model operation for the entire state.





75 YEARS OF INNOVATION

SHOWCASING CENTRAL SAN'S LONG TRADITION OF OPTIMIZATION AND PIONEERING NEW TECHNOLOGY

ULTRAVIOLET DISINFECTION

Central San was a pioneer in using ultraviolet (UV) light for wastewater disinfection. It pilot tested (as pictured at left) the new technology in 1992 as a safer alternative to chlorine. When the UV facility was completed and placed into operation in 1997, it was the **largest UV disinfection plant** in the country. Pictured at right is the facility today.



HOUSEHOLD HAZARDOUS WASTE COLLECTION FACILITY



As water quality regulations tightened in the 1990s, Central San became a leader in pollution prevention. To help control hazardous wastes at the source, Central San hosted a number of “BOP Drops” collection events in the early ‘90s (pictured at top left). To provide a more permanent solution, Central San partnered with Mt. View Sanitary District to construct the **Household Hazardous Waste Collection Facility (HHWCF)**. Opened in 1997, the facility was the first of its kind in Contra Costa County. In the 24 years since then, Central San has served **more than 630,000 customers** and collected **over 45 million pounds** of hazardous waste for reuse, recycling, or safe disposal.

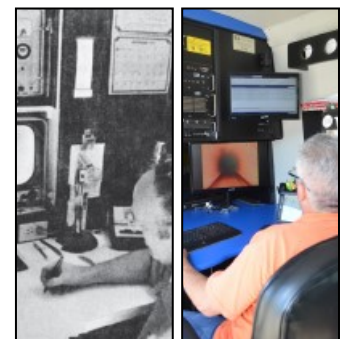
FROM MINICOMPUTERS TO TABLETS

Following the installation of the plant mainframe in 1978, Central San purchased its first **minicomputer** in 1982 for the Accounting Office. By 1984, Central San had added six word-processing stations for use by administrative staff, and by 1992, Central San was pilot testing field computers to log facility inventory and maintenance history (pictured at left). The **mobile tablets** used today are far more powerful, yet can fit in the palm of a hand (pictured at right).



CLOSED-CIRCUIT PIPELINE TELEVISIONING

As early as the 1940s, Central San used a **custom-made sewer camera** to inspect the condition of the old pipes it inherited. The 21-inch long camera was mounted on a sled and pulled with cables between maintenance holes. By 1972, Central San was helping to pioneer the use of television pipeline inspection. Today, crews inspect over 150 miles per year by closed-circuit televising, and they are piloting new technology for assessing the condition of Central San’s largest sewers, including **lidar** and **3-D underground mapping**.





75 YEARS OF INNOVATION

SHOWCASING CENTRAL SAN'S LONG TRADITION OF OPTIMIZATION AND PIONEERING NEW TECHNOLOGY

TRENCHLESS SEWER CONSTRUCTION



In 1987, Central San became the **first utility in the United States to use pipe-bursting** sewer construction technology to replace aging pipes. The technique employed a piece of equipment (affectionately nicknamed “the mole”) that could burst and disintegrate old pipe, push back surrounding earth, and pull in new pipe - all in one smooth operation. This significantly reduced construction impacts to roads, traffic, and customers. Pipe bursting triggered a revolution in pipeline replacement by making long, deep trenches unnecessary. Today, Central San uses a variety of technologies in sewer construction, including pipe bursting, directional drilling, and cured-in-place pipe.

MAINTAINING THE COLLECTION SYSTEM

Our collection system has expanded almost 100-fold in the past 75 years, from 16.5 miles of preexisting pipe Central San acquired upon its creation in 1946 to the more than 1,500 miles maintained today. In the early days, maintenance relied solely on hard labor and hand tools. Today, staff uses **power equipment** such as rodding and hydrovac trucks, along with **software to precisely schedule and track maintenance** - helping Central San achieve one of the best reliability records in the state.





75 YEARS OF INNOVATION

SHOWCASING CENTRAL SAN'S LONG TRADITION OF OPTIMIZATION AND PIONEERING NEW TECHNOLOGY

SOLIDS HANDLING

Over the years, Central San has used different methods for managing the solids removed in the treatment process. In the beginning, sludge was pumped to **drying beds** to allow water to evaporate. The remaining solids were sold as a soil conditioner under the label "Special Rabbit Pellets."

Since 1984, Central San has relied on two four-story **furnaces** to reduce some 200 tons of sludge to 10-15 tons of sterile ash every day. Now, looking to the future, Central San is planning significant improvements to its solids handling by adding **anaerobic digestion**. This process uses microorganisms to break down the solid waste, yielding renewable energy and biofertilizer. The upgrades will ensure the continuance of reliable service while protecting the environment.



LABORATORY TESTING AND ANALYSIS

In the 1960s, Central San's laboratory - considered technologically advanced for its time - required only one or two technicians to perform all necessary testing procedures. Since then, water quality standards and laboratory techniques have evolved significantly.

Today, a staff of six chemists conduct **thousands of tests every month**, monitoring every stage of the treatment process. Using sophisticated equipment, they can detect pollutants at extremely low levels - even down to the range of parts per quadrillion. That's the equivalent of one postage stamp on a letter the size of California and Oregon.

In addition, to support innovation in public health research, Central San has been lending the modern equipment and skilled staff of the Laboratory to participate in SARS-CoV-2 **wastewater epidemiology studies** with Stanford University, University of California at Berkeley, Contra Costa Health Services, and the United States Department of Human and Health Services. These studies hope to track the spread of COVID-19 in the region and provide early warning about local outbreaks by analyzing wastewater from around the Bay Area. This collaborative regional wastewater monitoring effort aims to provide the most useful, reliable, and accurate data about SARS-CoV-2 in wastewater to decision-makers.



