

110 Years

# CAWD Connections



"Protecting your health and the environment"

CONSUMER NEWS FROM YOUR CARMEL AREA WASTEWATER DISTRICT

SPRING/SUMMER 2022

*Progress—despite the pandemic*

## Scenic Road project underway

Your Carmel Area Wastewater District (CAWD) is now navigating the design and permitting process to replace 9,525 feet of sewer main adjacent to Carmel Beach, located under Scenic Road from Ocean Avenue to Santa Lucia Avenue. Besides construction on this northern section of Scenic, the project also includes portions of Camino Real and Carmelo Street, as well as San Antonio, Valley View, 15th, and 14th Avenues.

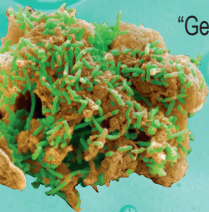
While construction was initially planned in two phases, it is more cost effective to do it all at once due to the complex permitting process for the project, which is inside the coastal zone within 200 feet of Carmel Bay, an Area of Special Biological Significance. The project requires separate coastal development permits from both Carmel-by-the-Sea and Monterey County, as well as Native American construction monitoring to protect archaeological artifacts.



**The southern end of Scenic Road, a popular nearshore walking/driving area which ends at Carmel River State Beach, will not be part of the construction project; however, a few neighborhood streets directly inland will be getting new sewer mains. Shown checking plans is CAWD Principal Engineer Rachel Lather.**

## MICROORGANISM OF THE MONTH

**GEOBACTER: THE MICROBE THAT POOPS ELECTRICITY**



"George" *Geobacter* is found everywhere in low-oxygen environments like pond sediment, soil, the bottom of the ocean—and the CAWD treatment plant. In our CAWD digester, George and other anaerobic bacteria transform the sludge from wastewater into biosolids. They produce methane in the process, which we use to generate electricity to help run the plant.

Yet decades ago, it was discovered that George can actually produce electricity on his own. *Geobacter* generates electricity for the same reason you and I breathe oxygen: to

metabolize energy in order to live. We humans get our energy from electrons in the food we eat. A series of (Cont. on page 2)

**Geobacter bacteria "breathe" metals instead of oxygen. Here, the microbes are covering iron oxide minerals.**

Eye of Science/Science Source

## Safeguarding the shoreline

The \$3.5 million project will replace the old, undersized 6-inch segmented clay pipe, which has fractures and sand intrusion. The new, seamless 8-inch HDPE plastic pipeline will meet current flow demand and protect nearshore habitat from sanitary sewer leaks. We will also rehabilitate manholes for further protection.

Contractors will use the non-invasive pipebursting method in which the existing sewer line is broken and expanded at the same time the new pipeline is pulled into place, with minimal trenching. Construction should begin in January 2023, with completion prior to summer tourist season.

"We live in a beautiful area, and it's our responsibility to (Cont. on back page)

## See a spill? Call CAWD immediately!



We count on the public to be our eyes and ears out in the community. If you see water flowing out of a manhole cover, in the street, through cracks in the road or sidewalk, or coming out of the sewer relief valve in your yard, it is a serious emergency! Please contact CAWD at once. We respond to emergencies seven days a week, 24 hours a day so don't hesitate to call us at 624-1248. After 5 pm, please call Carmel Police at 624-6403 and they will activate a CAWD response.

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Carmel Area Wastewater District  
3945 Rio Road  
Carmel, CA 93923  
831/624-1248





**Call us—we're here for you, day or night!**

If you have wastewater backing up into your home or yard it is an emergency—don't hesitate to call us for an immediate free inspection! Our friendly, professional crew is on call 24 hours a day, 365 days a year. We will determine if the problem is in the main line (our problem) or the lateral line (your responsibility).

**Free 24-hour sewer hotline**  
8 am-5 pm: call 624-1248

after 5 pm: call Carmel Police  
at 624-6403 and they will activate a CAWD response.



**Carmel Area Wastewater District**

3945 Rio Road Carmel, CA 93923  
(831) 624-1248 • CAWD.org

CAWD is a special district dedicated to protecting public health and the environment with the cost-effective collection and treatment of wastewater and the return of clean water to the environment.



