

Magnolia Point Reclaim Irrigation Water Education Team (MP:RIWET)

Information and Questions compiled by Art Yeaman, Green Cove Irrigation

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Updated 1-13-26

Magnolia Point Reclaimed Water Project: The first page and half pages is information from the City of Green Cove Springs.

Overview In June 2024, the City began a project in the Magnolia Point neighborhood to install reclaimed water pipes. The project's design and permitting has been funded by the Florida Department of Environmental Protection's State Revolving Fund. The project began with a survey of the area, including the identification and mapping of underground utilities.

Project Purpose

- In 2022, Florida passed Senate Bill 64, which requires utilities to stop discharging treated wastewater into surface waters (like the St. Johns River) by 2032. This law aims to improve water quality by reducing nutrients (nitrogen and phosphorus) that can harm ecosystems.
- Magnolia Point is the highest and most concentrated user of irrigation water in the City.
- Currently, the water has always been sourced from the Floridan Aquifer (a limited resource) for irrigation.
- Clean drinking water is precious, especially with Florida's growing population.
- The city wants to reduce water usage both inside homes and for irrigation.
- The plan is to switch all of Magnolia Point's irrigation systems from using drinking water to reclaimed water.
- When fully implemented, this conversion will save about 73.9 million gallons of Floridan Aquifer water each year.
- Conversion of the irrigation system to reclaimed water will remedy the low-pressure conditions in the higher elevation areas of Magnolia Point, which is caused by irrigation taking place during morning hours when residents are starting their day (heavy water usage).

The surveying and mapping process may take up to a year. Subject to funding and phasing, construction for this project is expected to commence between 2026 and 2027, with completion anticipated before 2032. *(Note Phase #8 Reclaim lines are already in place.)*

Frequently Asked Questions

Why did Florida enact the Surface Water Discharge Elimination Act? This law aims to improve water quality by reducing nutrients (nitrogen and phosphorus) that can harm ecosystems.

Why reclaimed water? Reclaimed water directly reduces the use of drinking water for irrigation. It also provides nutrients to landscapes.

When does the project begin? Surveying and design of the project and at water plants are currently underway. Actual construction of the reclaimed water system is anticipated in late 2026 / early 2027.

HOWEVER, as of the Fall of 2025 the City has placed this project on HOLD.

Is reclaimed water safe for both me and my pets? According to the Centers for Disease Control and Prevention (CDC), reclaimed water is generally considered safe for both people and pets after it has undergone proper treatment and disinfection. This extensive process, which will be followed by the City of Green Cove Springs, eliminates harmful contaminants, making the water suitable for various non-potable uses such as irrigation. However, it is not recommended for consumption or bathing. It is recommended that people wash their hands after handling it. For pets, it's fine for them to walk and play in areas irrigated with reclaimed water.

Are there any health concerns posed by eating fruits and vegetables grown in an area irrigated by reclaimed water? According to the Florida Department of Environmental Protection (FDEP), "reclaimed

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water should not be directly applied to the surfaces of vegetables or other edible crops that are not peeled, cooked, or thermally processed before being consumed." Therefore, fruits and vegetables that have been directly irrigated with reclaimed water (reclaimed water touches the edible portion) may be consumed if they are peeled or properly cooked. Fruits and vegetables that have been indirectly irrigated with reclaimed water (reclaimed water does not touch the edible portion) are considered safe to consume even if they are not peeled, cooked, or thermally processed.

Additional Resources

- A good resource for methods to reduce water consumption, in addition to regulations on irrigation ("watering days/times", etc.) is the St. Johns River Water Management District. The link to their water conservation website is <http://www.sjrwmd.com/waterconservation/>.
- The City follows the St. Johns River Water Management District regulations on irrigation ("watering days/times", etc.). The link to their water restrictions website is: <http://www.sjrwmd.com/wateringrestrictions/>.
- Centers for Disease Control and Prevention: <https://www.cdc.gov/>

*****This concludes information from the City of GCS*****

Art Yeaman, DBA Green Cove Irrigation: <https://greencoveirrigation.com/>

BIO: Art is a retired US Marine (1972-94). In 1995 he returned to school (First Coast Technical College) to study Agriculture Science (Irrigation, Landscape, & Greenhouse operations). During 1997 he developed a landscape and irrigation business. From 1999-2001 he was on staff with University of Florida Extension as a Florida Yards and Neighborhoods program assistant. In 2007 he stopped doing irrigation installations and landscape work to focus on his specific area of expertise....

More than 95% of Magnolia Point (MP) residential properties have a contractor installed in ground irrigation system. From my perspective a super majority of the MP residential Irrigation Systems are excellent quality with good design and infrastructure. Therefore, MP is a "target rich environment," a lot of irrigation systems that potentially need maintenance, repairs, and modifications. Since 2001 I have serviced more than 450 residential properties in MP.

