

110 Years

CAWD Connections



"Protecting your health and the environment"

CONSUMER NEWS FROM YOUR CARMEL AREA WASTEWATER DISTRICT

SPRING/SUMMER 2021

Progress—despite the pandemic

A banner year of achievements

Your Carmel Area Wastewater District (CAWD) had a banner year of accomplishments in 2020, despite the added challenges of the coronavirus pandemic.

- Our dedicated five-man collection team was honored with the Collection System of the Year award for excellence in wastewater conveyance. Last year the CAWD sewer system delivered 330 million gallons of wastewater to the treatment plant with zero overflows or violations. In addition, the collection staff finished the year with zero work time lost to injury. The award was presented by the California Water Environment Association for the best in the Monterey Bay section which includes Santa Cruz, Morgan Hill, Monterey Bay, King City, and Hollister.

- Despite working split shifts and taking on extra pandemic-related tasks, CAWD staff performed 72 percent more lateral permit inspections in 2020—353 total inspections versus 205 in 2019. The

increase was due to the new plumbing ordinance requiring video imaging of lateral lines when a property is sold, or undergoes over \$50,000 in renovation.

"Privately owned lateral lines are the source of many sewer spills when roots and debris enter the mainline," said CAWD Collection Supervisor Daryl Lauer. "Requiring repairs as part of escrow and large renovations will substantially reduce risk of overflows as time goes by."

- CAWD crews cleaned the entire collection system last year, clearing roots and debris from 81 miles of sewer main. In addition, in spring and fall they cleaned all the catch basins and storm drain debris interceptors for the City of Carmel-by-the-Sea.

(Cont. on back page)



A WINNING TEAM
Your CAWD maintenance crew was honored by their peers last year when they received the Collection System of the Year award. These skilled operators are dedicated to excellent service. If you have a backup, do not hesitate to call them day or night and they will respond immediately.



New: CAWD now accepts credit cards!

Contractors and property owners can now pay for permits quickly and easily online using their credit card at CAWD.org!

Complete your lateral line and sewer connection forms online, charge your fee, and we will email your permit as soon as insurance is verified—as quickly as one hour during regular operating hours. Questions? Please call 624-1248—we are at your service!

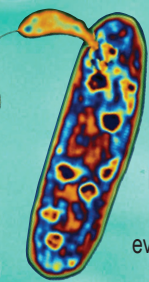
MICROORGANISM OF THE MONTH

MEET "DEXTER" *BDELLOVIBRIO BACTERIOVORUS*



"Dexter" *Bdellovibrio* (pronounced "dello-vie-brie-oh") is found pretty much everywhere, in water, soil, the human intestinal tract—and the CAWD treatment plant, where trillions of microbes clean our wastewater. Dexter is a predatory bacteria, an efficient killing machine on par with a shark or lion.

Bdellovibrio can travel 100 times its cell length every second—in human scale about the speed of a fighter jet. After the chase, Dexter attaches to his brethren with tiny grappling hook appendages. He then makes a hole, squeezes inside, and seals it behind himself, eating his prey from the inside out. Once sated, he clones himself, producing three to six *(Cont. on page 2)*



***Bdellovibrio* has the gruesome habit of burrowing into its prey to feed, grow, and replicate until its progeny burst out to hunt again.**

Getty Images

— Sewer rate notice inside! —

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



Presorted Standard
U.S. Postage
PAID
Watsonville, CA
Permit No. 30

CAWD stewardship in Hatton Canyon

CAWD has successfully completed environmental mitigation to support wildlife and habitat in Hatton Canyon State Park, as required to construct our pipeline and road projects there (see article, page 4). The canyon is home to many native species, including raptors, songbirds, mammals, reptiles, and amphibians. It is also an important wildlife corridor that connects habitat fragmented by highways and development. In addition, many locals frequent the popular two-mile Hatton Canyon hiking trail that runs behind Carmel High School, ending at Carmel Valley Road.



This charming mourning warbler caused a stir of excitement and media posts when local birders observed it foraging in Hatton Canyon last October. The rarely seen neotropical visitor stopped here for two days during its epic annual migration from eastern U.S. forests to Central/South America. The species has only been sighted nine times before in Monterey County.

Photo by Paul Fenwick

Precautions protect habitat

Before construction, our environmental consultant surveyed the area and identified small areas of riparian, wetland, and Monterey Pine forest habitat that would be disturbed along the edge of the roadway and pipeline. No special status species were found, but a quail nest and two dusky wood rat nests were flagged, protectively fenced, and monitored. (The quail matured and left the nest before construction).