BUSINESS PROCESSES

NEW WAYS OF WORKING TO STREAMLINE AND MODERNIZE OPERATIONS, MANAGE COSTS, AND PROVIDE EXCEPTIONAL CUSTOMER SERVICE

75TH ANNIVERSARY EXPERIENCE

Since 1946, Central San has been protecting public health and the environment. To celebrate 75 years of service to the community, staff launched an **online tour experience** at centralsan.org/75th. The interactive website has multiple pages dedicated to various services, including Collection System Operations (CSO), Plant Maintenance, the Lab, Household Hazardous Waste Collection Facility (HHWCF), and Customer Lobby. A 360-degree treatment plant tour takes visitors through the stages of treatment with audio guides. A student education programs section highlights kids' activities and hands-on science experiments. The site is full of behind-the-scenes videos, photos, and interviews; tool and equipment demonstrations; historical photos; and pollution prevention resources meant to engage and educate Central San's customers. After 2021, the site can be reworked as a **virtual customer experience** that will remain part of Central San's ongoing outreach efforts to customers far and wide.



100% FUNDING FOR PENSIONS AT REDUCED INTEREST-CARRYING COST

Central San completed a major milestone by paying off its outstanding pension unfunded actuarial accrued liabilities (UAAL) of \$70.8 million, erasing the balance of its UAAL. It achieved this in an innovative way, by taking advantage of low interest rates to complete a **\$58 million bond offering** that will be directly used for funding the Capital Improvement Program, which freed up the funds to pay off the UAAL. The capital improvement bonds have an interest rate of just 0.38%, far below the 7% rate Central San had been paying toward the unfunded liability. This is anticipated to **save about \$15 million** in interest costs through 2029.

CATEGORY ONE OVERFLOWS DATA INTEGRATION

Category One Overflows are discharges of sewage resulting from a failure in a sanitary sewer system that result in a discharge to a drainage channel and/or surface water, or a discharge to a storm drainpipe that was not fully captured and returned to the sanitary sewer system. When these overflows occur, the Lab and CSO need to coordinate to report information to the appropriate regulatory agencies.

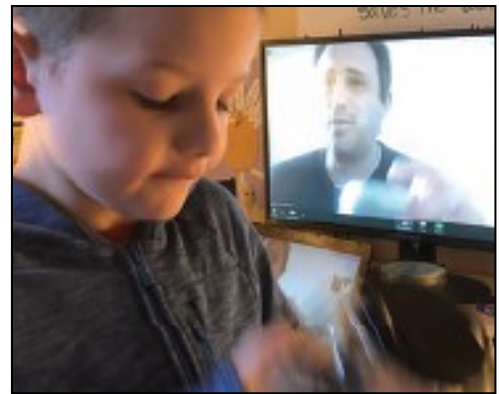
Using the existing Cityworks computerized maintenance management system program, CSO staff can send an automatic notification to Lab via the Cityworks inbox when these Category One Overflows occur. Lab staff can then obtain pertinent information such as Workorder ID, location description, and project name and confirm the information with CSO staff if there is a discrepancy. Further linking the Lab Reports in the geographic information system, GeoPortal, allow CSO staff to access the information in the field. This integration creates a **one-stop shop** for data for Lab, administrative, or CSO staff, and it **standardizes the process** for consistent results. It was a project completed through Central San's Mentorship Program as a joint lab-CSO effort, and it has been successfully tested and utilized for two overflow events.

STUDENT EDUCATION PROGRAMS

Central San's education programs are designed to bring the work of wastewater treatment directly to its youngest customers. However, Central San's classroom visitation model was tested when local schools moved to distance learning. To continue supporting schools under these unprecedented circumstances required a whole new level of creativity and resourcefulness. To meet the challenge, staff created a variety of innovative learning opportunities, from **virtual tours** to **hands-on science activities** using common household supplies. By designing engaging science around materials almost anyone would have on hand, staff ensured the lessons would be accessible to students and families across the service area.

Central San's education partners also turned to outside-the-box solutions to support remote learning. The Marine Science Institute worked with Central San and the Contra Costa Water District (CCWD) to create a **virtual Delta Discovery Voyage** to help thousands of students understand the source of their drinking water and the destination of their final effluent - all from their home computers. Doug Nolan adapted his **flow of water education program** online (a joint program of Central San and CCWD) and was able to serve over 10,000 students with his engaging educational program from a distance.

All told, Central San's education programs were able to adapt and respond to the needs of virtual classrooms, and in the process, served **21,673** students.



PRODUCTION HOSE CLAMPING MACHINE

Maintenance staff spends an average of \$27,000 on hoses and attachments each year to replace broken hoses throughout the campus. To save money and materials, staff had the idea to purchase a \$6,200 **punch lock banding machine** to fix the broken hoses instead of buying new ones each time. This purchase was approved through the District's Labor Management Committee with the Local One bargaining unit. With the machine, staff can now cut where the hole is and add a new fitting to the end. For example, if a 20-foot pipe that has a hole at 19 feet, instead of throwing the whole hose away, staff cuts off a foot or two and installs a new fitting with about 18 feet of good hose left to keep using. This purchase **saves thousands of dollars a year**.

BUSINESS PROCESSES

RECYCLED WATER SELF-MONITORING REPORTS

A new California monitoring and reporting requirement was issued this year which mandates quarterly inspections for all recycled water sites. This initially meant that a lot of staff time would be needed to conduct three times the number of inspections as before, as previously, Central San only conducted site inspections on an annual basis. For efficiency and to comply with the State requirements, Central San rolled out an online survey tool for customers to turn in **mandatory Quarterly Self-Monitoring Reports**. Customers have begun submitting these reports, and staff will continue to perform its annual site inspections to maintain customer engagement and check sites.

MODULAR INSURANCE REQUIREMENTS FOR CONTRACTS

There are thirteen different insurance profiles (excluding construction) that can be incorporated into contract templates. Manually changing all the insurance variations in the template for each contract was time consuming, so, to simplify contract creation, staff extracted the insurance requirements section from the body of the contract template and put into **separate template exhibits** that can be attached to the contracts. This allows staff to easily customize contracts based upon the nature and risk of the work the vendor is performing.