We welcome the public to attend CAWD board meetings, held the last Thursday of each month at 9 am at the CAWD office.

**Board of Directors**

Greg D'Ambrosio Charlotte Townsend  
Michael Rachel Ken White  
Robert Siegfried

**General Manager, Barbara Buikema**

"Bug of the Month" © Anne Muraski 2022



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## Efficiency supercharge

CAWD is constantly striving to be more efficient, and now we're tapping into the same productivity models used by top-earning companies.

"Although we're a nonprofit, there's no reason we can't benefit from innovations used by the private, for-profit sector," said CAWD General Manager Barbara Buikema. "Our current Lean Six Sigma training program is empowering our employees to problem-solve and identify the root causes of inefficiencies."

Staff is now working on their first case study in our Source Control program. CAWD Source Control Inspectors (aka "the grease police") regularly visit all area restaurants to ensure that fats, oils, and grease (FOG) are not entering the sewer system, where they can cause spills and backups.

### Knowledge is power: streamlining inspections

At the same time, the CAWD Collections department has completed a comprehensive sewer assessment, utilizing a remote-controlled camera to inspect our 84 miles of sewer main. Unsurprisingly, analysis shows that most FOG comes from restaurant-intensive areas. Using our map-based GIS system, we can follow the flow of grease to private lateral lines and even to specific restaurants. By cross-referencing the work of our Collections and Source Control departments, we can pinpoint FOG hotspots so inspectors can adjust the timing and frequency of their inspections to more efficiently assist restaurants who may need to improve maintenance, or increase the size of their grease traps.

"We are always striving for new ways to stretch ratepayer dollars and improve our service to the community," said Barbara. "We will be using the Lean Six Sigma model to explore how we can improve processes and procedures in all our departments: collections in the field, the treatment plant, and even how we process paperwork and permits."



**PARTNERING TO PROTECT THE ENVIRONMENT**

Nabeel Bahu (right), owner of RG Burgers and Island Taco, signs off after a satisfactory inspection conducted by CAWD Laboratory Supervisor Ray DeOcampo.



**Geobacter's long, hair-like "nanowires" are highly electrically conductive to move electrons outside the cell.**

**Below: Electrodes placed in jars of electrogenic bacteria create a microbial battery.**

## Microorganism (Cont. from front page)

cellular reactions release the electrons, which ultimately pass into the oxygen we breathe. To survive, all organisms must find a source of electrons and a place to dump them. Instead of using food and oxygen, *Geobacter* "eats" metals like iron to get electrons, then "poops" electricity—a stripped-down diet of pure electrical energy.

Rather than using lungs to dump electrons, *Geobacter* has highly conductive, hair-like "nanowires" to convey electrons onto metals, producing a stream of electricity. George's nanowires have spurred an entire new area of study to produce tiny, living, self-renewing batteries to power small electronics. These environmentally safe, protein-based batteries could replace existing batteries made with toxic lead and lithium. In addition, cutting-edge technology has harnessed George's microvolts to create wastewater treatment plants which also serve as giant batteries at wineries, breweries, and farms. Electrogenic bacteria liberate electrons as they metabolize waste, converting sewage into clean water while generating more than enough electricity to power the plants. Researchers hope that *Geobacter* can revolutionize green energy technologies to help reduce the impacts of the climate crisis.

### Living electrical grids

There are other kinds of "charged" bacteria, and many live in our own human gut microbiome. Recently, UC Berkeley scientists discovered that the diarrhea-causing bacterium *Listeria* produces electricity in a simpler way, transporting electrons directly through their cell walls. The same is true of other pathogens, like *Clostridium*, which causes gangrene, as well as beneficial probiotics such as *Lactobacillus*, needed to make yogurt and cheese. Scientists are researching how this discovery might aid the treatment of infectious disease, or help us have a healthy digestive system.

As it turns out, nature invented the first electrical grid, installed beneath grasslands, in muddy river bottoms and marshes, and even inside our own guts—all built by microbes to shuttle electricity.