Thanks to precautionary measures, low impact construction techniques, environmental awareness training for workers, and real-time monitoring, the project's impact ended up being much less than anticipated. No trees were cut down during construction. Upon completion, roadside habitat areas were recontoured and planted to pre-construction conditions. Working closely with California State Parks, CAWD contractors replanted .2 acres of willow trees and riparian vegetation, and .1 acre of Monterey pine forest understory. CAWD also revegetated .04 acres of wetland, and installed a multi-leveled wetland restoration basin, which together exceeded the 2:1 replacement ratio for mitigation. The site will be monitored for the next five years to ensure plant survival and effectiveness of the wetland basin.

Microorganism (Cont. from front page)

offspring. Just a few hours after attaching to the bacterium, Dexter's swimming progeny burst forth from the dead prey to hunt again, much like a gruesome "Alien" movie sequel. But that is only one of many lethal methods used by predatory bacteria.

Vampires and wolf packs

The "vampire" bacterium *Micavibrio* attaches onto its victim and sucks nutrients from the cell, growing larger as the host grows smaller. After the prey dies, *Micavibrio* divides and the hunt continues. *Myxococcus* can kill from a distance, releasing a deluge of enzymes that rupture the membranes of their prey. Thousands of *Myxococcus* band together to attack in a coordinated swarm. Like a wolf pack, they communicate with each other and take on different roles to besiege and destroy entire colonies of bacteria.

As more and more drugs fail to treat mutating antibiotic-resistant germs, researchers are studying predatory bacteria to see if they can be used as "living antibiotics" to cure human diseases. Studies show that predatory bacteria can kill pathogens that cause pneumonia, food poisoning, the plague, and all kinds of infections in people, animals, and plants, including dangerous superbugs like *Methicillin-resistant Staphylococcus aureus* (MRSA), the cause of sometimes fatal staph infections. The U.S. Department of Defense has its own Pathogen Predators Program, hoping to identify usable therapies for the battlefield, or in response to bioterrorist attacks.

Research on predatory bacteria has only just begun, and species continue to be discovered. Dexter alone is known to kill 150 disease-causing germs, and can swim through mucus to kill the same bacterium that colonizes the lungs of cystic fibrosis patients. Wherever there are bacteria, there are predatory bacteria trying to eat them.

See a spill? Call CAWD immediately!



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 call CAWD at once, so we can find the source and resolve the problem. CAWD crews continually clean and maintain our sewer system, but with 84 miles of pipeline, we count on the public to be our eyes and ears in the community. If you see anything out of the ordinary, please call us!

CAWD responds to emergency calls seven days a week, 24 hours a day—please don't hesitate to phone the numbers listed below!




**Carmel Area
Wastewater
District**

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

Free 24-hour sewer backup service:
If water is backing up into your tub or toilet, it is an emergency. Call us immediately, day or night!

8 am-5 pm: call 624-1248
After 5 pm: call Carmel Police: 624-6403; they will activate a CAWD response.

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 2021



A "vampire" bacterium sucks the life out of a larger microbe.

Image credit: Daniel Kadouri

Myxococcus cells work together like a wolf pack to swarm a colony of E. coli.

Image credit: James Bareleman



Above: MRSA causes dangerous staph infections that are resistant to antibiotics. Predatory bacteria target MRSA and offer hope for treatment.

Top: Human white blood cells engulf and kill four MRSA bacteria.

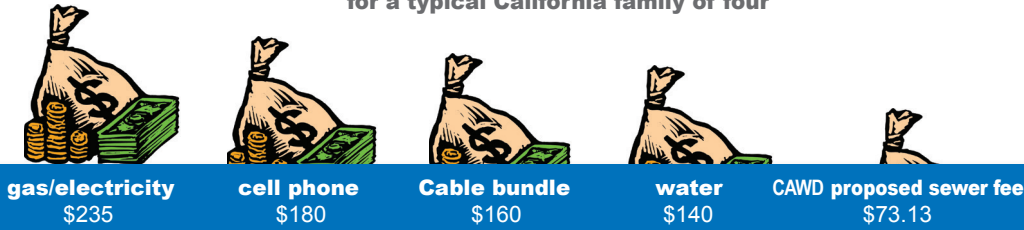
Image credits: royaltystockphoto/
National Institute of Allergy and Infectious Diseases



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How do we stack up to other utilities?