DRONE FOR OUTREACH, PROJECT PROGRESS, AND CRISIS RESPONSE

Central San procured a **drone to produce high-quality images and video** to supplement public outreach and internal support. The drone can show and record progress of critical infrastructure upgrades, which helps build customer trust for past or future rate adjustments and the responsible use of these funds. The drone can also be used for crisis response, to assess damage impacts, and to perform progress mapping and recording for projects. Pictured below is one of the images captured by the drone.



COVID-19 CONTACT TRACING FORM

A new **online form** was launched to assist in conducting swift and effective contact tracing during the COVID-19 pandemic. All staff who physically come into work can use this form to keep track of anyone with whom they come into contact while working. Specifically, if they are within six feet of someone for 10 minutes or longer (with or without a mask), that interaction should be logged. This makes it easier for Human Resources (HR) and Safety staff to reach out to affected employees in the event that someone tests positive for the COVID-19 virus. The link can be saved to make it easy to quickly log any contact while it is still fresh in the employee's memory.



ONLINE THERAPY SERVICE

During this time of heightened stress and anxiety, Central San began offering a new benefit from **Talkspace online therapy** to support its employees' mental health and overall wellbeing. With a network of thousands of licensed clinicians, Talkspace is an online therapy service that connects users to a dedicated therapist from a secure, Health Insurance Portability and Accountability Act (HIPAA) compliant platform. Employees and their eligible dependents can send their therapist text, voice, or video messages - anytime, anywhere - including from the comfort of their home. Adding Talkspace adapted the benefits program to the COVID-19 pandemic and enhanced employee resources.

BOARD ROOM UPGRADES

Improvements were made to the Board Room to provide better transparency to the public and reduce technical difficulties with hybrid in-person/videoconference meetings. New **sound and streaming equipment**, including echo-canceling abilities, has been installed to make virtual meetings easier to follow and participate in. **Personal screens** were added to the seats on the dais to **free up seating** in the back row that used to be blocked by projector screens and to allow those sitting on the dais to watch the presentations on easily viewable monitors. The Board Room is used primarily as the meeting and decision-making place of Central San's elected officials, but it is also used as a meeting room for staff and bid openings.

BOARD POLICIES AND ADMINISTRATIVE PROCEDURES MANAGEMENT

The Board of Directors sets stand-alone policies known as Board Policies (BPs). BPs are reviewed by the Board every two years and revisions are adopted as needed. The General Manager establishes Administrative Policies (APs) to implement BPs as well as other internal processes. APs are revised as necessary, such as when the associated BPs, administrative processes, or laws change. Thus far, 47 BPs have been adopted by the Board, and 18 related APs have been approved by the General Manager. To facilitate revisions and management of these policies, staff developed a **standardized electronic file folder structure** for the different stages of BPs and APs (draft, biennial review, obsolete/outdated), a comprehensive **tracking log** with adoption/review statuses, and a **tickler system**. Staff also implemented a biennial AP review process to coincide with related BPs. This system maintains version control and keeps track of review dates.

BUSINESS PROCESSES

AUTOMATED PROCUREMENT CARD REQUEST FORM

Requesting a new procurement card (p-card) or a change to an existing card used to be a paper-based, manual process. A hard copy form was filled out and routed via interoffice mail to various approvers for signature. To improve this process, staff created an **automated p-card request form**. First, the request form was updated to capture all necessary information. Then, the form was uploaded into DocuSign as a template PowerForm and linked on the Purchasing page on the San Central intranet. Clicking on that secure link guides the user through a process that requires completion of the mandatory fields. When completed, the form is routed to staff's Supervisor, Manager and Director for approval. Generating this on-demand, self-service form for signature has expedited the process, saving staff time while providing a user-friendly experience.

ENTERPRISE RESOURCE PLANNING SOFTWARE REPLACEMENT

No discussion of Central San's business process improvements would be complete without the impact of a significant, multi-year optimization project with operation-wide benefits: the replacement of its outdated CentralSquare / SunGard HTE enterprise resource planning (ERP) system with **Oracle Fusion Cloud**.

This has been a highly complex and time-consuming effort involving conference room pilots, user acceptance testing, closing of configuration gaps, data conversion system documentation, and training staff. The new, more user-friendly ERP is already increasing automation, making it easier to produce reports, allowing for real-time data entry synchronization and authorization, and centralizing record keeping. Other business process improvements that staff performed with the new ERP were as follows:

EMPLOYEE SELF-SERVICE

Through the ERP's **Benefits, Pay, and Personal Information modules**, employees are able to change their own address, marital status, emergency contacts, and dependents; manage their benefits, including during open enrollment; view paystubs and W-2s; set deferred compensation contributions and direct deposit allocations; and change tax withholdings. Previously, only HR staff could make these changes in the system. The self-service module eliminates paper routing and mail delays, HR staff time to process requests, and associated potential data entry errors. The module also increases privacy for staff and creates the ability for staff to update and access their information in real-time.

AUTHORIZATION FOR PERSONNEL ACTIONS

For years, hard copy **Personnel Action Forms (PAFs)** were used by HR staff to authorize changes related to employee pay and statuses. These paper forms were scanned, routed to administrative assistants, and signed by supervisors, division managers, and directors. To optimize this process using the ERP, staff first reduced the signatories to the amount needed for internal controls. Then, the PAFs were transferred into the ERP so they could be signed electronically. Integrating the PAFs into the ERP eliminated the need to populate a new form every time with employee information, created an electronic record instead of paper copies, and significantly reduced staff time in authorizing personnel changes.

ERP SOFTWARE REPLACEMENT (CONTINUED)

TIMEKEEPING AND PAYROLL

Through the ERP's **Time and Absences module**, staff retired use of its standalone electronic timekeeping system to consolidate everything in the ERP. In Oracle, employees can print timecards and look up previous timecards, and they can see their live accrual balance; previously, employees could only see the balance from the previous payday as shown on their paystubs. When an employee schedules an absence, it appears on the timecard immediately, eliminating the waiting period for the leave request to be approved before the employee can complete their timecard. Timecards and leave requests can be edited regardless of whether it is pending signature, and supervisors can approve leave and timecards directly from email notifications sent by Oracle. This access to immediate and real-time information increases efficiency and accuracy in the timekeeping and payroll process. In addition to the new timecard system, the ERP offered the option to switch from monthly to bi-weekly pay. Bi-weekly pay was launched in January 2021 with the first paycheck of the year.