**Listeria bacteria transport electrons right through their cell walls into the environment as tiny currents, helped out by flavin molecules (yellow dots).**

Amy Cao © UC Berkeley



## How do we stack up to other utilities?

Approximate monthly utility cost comparison for a typical California family of four



**gas/electricity**  
\$235



**cell phone**  
\$180



**Cable bundle**  
\$160



**water**  
\$140



**CAWD proposed sewer fee**  
\$83.82

## Plant rehab: on budget and ahead of schedule!

Despite complications from the pandemic, work has continued unabated on CAWD's Capital Improvement Projects 15-year Master Plan, our community's wastewater treatment plant renovation which we started in 2012. We are now working on the last major portion of the plan, our \$10 million Electrical/Mechanical Rehabilitation and Sludge Holding Tank Replacement Project.

"Pandemic supply chain issues remain persistent, but we have stayed within budget and on schedule by planning ahead and anticipating problems," said CAWD Principal Plant Engineer Patrick Treanor. "In fact, the entire renovation should be largely completed by mid-2023—that's five years ahead of the 15-year timeline if all goes well."

Patrick attributes the success to detailed crosschecks for accuracy during the design process, and diligent day-to-day on-site management during construction. This last phase includes rehabilitation of the headworks and pump stations, demolition of three old digesters, a new sludge tank, and electrical upgrades that will improve reliability and safety throughout the plant.

"We are finding alternate suppliers and substituting equivalent equipment when needed to keep our contract workers productive," said Patrick. "We are also prioritizing design sign-offs to allow more lead time for fabrication; this minimizes rising materials costs and avoids delays."

"As public servants, it's our responsibility to get the highest possible return for our customers' investment—that's something we take very seriously," said Patrick. "Thanks to the nimble approach we've taken, our total change order costs to date amount to less than one percent of the total construction project cost." This low change order amount is an admirable feat even without a pandemic—the industry average can typically be up to five or even 10 percent.



CAWD Principal Plant Engineer Patrick Treanor (foreground) and Construction Manager Evan Currie of Currie Engineers inspect progress on the plant's new sludge holding tank. The 73,000-gallon tank will meet current seismic standards, replacing our previous tank which served the community for 84 years.

## CARMEL AREA WASTEWATER DISTRICT PROPOSED BUDGET

July 1, 2022-June 30, 2023

### Sources of Cash \$20,189,013

Sewer User Fees	Capital Reserve Fund	PBCSD* Fees	Property Taxes	Reclamation Project	Interest Income/Other
\$9,296,889	\$4,110,259	\$2,883,220	\$2,376,600	\$840,589	\$681,456
46.0%	20.4%	14.3%	11.8%	4.2%	3.4%



For the past two years, CAWD has substantially reduced rate increases to ease the burden on tax payers during the pandemic. We must now make up for that deficit in order to complete delayed capital projects which are necessary to maintain our community's sewer system, protect human health, and safeguard the environment.

\* Pebble Beach Community Services District

### Uses of Cash \$20,189,013

Capital Projects	Operations & Maintenance	Reclamation Project	Debt Service
\$11,814,840	\$7,320,128	\$840,589	\$213,456
58.5%	36.3%	4.2%	1.1%



Our detailed assessments show that we need to spend \$14 million on our community's treatment plant, and \$64 million on our collection system over the next 15 years to keep it safe and reliable. Ratepayers will see annual, incremental fee increases to fund rehabilitation. As a self-supporting, nonprofit agency, CAWD depends on user fees to fund infrastructure and maintenance. CAWD's goal is always to match revenues to expenses, leaving no profit.





## Honors for Covid-19 sewer surveillance

CAWD was honored with a commendation from the State Water Quality Monitoring Council, along with other agencies who are participating in the US Health and Human Services National Monitoring Pilot Program for COVID-19. Participants were recognized for “demonstrating international leadership” in advancing a new approach to monitor trends during a public health emergency.

CAWD was an early participant, collecting wastewater samples to track the coronavirus in our community since July 5, 2020. In the fall of 2020, the Centers for Disease Control and Prevention established the National Wastewater Surveillance System to monitor the trajectory of the virus.