CHANGE: When I learned that Reclaim Irrigation is coming to MP I started to ask questions. I made it known that reclaim water is a significant **change** with various concerns. Jon Bastress, MPCA President invited me to attend a meeting with city staff. That's when it became clear to me that there are several unanswered questions. I also noticed that some answers were only offered from a limited perspective. Therefore, I offered to:

1. Help create a list of questions. *(this document starts this process)*
2. Invite additional resources: *Initially Wayne Hobbs, our Clay County Horticulture Agent.*
3. Be willing to make myself available for Q&A sessions, discussions, workshops, etc.
4. Provide limited oversight to challenge some answers. *For example, on page #1 there is a claim that "It also provides nutrients to landscapes." Ok.... But what about added Chlorine and Salts?.....*
5. Be part of a team to create awareness and educate MP residence.

Nearly 1000 people a day move to Florida and plans are in place for 4,000 new house for the Greater GCS area. Urbanization impacts our water quantity and quality. I commend the City of GCS and the MPCA board for getting out in front of this CHANGE. **As per the State Mandate and City data we are now part of a project to save about 73.9 million gallons of Floridan Aquifer water each year.**

Change is on the way!!!! We need residence of MP to ask questions. Let's get started

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Art Yeaman

Basics:

1. What are the basic Do's and Don'ts for reclaim irrigation water? Usage Tips:

DO:

- Post signs indicating that reclaimed water is in use and is not appropriate for human or animal consumption.
- Use purple indicators on irrigation equipment that uses reclaimed water.
- Water at night or whenever the potential for human contact is low.
- Prevent water from pooling or running off into adjacent properties.
- Avoid overspray onto outdoor picnic or dining areas where food may be prepared or eaten.
- Wash your hands with soap and drinking water if you come into physical contact with reclaimed water.
- Ensure all landscape and irrigation maintenance professionals know that reclaimed water is being used on the property.

DON'T:

- Allow humans or house pets to consume reclaimed water.
- Allow children to play in the sprinklers
- Connect reclaimed water to the drinking water system.
- Bathe in reclaimed water.
- Use reclaimed water in swimming pools or spas.
- Use in aquariums.
- Use for heating and cooling equipment.
- Connect to fountains.
- Wash vehicles, playground equipment, driveways, sidewalks or other structure

VIDEO: University of Florida - IFAS Irrigation Orientation - Reclaimed Water Dos and Don'ts

<https://www.youtube.com/watch?v=IGgh-Rei69g>

Rain Bird Reclaim Water Awareness (White Paper)

https://www.rainbird.com/sites/default/files/media/documents/2018-02/wp_ReclaimedWater.pdf

2. What is reclaim irrigation water? Reclaim water is sewage and/or storm drain water that has been screened, filtered, and treated then sent back to you for irrigating your yard. On January 14, 2025, Scott Schultz, GCS Water Dept. Director for the City of Green Cove Springs stated that this Reclaim Water will be 100% your sewage that is screened, filtered, and treated and then return to your yard.

VIDEOS

1.) Know Your Yard Science- Reclaimed water <https://www.youtube.com/watch?v=EFoDBq6ZVvQ>

2.) The reclaimed water here is so nasty, it's unsafe to water your grass with it
<https://www.youtube.com/watch?v=tQbd-0AJvrg>

3.) St. Johns County Utilities: Reclaimed Water https://www.youtube.com/watch?v=x5nSrgJDq_U

3. What is the cost to the homeowners?

4. Are there Financial Incentives?

City of GCS Factors, Requirements, or Regulations

1. Is this reclaimed project modeled after another community?
2. What are the lessons learned (pros & cons) from other communities converting to reclaim.
3. What communities are very satisfied with reclaim irrigation water?
4. Is there a timeline for it to be in place in specific neighborhoods or specific roads?
5. Will homeowners be required to tie in to the reclaim irrigation water or will be able to opt out it and then connect when they are ready?
6. If we already have a separate Irrigation Meter will the new Reclaim water line be hooked up at that point?
7. If we do NOT already have a separate Irrigation Meter will the new Reclaim meter and water line be hooked up near (side-by-side) the Potable (House) water meter?
8. What is the projected water pressure range and Gallons Per Minute (GPM) rate of flow.
9. Phase 8 of MP (for west portion) is already plumb for reclaimed water. Will that reclaim water be delivered by the GCS or by Clay Utility?
10. What about reclaimed irrigation water system downtime? Will there be periods of time during the day that the system will be down for maintenance?
11. Will backflow prevents be required and if so, will there be a periodic inspection required?
12. Will Pump "Lift Stations" need to be added at various places in MP neighborhoods? If so, will the Pump Stations also include accessible Filtration points?
13. How will the City Officials present this project to our residence? Here's a link to what they did in the City of Edgewater, FL

https://www.cityofedgewater.org/sites/default/files/fileattachments/environmental_services/page/2081/reclaim_water_new_customer.pdf