NOTIFICATION OF EXPIRING CONTRACTS

As part of the Contract Management module, **automatic notifications of upcoming expiring contracts** are now sent electronically to reduce the likelihood of contracts lapsing inadvertently. This ensures that contracts remain in place and are active when necessary so that materials and services can be purchased as need arises with limited delays.

FINANCE MODULE

Several optimizations were launched as part of the Finance module:

- **General Ledger and Sub-ledger Systems Modernization** – Migrating the cash management, fixed assets, payables, projects, receivables, inventory, and purchasing systems into Oracle significantly enhanced the value of operational information, saves staff time, improves customer service, and improves the quality and reliability of financial information for stakeholders.
- **Chart of Accounts Update** – This update was conducted with the assistance of a Certified Public Accountant consultant who surveyed staff, identified pain-points in the chart of accounts, compared the approach to industry best practices, and recommended changes. Now, informational reporting meets the needs of internal staff, Board Members, and the public, and the accounting system design minimizes manual processes.
- **Electronic Signatures and Approvals** – When staff began teleworking, DocuSign became more widespread in administrative processes as an essential tool in keeping Central San's business running. When Oracle Fusion Cloud went live, it offered all-new paperless ways to process and approve important business actions. While DocuSign provided a valuable temporary solution to facilitate financial approvals while working in a remote environment, Oracle is taking approvals to a whole new level for the foreseeable future. Now, invoices, procurement card expense reports, travel reimbursements, requisitions, purchase orders, timecards, and many other activities are approved within the ERP, making it a “one-stop shop” system of record. Furthermore, integrated electronic approvals vastly improve internal controls by preventing transactions from occurring absent proper approval in the system.

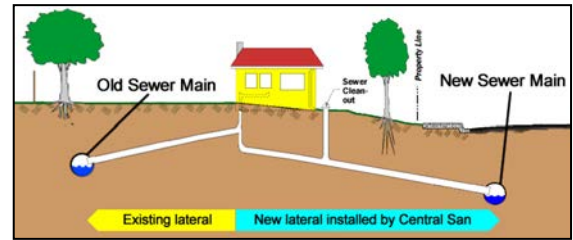
INFRASTRUCTURE

IMPROVEMENTS TO ASSETS MADE TO ENHANCE PERFORMANCE AND LIFESPAN, INCREASE RESILIENCY, AND IMPROVE OPERATIONS; STUDIES AND PILOTS TO ASSESS POTENTIAL OPTIMIZATIONS TO INFRASTRUCTURE; AND MAINTENANCE PRACTICES TO MONITOR ASSET CONDITIONS AND PERFORM WORK ORDERS EFFECTIVELY AND EFFICIENTLY

PRIVATE LATERAL INSTALLATION VIA PIT-LAUNCHED HORIZONTAL DIRECTIONAL DRILLING

District Project 8456, Danville Sewer Renovations, Phase 3 abandoned 4,300 feet of sewer mains in easements and replaced them with 1,700 feet of sewer mains in the street. This may sound like a typical collection system construction project; however, optimization lies in the installation of **47 private sewer laterals by pit-launched horizontal directional drilling**, to reverse the flow from the backyard mains to be abandoned to the new mains installed in the streets. This method uses a small drill rig that can start the drill path at the downstream elevation, eliminating the need for a set-back and significantly reducing the required construction footprint, resulting in a cost-effective and non-invasive way to eliminate easement sewers. Through this

project, Central San **saved about \$1 million** in capital costs by reducing the amount of pipe needing to be replaced and about **\$15,000 annually** in future cleaning and maintenance. Residents in the area saved money on a new sewer lateral, saw their property values increase by eliminating their easements and offering the opportunity to build accessory dwelling units or additions, and will no longer need Central San crews to perform maintenance on their property.



ULTRASOUND TESTING PROGRAM

Part of Central San's Asset Condition Management Program, an **Ultrasound Testing Program** was launched to identify and implement **energy savings, help avoid equipment downtime, increase reliability, enhance acceptance testing, and allow advanced diagnostics and trending** to aid in the Preventative Maintenance (PM) Program. The program is currently being used as a diagnostic tool on induced draft fans, centrifuges, and return activated sludge pump motors. Staff are being trained and certified, have created Ultrasound Inspection Forms in Cityworks, and are working on creating a predictive maintenance task for the steam assets. As staff continues to expand use of ultrasound testing, the technology will continue to be used, along with other technologies such as vibration analysis, as a troubleshooting tool on equipment.

RENEWABLE DIESEL FUEL

Renewable diesel is now being used instead of regular diesel to fuel the vehicles and the emergency backup generators at the CSO facility. Use of renewable diesel **reduces greenhouse gas emissions by about 90%**, which makes it better for the environment. The trucks need less maintenance to clean out the diesel particulate filters, CSO crew members are less exposed to diesel particulates, fuel filters are replaced less often, and the cold start performance increases. Depending on the results of CSO's pilot on its heavy-duty trucks, usage may spread to the rest of Central San.

MR. MANHOLE

With more than 30,000 maintenance access holes (or “manholes”) in Central San's service area, keeping them in tip-top shape is no small task. To help complete adjustments more safely and efficiently, staff is using a new tool affectionately called "**Mr. Manhole.**"

Central San's maintenance holes are built to last, with casings usually constructed of concrete and rebar. However, if the surrounding road settles or is slurry sealed, they can end up above or below grade. Off-grade maintenance holes can create hazards for cars, bikes, and pedestrians, as well as liability concerns, so Central San takes a proactive approach to fixing these, often fixing them before customers can even notice.