## Sewage treatment plants as public health observatories

Our local monitoring showed a spike in early November and late December 2021, coinciding with holidays and the emergence of the omicron variant. On average, concentrations have steadily decreased since January, but there have been intermittent spikes, including April 5 testing which was higher than 97 percent of nationwide tests during the same time period.

Since people shed the coronavirus before showing symptoms, sewage can serve as an early warning system to reduce transmission, identify hotspots, and help allocate funding in advance of surges. The hope is that the program will quickly evolve into an integrated, strategic public health surveillance and response system to thwart the spread of future pandemics.

To view CAWD’s weekly virus data, please visit [CAWD.org](http://CAWD.org).

# Don’t Flush labeling: now it’s the law!

Thanks to years of effort and the passage of AB 818, as of July 2022 all manufacturers of baby and adult wipes, cosmetic wipes, and cleaning wipes must have Do Not Flush labeling on their products, and fulfill public education requirements. This is a big win for municipalities, wastewater agencies, and consumers who for decades have been shouldering the burden of billions of dollars in sewer infrastructure damage, home backups, environmental fines, and additional labor costs caused by flushed wipes.

Since their introduction, wipes have been marketed as flushable even though they are plastic products and cause sewer spills and microplastic pollution in oceans and waterways. Newer, non-plastic, “biodegradable” wipes do not break down in the sewer system either. We all pay for the damage. Besides cleanup and repair costs, there is the ongoing expense of separating wipes from wastewater and trucking them to the landfill where they belong, as well as the manual labor required to constantly remove masses of entangled wipes from machinery, which compromises the safety of treatment plant operators.



As of July 2022, all wipes manufacturers are required to print Do Not Flush labels on products, and provide public education.

## Toilets aren’t trash cans; please put wipes here, so they don’t end up here



## Help us spread the word:

Please flush nothing but “The Three Ps:” pee, poop, and toilet paper! That means no tampons, facial tissue, dental floss, cigarette butts, paper towels, cat litter, condoms, cotton balls, hair, rags, fats, oils, grease, or wipes of any kind—nothing but human waste and toilet paper. Consider buying an inexpensive under-seat bidet to save money on toilet paper, wipes, and plumbing repairs. *Together, we can protect the environment and our investment in our community’s wastewater treatment system!*

## Scenic Road (Cont. from page one)

ensure that CAWD operations do not impact the natural environment,” said CAWD Principal Engineer Rachel Lather. “We are dedicated to installing this necessary upgrade in the most responsible, least disruptive manner possible to the environment and Native American tribal artifacts.”

## Rancho Cañada project: it’s a wrap!

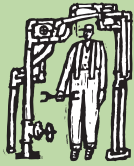
The Rancho Cañada Sewer Relocation Project is now complete, a major undertaking that involved complex permitting requirements, as well as coordination with the Monterey Peninsula Regional Park District, Santa Lucia Conservancy, Essalen Tribe of Monterey County, and Cal American Water.

CAWD installed 4,280 feet of new gravity sewer mains to replace old, deteriorating clay pipeline located mainly within the Palo Corona Regional Park (previous site of the Rancho Cañada Golf Club). A 790-foot section was near private residences along Via Mallorca and Via Petra Roads, where we used trenchless construction methods to reduce disturbance.

The new, seamless plastic main line increases capacity to handle current flow rates. Much of the line was moved from its previous location along an old farm road that no longer exists. The new alignment provides a buffer for sensitive wetland habitat, safeguards the Carmel River from spills, and improves access for maintenance, thereby reducing operations and maintenance costs. *For more information on these and other capital projects, please visit [CAWD.org](http://CAWD.org).*



New sewer mains in Palo Corona Regional Park will safeguard habitat and reduce operational costs.



## How does CAWD set sewer rates?

CAWD's rate model was devised by the State Water Resources Control Board. It allocates costs based on **flow, suspended solids, and biochemical oxygen demand (BOD)**.