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



Fee increases kept to a minimum again this year

While rate increases are unavoidable, your CAWD staff and elected Board of Directors are also acutely aware of the hardships suffered by local residents and businesses due to the pandemic. Thanks to further budget cuts and maintenance deferral of some non-critical projects, we have minimized rate increases for a second year in a row to allow more time for recovery (see rate insert for details). We wish we could avoid increases altogether during this difficult time, but that is impossible for many reasons:

—Nearly 85 percent of our operating budget is for fixed costs. The plant must process wastewater constantly, 24 hours a day, 365 days a year, regardless of how much inflow comes into the plant. Since we are already leanly staffed, layoffs are not an option for safe operation. In addition, chemical costs have gone up substantially during the pandemic due to supply issues.

—Some maintenance cannot be deferred. Just as ignoring termite damage in a home leads to costly structural repairs, continuing to defer sewage system maintenance results in much more expensive replacement costs down the road. Wastewater systems are inherently corrosive environments where sewer gas continually degrades infrastructure. To be fiscally responsible, we must perform constant rehabilitation to obtain the longest useful life possible out of our community's investment.

—The State of California is revising waste discharge regulations and instituting zero tolerance policies for sewage spills. Proactive maintenance is vital to protect the environment and human health, reduce risk, and avoid hefty fines which would have to be shouldered by ratepayers.

At CAWD we are dedicated to getting the most out of every ratepayer dollar, and operating in the safest, most cost-efficient manner possible. To review our detailed annual budget, please visit CAWD.org.



Grants ease burden on ratepayers

Grant opportunities for public sewer infrastructure are sparse and highly competitive these days. Regardless, CAWD is always looking for special project funding which could save our customers money. Happily, after a long application process we were able to secure two Hazard Mitigation Grants from FEMA/California Office of Emergency Services to fund three projects reported on in this issue. (We also applied for a grant to cover pandemic-related costs, which is still in process.)

The Hatton Canyon sewer line replacement project (see article, page four) was awarded a \$900,000 grant with a required 25 percent local match. The upgrade protects the pipeline from seasonal flooding, and safeguards sensitive habitat from sewer spills. In addition, CAWD received \$297,918 for the Hatton Canyon access road repair, which also paid for required environmental mitigation (see page two). In total, the grants provided \$1,197,918 for the projects, so ratepayers did not have to pay that amount.

CARMEL AREA WASTEWATER DISTRICT PROPOSED BUDGET

July 1, 2021-June 30, 2022

Sources of Cash

\$18,656,766

Sewer User Fees	Capital Reserve Fund	PBCSD* Fees	Property Taxes	Reclamation Project	Interest Income/Other
\$8,677,198	\$3,372,679	\$2,910,829	\$2,100,000	\$819,160	\$776,900
46.5%	18.1%	15.6%	11.3%	4.4%	4.2%



For the last two years, CAWD has cut nearly \$1 million from our operating budget to keep ratepayer fees as low as possible during the pandemic. One-third of the plant cost is paid for by Pebble Beach Community Services District, per our agreement to provide them with wastewater treatment.

* Pebble Beach Community Services District

Uses of Cash

\$18,656,766

Capital Projects	Operations & Maintenance	Reclamation Project	Debt Service
\$10,271,699	\$7,560,751	\$611,410	\$212,906
55.1%	40.5%	3.3%	1.1%



Our detailed assessments show that we need to spend \$50 million on our community's treatment plant 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.





Sewer surveillance tracks COVID-19

Since July 5, 2020, CAWD has been systematically collecting wastewater samples to track the coronavirus in our community. We send weekly samples to Biobot Analytics for analysis, and share data with the Monterey County Health Department, the Carmel-by-the-Sea City Council, and online at CAWD.org. Biobot Analytics is a Massachusetts company which has been analyzing samples from over 400 communities in 43 states.

CAWD samples have continued to show higher counts of SARS-CoV-2 around holidays, with a peak of 153,517 virus particles detected after Christmas. We had a low in mid-February of 15,930 particles, followed by a spike to 94,800 on April 6. Samples from March 23 and April 16 also contained the more easily transmitted B.1.1.7 variant. The data is clear that the virus is still in our community. It is vitally important to get vaccinated and continue following mask and social distance guidelines.