Mr. Manhole uses a large circular cutting device to help remove a donut-shaped section of the roadway centered on the maintenance hole. The cutter attaches to the hydraulic auger drive on a skid steer loader and has adjustable arms, so the crew can set it to cut holes of different diameters. The system also includes a debris shield and mister to control dust. Once the road surface and old casing are removed, the crew brings the frame up to grade, reattaches the cover ring, pours new concrete, and finishes to street level.

Over the past three years, Central San has averaged about 135 adjustments per year. In a traditional repair, crews use jackhammers to break up the roadway around the maintenance hole. Although Mr. Manhole is not necessarily faster than the old method, **it is easier and it helps avoid injuries.** It also yields a **better final product** that is less likely to leak, crack, or crumble from traffic passing over it. With fewer spot fixes needed, Mr. Manhole is expected to save time and money over the long term. It is currently being utilized for field operations on a weekly basis.



INFRASTRUCTURE

ASSET CONDITION MONITORING TEAM

Each Plant Maintenance Shop has formed an **Asset Condition Monitoring Team** to develop and implement procedures for thermography, ultrasound, vibration, laser alignment, high-speed camera motion amplification, fluid analysis, and motor winding analysis. These technologies can continually **monitor essential equipment** for proper maintenance. Each technology is assigned to two to three technicians, who meet on a regular basis to develop procedures for implementing and creating goals. For extra support, a Planner has been delegated to each team.



These teams are focusing on improving existing programs and developing new ones, discussing standard criteria for inspections and analysis, and incorporating them into Cityworks and GeoPortal. They have determined a tentative monitoring scale for each technology and developed inspection templates. Various staff have obtained certification in the technologies, and they continue to implement technologies on various asset classes. The Team will be responsible for configuring **Asset Health scores**, which will be used in the Asset Health Indicator Project that is in progress. Staff will continue to perform analysis and inspections on equipment and develop their skills by obtaining more certifications in technologies.

DON'T JUST FIX IT; IMPROVE IT

Plant Maintenance staff is constantly rehabilitating assets to optimize their performance. They make it a regular practice to not just perform the PM or repair, but also to ask what more can be done. Work orders that are categorized as "Don't Just Fix It; Improve It" (DJFI) typically are an optimization idea to respond to a failure before an asset's useful life, repeat failures showing on the Bad Actors list, multiple reactive or corrective work orders on a high-criticality asset, or more than one reactive work order with a priority of one or two on a specific asset between PM tasks.

In total, **14 DJFIs** were completed in FY 2020-21 that resulted in energy cost savings, staff time savings, added redundancies, improved resiliency, simplified operations, and/or made adjustments needed for regulatory requirements.

QUALITY ASSURANCE / QUALITY CHECK PROCESS IMPROVEMENTS

When Plant Maintenance technicians are fulfilling a work order, they sometimes identify a need to update the work order to reflect a better way of performing the task than prescribed. Within Cityworks, Maintenance staff can check a box that sends an email to a Maintenance Planner to request a **quality assurance / quality check (QA/QC) or improvement** to the work order, standard operating procedure, or asset. The Planners then review and update the work orders accordingly. This practice ensures that the work orders which form the basis of all maintenance tasks are kept updated both by staff doing the work and staff scheduling the tasks. This leads to increased PM program effectiveness and efficiency. Staff is constantly QA/QCing and improving the work orders in Cityworks, which dictate current and future maintenance tasks and how they are done. Staff completed **58 QA/QC updates** in FY 2020-21.

IN PROGRESS

OPTIMIZATION PROJECTS WHICH ARE CURRENTLY UNDERWAY OR IN THE WORKS

REMOTE RECYCLED WATER METER READING PILOT

Staff is piloting new technology to remotely read Zone 1 recycled water meters. **Water Pigeons** allow staff to obtain water consumption data for each of the 10 piloted sites through a web portal. Data is provided in six-hour totalized increments, four times per day. This could facilitate **remote meter readings** and be used to assist in identifying usage trends and potential customer leaks. CSO staff currently conduct these readings manually, which can take up to eight hours to read all 47 meters in the recycled water distribution system, costing about \$1,056 per month (\$12,672 per year). If successful, the technology would theoretically pay for itself in less than two years.



MAINTENANCE ACCESS HOLE MONITORS PILOT

Staff has installed **10 maintenance access hole monitors** from Smart Cover and ADS (five from each brand), as part of a one-year pilot project to evaluate and predict collection system flows and avoid spills. Staff has been performing ongoing monitoring, adjustments, and data collection during this pilot and has had coordination meetings internally and with the vendors.

HAZARDOUS MATERIALS TRACKING DATABASE

Hazardous materials tracking is currently handled in a Microsoft Access database that is not easily searchable or accessible from multiple locations. A more sophisticated **hazardous materials tracking database** will automate the tracking of hazardous materials and locations throughout Central San's facilities. When launched, the new database will be linked from the San Central intranet to make it easy to find and use.

EASEMENT VEHICLE

CSO's Innovation Workgroup came up with an idea to take a field truck out of service and re-purpose it to **accommodate rodder hoses for easement maintenance**. The project was put on hold due to COVID-19 protocols prohibiting vehicle sharing, which left no spare vehicles. The project will be resumed once a vehicle becomes available.

PIPELINE TOOL AND MAINTENANCE ACCESS HOLE INSTALLATION DEMONSTRATORS

Last year, CSO designed and constructed an Overflow Simulator, which won the Innovation of the Year Award at Central San's first Innovations Fair. Now, CSO has plans to further expand their in-house training tools to include a **demonstrator of pipeline cleaning tools**, and a **demonstrator on how to install a maintenance access hole** - specifically, the proper methods of turning cleaning tools within the maintenance access holes. When completed, these projects will efficiently train staff and potentially also educate customers on the work done to maintain sewer pipelines.