**Flow** is the amount of liquid wastewater—at CAWD this is about 1.3 million gallons each day. A large cost of flow is for the energy needed to continually pump the water to the headworks where it then gravity feeds through the rest of the plant during treatment.

**Suspended Solids** are the particles of matter left in wastewater after heavier solids have settled out. When wastewater enters the plant, it is screened at the headworks to remove large debris—this goes to the landfill. Then the water goes to a clarifier where larger particles settle to the bottom. This sludge gets pumped to a digester that turns it into compost. The remaining particles in the water are the suspended solids that must be consumed by the billions of microorganisms we propagate to clean our wastewater.

**Biochemical Oxygen Demand** is the amount of oxygen consumed by the microorganisms that eat bacteria to clean our wastewater. The more concentrated the wastewater, the more oxygen we need to support the microbes. More oxygen means more cost to run the large blowers which aerate the water in our secondary treatment tanks. These tanks are like giant aquariums of microscopic animals. Much of the plant's equipment and infrastructure are there to keep our hardworking microbes happy and healthy.



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### Board of Directors

Greg D'Ambrosio  
Michael Rachel  
Robert Siegfried  
Charlotte Townsend  
Ken White

**General Manager**  
Barbara Buikema

## — Proposition 218 Notification — Notice of Public Hearing on Proposed Sewer Rate Increase

**Thursday, June 30, 2022 9:00 am**  
**Carmel Area Wastewater District**  
**3945 Rio Road, Carmel CA 93923**  
**Zoom link: CAWD.org**

On June 30, 2022, at 9:00 a.m., or as soon thereafter as the matter may be taken up, the Carmel Area Wastewater District (CAWD) Board of Directors will hold a public hearing prior to the adoption of its sewer rates.

After two years of operation during the pandemic, the District is cautiously optimistic about the future. We have loosened our pandemic protocol, but we continue to sample our wastewater every week to provide the Monterey County Health Department and the public with data on current COVID-19 levels in the community. During the pandemic we undertook numerous belt-tightening measures to keep rate hikes as low as possible. We were able to curtail residential rate increases (two-thirds of our customers) to 3.16 percent in 2020-21, and 3.20 percent in 2021-22.

As a result of this reduced rate fee, we did not undertake certain necessary capital projects which now must be completed to ensure the safe, reliable operation of our community's wastewater system.



**A TOPSIDE VIEW OF OUR COMMUNITY'S NEW SLUDGE HOLDING TANK**  
CAWD's treatment plant renovation will be largely completed next year, on budget and ahead of time, to ensure public health and safety, and protect the local environment for the next 30 years.

Over the next 15 years, we have projected \$14 million in projects to maintain the treatment plant. We have also scheduled \$64 million to replace or rehabilitate our aging sewer lines during the same period of time. During the 15 years after that we anticipate that another \$60-\$70 million of sewer line rehabilitation will be needed. Our recently completed, map-based sewer assessment allows us to pinpoint the exact lengths of deteriorating pipeline that need

work, keeping construction as cost effective as possible. In addition, like everyone we are seeing severe inflation in the marketplace. The chemicals and mechanical parts we must buy on a weekly basis are increasing in cost with every order, and can have long wait times. We stockpile back-up inventory of critical parts to ensure continual operation, but chemicals require special storage and handling, so we are forced to pay more for them and manage with little margin to spare.

It is never easy to ask for a rate increase. Nobody likes them, including the CAWD staff and board members who live in the district. Yet we must catch up with delayed projects and keep up with inflation if we are to responsibly maintain our infrastructure for the next generation, passing down the same protections and safeguards we have enjoyed, thanks to our predecessors. To that end, we are proposing an additional \$10.69 per month on residential property tax bills, our largest customer category. The total \$128.28 increase for 2022-2023 will make up for the reduced fees of the past two years, and help to ensure the long-term sustainability of the Carmel area wastewater system. Meeting our projected budget is a significant but necessary challenge, especially since grants are not available as they were 40 years ago. Regardless, we will continue to look for all possible outside funding, such as monitoring the current administration's Build Back Better plan as a potential grant source.