Early warning system
“Sewer surveillance,” or wastewater epidemiology, is rapidly expanding as a powerful public health tool to track COVID-19 and future pandemics. People shed the most coronavirus immediately after contracting it and before showing symptoms, so wastewater testing is invaluable as an early warning system to reduce transmission, and identify hotspots. Under the new administration, the Centers for Disease Control and Prevention is creating a national database for wastewater testing which will help public health officials make informed decisions to protect the population and save lives.

To view CAWD’s weekly virus data, please visit CAWD.org.



The Rio Road rehabilitation project protects our community’s investment by extending the useful life of the sewer line.

Please—put wipes in the trash can!

- Wipes cause backups and damage our sewer system—they belong in the trash.
- Despite marketing claims, no wipes of any kind are flushable. Please flush only human waste and toilet paper.

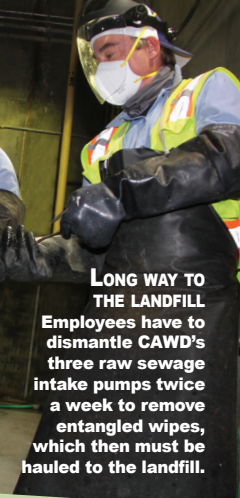


Green up your bathroom

Wipes are not biodegradable or recyclable, have a high carbon footprint, cause expensive damage, and pollute oceans and waterways with microplastic. To protect your home, the environment, and our community’s sewage treatment system, please flush nothing but the three Ps: pee, poop, and toilet paper! Use moistened paper instead of wipes, or, better yet, install a bidet to eliminate or reduce the need for both.

Simple bidets start at around \$30, easily attach beneath your existing toilet seat, and use no electricity. Luxury bidet toilet seats provide heat, spray modes, and air drying. Either way, you’ll see a huge savings.

- ✓ One-time purchase pays for itself with savings on wipes/toilet paper
- ✓ Healthier, cleaner, hands-free cleansing with no chemical residue
- ✓ Greatly reduces risk of backups and sewage spills
- ✓ Uses far less water than wipes or toilet paper production
- ✓ No microplastic pollution, which harms wildlife
- ✓ Much smaller carbon footprint
- ✓ Trees will thank you—and so will we!



LONG WAY TO THE LANDFILL
Employees have to dismantle CAWD’s three raw sewage intake pumps twice a week to remove entangled wipes, which then must be hauled to the landfill.

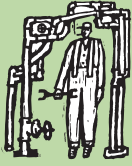


Achievements *(Cont. from page one)*

Capital projects completed—on time and within budget

- The Rio Road sewer main project rehabilitated 4,055 feet of clay pipeline which serves all homes and businesses from Larson Field eastward, past Highway One to the near-end of Rio Road. While we continue to defer maintenance during the pandemic to minimize ratepayer fees, some projects—like this one—would end up costing much more if they were delayed. Because the mainline was not totally degraded, we were able to line it with tubing using a “no dig” trenchless process. A more degraded line would require much more expensive excavation and replacement.
- We completed the Hatton Canyon pipeline project, which replaced 5,500 feet of clay mainline with a seamless pipeline anchored into sealed manholes for the entire length of the canyon. The new infrastructure will withstand seasonal high-velocity creek overflows to safeguard the sewer system and the environment in this popular hiking area (see related story, page 2). The Hatton Canyon road rehabilitation project, required to accommodate heavy equipment for the pipeline replacement, was honored with the 2020 Project of the Year Award from the American Public Works Association Monterey Bay Chapter. Thankfully, CAWD was able to pursue and secure grants which largely funded both projects, saving ratepayer dollars (see page 3 sidebar).

“Despite the pandemic—or maybe because of it—I’ve seen our employees double down over and over again in their commitment to serve and safeguard the public during this difficult time,” said CAWD General Manager Barbara Buikema. “As a result, one of the most challenging years in our history was also one filled with progress and achievements.”



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.



Carmel Area Wastewater District
3945 Rio Road
Carmel, CA 93923
(831) 624-1248 ■ CAWD.org

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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 24, 2021 9:00 am
Carmel Area Wastewater District
via Zoom link at CAWD.org

On June 24, 2021, at 9:00 am 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 annual sewer rates. The public can attend remotely via the link on our homepage at CAWD.org.

Your CAWD staff and elected Board of Directors are keenly aware of the hardships imposed upon residents and businesses by the ongoing pandemic. Last year at this time we cut \$691,000 from our budget in order to keep sewer fees as low as possible, never imagining that a year later we would all still be grappling with the social and economic challenges of COVID-19. This year, we have once again spent long hours debating our rate model and deeply evaluating options that would help our ratepayers—a much more difficult task on top of last year's budgets cuts.