IN PROGRESS

GROUPING PIPELINE CLEANING SCHEDULES BY LOCATION AND FREQUENCY

Cleaning and performing maintenance on sewer lines effectively and on schedule prevents overflows and uses staff resources efficiently. Using the Pipeline Cleaning Schedules Web Application, CSO staff is **constantly reviewing and improving pipeline cleaning schedules** based on schedule frequency intervals and by location. Staff can see information on each pipe, project out seven years, and schedule mains or groups of mains to manage distribution of schedules by month. Pipelines can be on one-, two-, three-, or six-month schedules, or on one-, two-, three-, five-, and seven-year schedules. Using the web application software, staff continues the ongoing effort to optimize these schedules with the goal of reducing overflows, helping to meet Central San's ambitious Strategic Plan target of completing $\geq 98\%$ pipeline cleaning schedules on time, increasing productivity, and reducing vehicle wear-and-tear.

ONLINE ENVIRONMENTAL COMPLIANCE PERMITTING

Staff is currently evaluating whether it is feasible to move some of the **Environmental Compliance permitting** to an online system. Part of the feasibility depends on regulatory requirements.

MICROSOFT TEAMS TELEPHONE INTEGRATION

During the pandemic, staff has communicated productively while staying safe and social distancing, thanks in part to **Microsoft Teams** and its chat, calling, and videoconferencing features. Staff has been evaluating options to upgrade Central San's internal telephone system and decided that the best way to do this would be to transition it to Microsoft Teams - a system with which most employees are now very familiar.



By integrating telephone service with Microsoft Teams, employees will be able to make telephone calls from within Teams. In addition to having a **"single pane of glass" for telephone, chat, and video meetings**, there are other advantages to transitioning to this new phone system. Teams calling is cloud-based, so employees can access it from anywhere on a wide range of devices. This gives added flexibility to employees working remotely and provides a way to access the corporate phone system during an emergency or disaster when employees may be dispersed in various locations. In addition, enhanced 911 service will automatically transmit detailed location information such as building and floor number to 911 dispatch.

CONTRACT MANAGEMENT

The ERP's **Contract Management module** will streamline the process of contract creation, signing, tracking, and document management. Currently, staff creates contract documents in Word, manually maintains version control and approvals, uploads documents into DocuSign, saves them to a shared network drive, and maintains a separate log of contract information. The Contract Management module will fully integrate these processes, bringing them all into Oracle. It will track an audit trail of approvals and changes made to template contract language, provide version control, integrate with DocuSign, provide greater visibility and accessibility into the status of contracts and the documentation, and eliminate staff time having to do duplicate data entries.

IN PROGRESS

PURCHASING CONTRACT DOCUMENTS IN LASERFICHE

Since the beginning of the pandemic, all Purchasing contract documents have been saved to a shared network drive. To alleviate the limitations that have been experienced affecting the naming structure, accessibility, and the security of these files, these files will be **moved into a central repository, Laserfiche**, to provide a secure storage location while also giving staff across the organization the ability to search and access the contract documentation they are looking for in a system with which they are already familiar.

LARGE-DIAMETER PIPELINE INSPECTION PROGRAM

Central San's collection system includes more than 1,500 miles of underground pipelines. About 75 miles are classed as large diameter pipelines, measuring more than two feet in diameter. Though they comprise only about 5% of the total pipes, they represent more than one-third of the value of the collection system. The large diameter pipelines - or interceptors - play an essential role in carrying wastewater to the treatment plant. Measuring up to 8.5 feet in diameter, these concrete pipes collect wastewater from numerous smaller neighborhood sewer lines that feed into them. Interceptors are the workhorses of the system, but they are aging. Almost half are more than 50 years old.

To help Central San better plan for needed repairs and replacements, staff launched an assessment program using state of the art **multi-sensor technology, including lidar and 3-D underground mapping**, to obtain more precise information about the condition and location of the interceptors. These sophisticated sensors travel through the pipelines on robotic platforms, collecting data as they go. Lidar uses lasers to map the inside diameter of the pipe, to produce cross-sectional measurements that can help spot deviations in the diameter of the pipe (a sign that the pipe may have corroded or thinned in that area). 3-D mapping provides accurate information on a pipeline's horizontal and vertical location, which helps staff design future pipe renovations. The goal of the inspections is to help **optimize pipeline replacements** - so they are addressed not too soon or too late. Staff is rolling out this inspection program at several locations, including a section of 39-inch diameter pipe that runs under Highway 4 near the treatment plant. Then, depending on the initial results, staff will continue scanning up to five more miles of pipeline.



IN PROGRESS

STEAM AND AERATION BLOWER SYSTEM IMPROVEMENTS

Central San's steam system is complex and aging, requires significant maintenance, and has the potential to perform more energy recovery. The Steam and Aeration Blower Improvements (Steam Project), a multi-year effort to optimize one of the main power sources at the treatment plant, continues to progress. After a two-year **condition assessment** effort to estimate the remaining useful life of the existing boiler feedwater, steam, and aeration systems, as well as associated structural, electrical, and instrumentation and control systems, workshops were held with consultants and staff to discuss the results of the condition assessments, including remaining useful life and improvement options for current equipment.

Now in Phase II, staff is evaluating options to improve safety and reliability, enhance ease of operation, extend useful life of equipment, and reduce operating costs. The overall Steam Project will be completed as four separate projects: 1) **Blower Project** (which is near bidding), 2) **Aeration Basin Diffusers** (final design contract has been awarded), 3) **Secondary Process Improvements** (final design will be completed in future years), and 4) **Steam Process Improvements** (final design will be completed in future years).

TERTIARY MEMBRANE AND REVERSE OSMOSIS FILTRATION PILOT PROJECT

Central San regularly evaluates all options to identify the most optimal approach when completing a capital project. A business case evaluation was completed in August 2020 which compared the plan of renovating existing granular media filters to an ultrafiltration membrane system for Title 22 recycled water production. Central San received planning-level proposals from four membrane manufacturers who used plant water quality data to determine the number of membrane modules and associated costs. The pilot project will **evaluate membrane performance**. A **dual-stage reverse osmosis skid** will also be piloted to better inform the viability of membranes as pre-treatment, and for potential future advanced recycled water opportunities, such as the Water Exchange Project.