CAWD is dedicated to diligent, cost-effective long-term financial planning. For the past 20 years, we have employed a pay-as-you-go system to run the district. The CAWD Board of Directors has chosen to continue with this model so that we have the freedom to maintain and build our infrastructure in a way that best meets the needs of the community, un beholden to loan covenants, and without adding borrowing expenses to user fees. CAWD is deeply committed to getting the most value out of every ratepayer dollar, while maintaining high-quality standards that protect human health and the environment, as well as safeguarding property values, business, and our economy.

The procedural requirements of Proposition 218 require that the District provide a notice of the proposed rate schedule to all property owners of record forty-five (45) days prior to holding a public hearing. In order for the increase to “not take effect,” a majority of the property owners are required to file opposition to the increase in writing.

Property owners may file a written and signed protest against the proposed increase with the CAWD Board of Directors at or before the close of the public hearing. To be valid, a protest must be in writing even if you plan to attend the public hearing. Email protests cannot be formally considered. Each written protest must include the parcel owner’s name, service address, assessor’s parcel number for the parcel served, and the parcel owner’s signature. Only one protest will be counted per parcel. If you own more than one parcel, you may file a single protest, but it must identify each parcel you own. The protest must be signed by the property owner(s). If the signer(s) is not shown on the last equalized assessment roll of Monterey County as the owner(s) of the property, the signer(s) must provide written evidence of ownership of said property. For your convenience, we have posted a protest form on our website: CAWD.org. At the hearing, the Board of Directors shall hear all protests and tabulate the ballots.

Protests should be mailed or delivered to the same address as the hearing location. For further detailed information regarding the proposed rate plan, please call James Grover, CAWD Principal Accountant, at (831) 624-1248.

*We will continue to update you on improvements to our community’s wastewater system, and we invite you to review our long-term capital plan at CAWD.org. Please feel free to contact us at 624-1248 should you have any questions.*

### **Carmel Area Wastewater District Proposed Sewer Rate Increases for 2022-2023**

<b>User Categories</b>	<b>2021-22 Annual Rates</b>	<b>2022-23 Proposed Rates</b>	<b>Percentage of Change</b>
Bakery (each location)	\$ 3,351.22	\$ 3,743.88	11.72%
Bar (each location)	\$ 1,374.58	\$ 1,579.64	14.92%
Beauty Salon (each location)	\$ 1,136.286	\$ 1,331.32	17.16%
Business/Govt./Retail (1-10 employees = one unit)	\$ 511.94	\$ 612.48	19.64%
Camera/Photo (each location)	\$ 710.04	\$ 799.14	12.55%
Church/Synagogue/Mission (each location)	\$ 760.26	\$ 887.94	16.79%
Convalescent Hospital (per bed)	\$ 405.48	\$ 472.38	16.50%
Dental Office (per dentist)	\$ 763.14	\$ 914.52	19.84%
Gym/Health Spa (each location)	\$ 982.70	\$ 1,161.50	18.19%
Hotel/Motel (per room)	\$ 428.08	\$ 477.64	11.58%
Laundromat (per machine)	\$ 944.46	\$ 1,143.94	21.12%
Laundry (each location)	\$ 3,564.90	\$ 3,968.94	11.33%
Market (each location)	\$ 1,610.36	\$ 1,840.42	14.29%
Medical Office (per physician)	\$ 359.92	\$ 440.50	22.39%
Residential/Minimum vacant (each location)	\$ 877.58	\$ 1,005.94	14.63%
Restaurant (per seat/meal)	\$ 66.32	\$ 74.40	12.18%
School (per population)	\$ 34.88	\$ 42.24	21.10%
Service Station (per pump)	\$ 2,546.00	\$ 2,947.48	15.77%
Supermarket (each location)	\$ 22,703.94	\$ 25,502.46	12.33%
Special User (each location)	\$ 775.56	\$ 916.18	18.13%
Veterinary Office (each location)	\$ 2,043.50	\$ 2,288.84	12.01%
Vet Hospital/Boarding (each location)	\$ 5,608.98	\$ 6,511.88	16.10%