NIGHTWATCH AT THE PLANT In adherence with COVID-19 guidelines, CAWD staff are split into day and night shifts to ensure that we have skilled plant operators even if one shift has to quarantine.

Unfortunately, there is not much room for belt tightening because nearly 85 percent of wastewater treatment cost is fixed. Regardless of whether restaurants are closed or people are sheltering in place, we must provide the same level of service and maintain all the same equipment every day of the year. In addition, disruption in the supply chain during the pandemic has increased our cost of operations, especially for the chemical products required to treat wastewater, ensure public safety, and stay in compliance with state regulations.

Nevertheless, after months of careful consideration and risk assessment, we

identified a few areas where maintenance could be deferred longer to allow more time for pandemic recovery. This cuts another \$404,600 from our budget on top of last year's \$691,000 reduction. As a result, we are able to minimize the 2021-22 rate increase to 3.02 percent, or \$2.14 more per month for residential users, our largest rate category. For commercial categories, with few exceptions we managed to keep rate increases between 1 and 2 percent. We believe that this fee structure equitably shares savings with all customers, based on the California State Water Resources Control Board rate model (see sidebar).

It is important to note that continuing to defer rehabilitation and capital projects for a second year is a short-term strategy at best. Our detailed assessments and capital long-term planning show that the community needs to spend \$50 million on its treatment facility over the next 15 years. We also know that our collection system, which includes our 84 miles of mainline, needs an estimated \$80 million of rehabilitation. The board has taken a very practical approach and supports addressing the highest risk pipelines within five to 10 years, and the medium high-risk lines within 10 to 15 years. These two categories total \$39 million. The board also understands that this vital long-term planning does not include the cost of unforeseen emergency projects.

In addition, we cannot ignore the looming threat of sea level rise, a serious and complex issue which CAWD and many other coastal wastewater treatment facilities must address. Our location at the mouth of the Carmel River Lagoon mandates that we prepare for possible flooding, and we are working on a solution which protects our community's investment and the environment. As your nonprofit provider of wastewater services, we will continue to operate our community's wastewater system in the most efficient and cost-effective manner possible, while maintaining the same high-quality standards to protect human health and the environment.

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.

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 2021-2022

User Categories	2020-21 Annual Rates	2021-22 Proposed Rates	Percentage of Change
Bakery (each location)	\$ 3,339.10	\$ 3,351.22	0.36%
Bar (each location)	\$ 1,358.00	\$ 1,374.58	1.22%
Beauty Salon (each location)	\$ 1,121.26	\$ 1,136.28	1.34%
Business/Govt./Retail (1-10 employees = one unit)	\$ 505.36	\$ 511.94	1.30%
Camera/Photo (each location)	\$ 702.20	\$ 710.04	1.12%
Church/Synagogue/Mission (each location)	\$ 750.24	\$ 760.26	1.34%
Convalescent Hospital (per bed)	\$ 400.58	\$ 405.48	1.22%
Dental Office (per dentist)	\$ 751.60	\$ 763.14	1.54%
Gym/Health Spa (each location)	\$ 969.84	\$ 982.70	1.33%
Hotel/Motel (per room)	\$ 422.82	\$ 428.08	1.24%
Laundromat (per machine)	\$ 930.62	\$ 944.46	1.49%
Laundry (each location)	\$ 3,533.92	\$ 3,564.90	0.88%
Market (each location)	\$ 1,603.04	\$ 1,610.36	0.46%
Medical Office (per physician)	\$ 364.94	\$ 359.92	-1.38%
Residential/Minimum vacant (each location)	\$ 851.84	\$ 877.58	3.02%
Restaurant (per seat/meal)	\$ 65.98	\$ 66.32	0.52%
School (per population)	\$ 34.36	\$ 34.88	1.51%
Service Station (per pump)	\$ 2,517.14	\$ 2,546.00	1.15%
Supermarket (each location)	\$ 21,601.64	\$ 22,703.94	5.10%
Special User (each location)	\$ 765.36	\$ 775.56	1.33%
Veterinary Office (each location)	\$ 1,938.78	\$ 2,043.50	5.40%
Vet Hospital/Boarding (each location)	\$ 5,543.28	\$ 5,608.98	1.19%