Staff has been working towards a tertiary pilot project to test whether **tertiary membrane filtration** would provide better performance than the current gravity/sand filters. Currently, there are four gravity/sand filters in place rated up to 3 million gallons per day that have not performed well. These filters require a lot of coagulant aid, alum, and a considerable amount of backwash maintenance.

Central San is currently constructing Phase 1 of the Filter Plant Improvements Project. With Phase 1, it was decided to only replace one of the four filters with the concept of doing a parallel comparison with the tertiary membrane pilot project to compare performance and operating cost. Staff reviewed many different filtration options, including **submerged and pressure membranes**. After preparing a white paper on tertiary membrane filtration for Central San, the pressure membranes configuration seemed to be the most cost-effective approach.

The white paper on this pilot has been completed, and favorable bids for the Filter Plant project determined that Filter No. 3 will be replaced in kind with a dual granular media filter. A **pilot for pressurized membranes** is being evaluated.

IN PROGRESS



MENTORSHIP PROGRAM PROJECTS

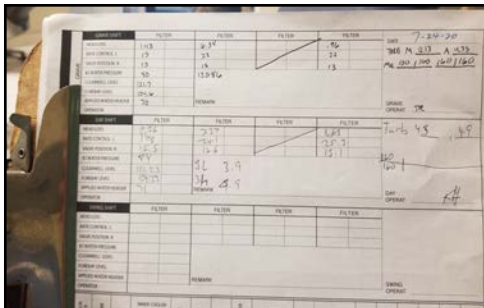
Central San's BOOST Mentorship Program gives mentees an opportunity to complete a project with their mentor. Mentees in this program began the following in-progress optimization projects, which will help Central San manage data in an effective way and help maintain important assets for decades to come.

ASSET HEALTH INDICATOR TOOL

Once developed, the **Asset Health Indicator Tool** will use data and analytics to optimize maintenance schedules to supplement Central San's condition-based maintenance program. The Maintenance Shops have already started utilizing the software and held their first meeting to provide feedback.

DIGITIZING OPERATOR ROUTES

During their "rounds" to gather data throughout the plant, Operators fill out nine paper information sheets to pass to the Control Room. Digitizing these "**Operator Routes**" into an online form within Cityworks provides the ability to trend and analyze data to improve operations (as seen below), standardize the format of the data provided, enable access via iPads, and keep track of the workflow between different departments. It also simplifies the process for the Operator as it also removes the need for in-person contact and paper processes. Staff is currently obtaining hardware and piloting the digitized rounds sheets. Next, staff will be trained and dashboards (such as the sample pictured on the right) will be created to help visualize the data recorded in the rounds.



Rounds sheets into Cityworks



Data into actionable dashboards



TREATMENT PLANT ASSET HANDOVER PROCESS OPTIMIZATION

Central San is all about customer service - not just externally but also internally. When Capital Projects completes a project, they are handing it over to their "client": Plant Maintenance, who needs a plethora of information on each asset to be able to efficiently and accurately maintain it over its full lifespan. Some of this information might include as-builts, as-is drawings, hazard energy control procedures, manuals, spare parts, and asset registries. To ensure proper communication and record keeping when Capital Projects transfers assets to the Plant, staff is working on **optimizing about ten asset handover processes**. Flowcharts depicting each process have been developed and reviewed with key stakeholders, and staff is working on identifying the best software to facilitate the handover process and how this will integrate into the larger Technology Master Plan.

SODIUM HYPOCHLORITE USAGE FOR #3 WATER

This Mentorship Project from the 2018 cycle of mentees identified the ability to **reduce or eliminate the use of bleach to disinfect #3 (tertiary-treated) water** as a potential cost savings. Staff sought input from multiple divisions, tested samples, and gathered data to confirm that there is not a chlorine residual requirement for in-plant water use within Central San's National Pollutant Discharge Elimination System Permit, and the #3 water for on-site use is a Title 22 exemption Central San provides for itself. Thus, Central San could either **eliminate sodium hypochlorite feed** to the high and low pressure #3 water **or significantly reduce** the current amount used by as much as 50%. While there is not a capital cost associated with elimination, there is a capital cost with reduction that has a payback of approximately eight months. A chlorine analyzer will be installed in the Piping Renovations, Phase 10 Project, which will provide the necessary hardware to establish this feature. After that, staff can perform program modifications to adjust the pump speed to maintain a desired chlorine dose.

ORACLE CLOUD ERP SYSTEM OPENS THE DOOR FOR MORE OPTIMIZATIONS

The transition to Central San's new ERP system is a complex project with benefits that affect every employee. Much has already been completed in this effort, but still to come are the following optimizations made possible by this continuing large-scale project.

PERMITTING AND COMMUNITY DEVELOPMENT

The **Permitting and Community Development system** will be modernized and migrated from the dated legacy SunGard system to a new system. This will improve internal processes, add new tools for public access and mobile inspections, save staff time, and improve customer service. It will also integrate with Environmental Compliance permits such as dentist office and pool forms, and it has the potential for a billing module, which will be considered after the Permitting system goes live.

CENTRALIZED LEARNING MANAGEMENT

Having a **centralized learning management system** will fill an existing need to track District-wide training consistently and in a centralized place for reporting purposes such as benchmarking and strategic planning. Staff had previously identified NeoGov to fulfill this purpose, as the system can not only track spending and hours, but also course content. Staff can potentially use a module with similar capabilities in the new ERP system to track training across all divisions. The project is currently pending development of the Technology Master Plan.

PROCUREMENT

Through the ERP's **Procurement module**, staff is now able to submit complete requisitions with attachments that contain all the required information. The approval process is fully automated, ensuring timely approvals and appropriate controls, and providing approvers with sufficient information to make decisions. Purchase orders are also submitted through an automated approval workflow with the same benefits and give staff the ability to track the status of their requests. Purchase orders may now be sent electronically from the system directly to the vendor with attached documentation when applicable. Notification is also sent to the requestors, closing the loop by letting them know that the purchase order is complete. Staff is still fine-tuning the module to meet Central San's needs.

TECHNOLOGY MASTER PLAN

In 2015, an Information Technology (IT) Master Plan was completed by a consultant who performed stakeholder interviews, end-user surveys, best practice assessments, planning and prioritization workshops, and strategic plan development. Now, that plan has been fully implemented and staff is working on the next phase of leveraging technology to take Central San to a new level of utility management.

Staff has taken a new approach that supports innovation and the use of technology to realize Central San's vision of becoming a more efficient utility and a leader in optimization. To do this, it is expanding beyond the traditional vision of the master plan and adopting a broader scope to look at technology across the entire organization in a comprehensive way, regardless of where that technology exists. The new **Technology Master Plan** will take a deep dive into the operations side, not typically considered part of IT, which includes treatment plant controls and maintenance.

To guide Central San through this process, staff has engaged a firm that specializes in master planning, and has partnered with an engineering consultant with experience in developing organization-wide plans. The goal of the Technology Master Plan is to keep Central San at the **forefront of innovation** and ensure that we **use information technology effectively** to reduce risks and improve efficiency; plan for both business and operations and maintenance needs; establish a framework for bringing in new technology in smart ways; transform data into actionable information; ensure that projects are staged for success by ensuring they have proper resources and foundations in place; and provide for proper security, business continuity, and disaster recovery scenarios as tied into the Security Master Plan.

The new Technology Master Plan will include **roadmaps** for various systems that will be considered both on their own as well as in the context of the overall Master Plan effort. This will ensure that needs of each business unit will be addressed and provide a path forward that will take into consideration cost and resource requirements for each functional area.

These will be incorporated into an **overall plan** that will also include methodologies to ensure that future projects will properly integrate and interoperate with existing systems and business processes prior to project initiation. In addition, Central San will be using this opportunity to explore ways to improve standardization and implement a platform to help support all systems in a cohesive manner.

DOCUMENT MANAGEMENT

At Central San, documents, files, emails, and other information are stored in a variety of places that cannot be searched in any practical way. Documents can be found in network drives, email folders, SharePoint, LaserFiche, and many other places. When staff retire or change positions, their records are sometimes hard to find and important information can be lost. In addition, Central San still has a significant amount of paper documents stored in file cabinets and off-site storage. These documents are difficult to find and are at constant risk since they are susceptible to loss by fire or water, or simply by being misplaced. The Technology Master Plan will **inventory, prioritize, and store the major documents** stored across the organization.

Items will be scanned, and procedures will be created to make sure staff is working with the latest information, and indexing and nomenclature standards will be created. These efforts will help ensure that document retention schedules are being followed and the organization's needs are met in terms of workflow, security, and system backups.

A TEAM EFFORT

Every member of the Central San team takes great pride in their work in advancing the organization's mission in the most effective and efficient way. Central San's staff is creative and resourceful, and they recognize that an idea cannot come to fruition by one person alone.

The below groups specifically exist to promote optimization and innovation, through coordination among various individuals - often from across all corners of Central San - to bring these ideas to life.

CSO INNOVATION WORKGROUP

The CSO Division is so dedicated to finding optimizations that they have an Innovation Workgroup consisting of members from different sections of the division. They meet to discuss and propose innovation opportunities and already have one project under their belts (the Overflow Simulator) and three in progress (the Easement Vehicle, the Pipeline Tool Demonstrator, and Maintenance Access Hole Installation Demonstrator).

SMART INITIATIVE STEERING COMMITTEE

The Smart Initiative Steering Committee was formed to help guide Central San in its evolution as a Smart Utility. Made of Executive Team members, various Managers, and staff, the Committee helps implement smart utility projects by identifying priorities, ensuring appropriate resources are provided, and staying apprised of project progress. The projects completed through this initiative will leverage new and existing data Central San collects through its IT, Asset Management, Plant Maintenance, and other programs to optimize operations and maintenance; improve asset management; increase energy efficiency, staff productivity, and safety; and reduce facility management costs. Several projects have been identified and initiated, including the Treatment Plant Asset Handover Process Optimization and the development of an Asset Health Indicator Tool.

APPLIED RESEARCH AND OPTIMIZATIONS COMMITTEE

In the Applied Research and Optimizations Committee, representatives from the Planning, Capital Projects, Regulatory Compliance, Operations, Maintenance and Lab workgroups meet to discuss pilot opportunities, new technologies, and optimization concepts related to the Treatment Plant. The Committee setting allows for efficient interdepartmental coordination and creates a space for considering investigations into existing processes for optimization opportunities and piloting of innovative technologies. There are also separate committees for Collection Systems and Recycled Water Distribution.

MENTORSHIP PROGRAM

As seen on pages 20-21, Central San's Mentorship Program has become a breeding ground for some of the organization's lasting and impactful optimization projects. Each of the mentees and mentors in the program devote themselves to a meaningful project, often out of the comfort level of the mentee, which result in an improvement in Central San's operations. This program is in keeping with Central San's priorities of workforce development and continuous improvement, and it promotes interdepartmental communication and coordination.

It is thanks to the spirit of teamwork and ingenuity embodied by these groups and the individual employees that Central San can complete these optimization projects.

ACRONYMS

APs	Administrative Procedures
BPs	Board Policies
CCWD	Contra Costa Water District
CSO	Collection System Operations
DJFI	Don't Just Fix It; Improve It
ERP	Enterprise Resource Planning
FY	Fiscal Year
HHWCF	Household Hazardous Waste
HR	Human Resources

IT	Information Technology
M	Million
PAFs	Personnel Action Forms
PM	Preventive Maintenance
QA/QC	Quality Assurance /
UAAL	Unfunded Actuarial Accrued Liabilities
UV	Ultraviolet





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OF INNOVATION**