MPCA Concerns, Factors, Requirements, or Regulations

1. **Will homeowners be required to tie in to the reclaim irrigation water or will be able to opt out it?**
2. **What other communities are highly satisfied with reclaim irrigation water?**
3. **Will the irrigation watering days change? Can I run my system when I need it? Such as every 4 or 6 days or once every 7-14 days?**
4. **What are the HOA requirements to maintain turf grass?**
1-25-25: According the Bill Nisley, MPSA Sec. There's nothing specific about turf in our covenants. Just that any landscaping changes require Architect Review Committee (ARC) review and approval. **So... does that mean that there NO landscaping standards; there are only opinions of the members of the Architect Review Committee?**

Water Quality Data

1. **What are the water quality standards?**
2. **What are the management quality control factors?**
3. **Who establishes the standards and who enforces the standards?**
4. **Does it contain polyfluoroalkyl substances (PFAS) aka "Forever Chemicals"?**

Health Concerns (short term and long term)

1. **What are the health concerns?**

Plants & Soil: Ornamental, Fruits, Vegetables, Herbs

1. **What are the adverse effects to ornamental plants and more specifically herb and vegetable gardens?**
2. **What are the health concerns?**
3. **Reclaim water tends be high salt, elevated chlorine, and undissolved solid. What are the pros and cons for irrigation plants?**

4. **Will reclaimed water impacted Lawn or Landscape Fertilizer or Pest Control**
5. **What is the pH range for Reclaimed Water?**
6. **What are the long-term effects on the plants and soil?**
7. **Does Reclaim tend to be more Alkaline and Acidic?**
8. **Will a “Xeriscape” Yard be more suitable?**

9. Is a “Florida Friendly Landscape” more suitable for reclaimed water? <https://ffl.ifas.ufl.edu/>

10. **Does rainwater and lawn irrigation water saturate vertically to recharge groundwater and or aquifers?**
11. **If reclaim water has nutrients (nitrogen and phosphorus) will it cost me less to fertilize my landscape?**
12. **Can I Overuse Reclaimed Water?** Overwatering with reclaimed water may result in salt accumulation in the soil.

Irrigation System: (advantages & obstacles)

1. **How do I know if my water is reclaimed?** The industry standard is that potable water is in place with WHITE PVC and standard irrigation materials. However, reclaimed water is run through **PURPLE PVC** with purple irrigation heads, and purple valve cover boxes, all exposed items are to be clearly marked with purple. Note: Phase #8 residence had purple pipes installed, however, it has not been connected to the reclaim water.
2. **Reclaim water tends to have high salt, chlorine, and or undissolved solid. What are the pros and cons for irrigation parts?** Chlorine is used to disinfect reclaimed water but can also cause irrigation system components to deteriorate faster. Microbes and other solids that remain after treatment can also contribute to this breakdown. There are newer and improved irrigation components more suitable for reclaimed water. For example: Heavy-duty, glass-filled nylon valves are designed with chlorine and chemical resistant diaphragms.

3. **What about reclaimed irrigation water system downtime? Will there be periods of time during the day that the system will be down for maintenance?**
4. **Will there be any requirements for the homeowner to change anything else in their irrigation system such as Backflow Preventer, Valves or marking the heads in purple?**
5. **What are the irrigation maintenance concerns?**

https://www.rainbird.com/sites/default/files/media/documents/2018-02/wp_ReclaimedWater.pdf

VIDEO: Using Non-Potable, Reclaimed & Recycled Water

https://www.youtube.com/watch?v=TkaYwvXZL_o

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The following is further information to help the process.

Info from UF – IFAS

by **Ed Thralls**

Posted: April 6, 2020

What are the guidelines for Vegetable Gardens? One of the largest obstacles to reclaimed water use on edible crops is public perception, mostly resulting from a lack of adequate education. Public health concerns include the presence of pathogens and heavy metals, which are typically of little concern following proper treatment of domestic wastewater. In terms of crop productivity, there are concerns regarding the high salt (nutrients/fertilizer) content of reclaimed water.

Overwatering with reclaimed water may result in salt accumulation in the soil, resulting in poor root growth and water uptake by crops. It is important to note that tolerance of reclaimed water use varies by crop type. Although the organic and inorganic nutrient content of reclaimed water can benefit users by reducing the need for some fertilizers, high nitrogen concentrations may result in excessive microbial growth and activity and be detrimental to crops. If overwatering leads to heavy runoff, these nutrients may also pose a water quality risk to surface water bodies.

Orange County states: “The primary use (of reclaimed water) will be landscape irrigation, but you may also use reclaimed water to irrigate fruit and vegetable gardens. In-ground sprinkler systems must be used for reclaimed water irrigation. Orange County

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does not allow the use of hoses or spigots for irrigation with reclaimed water. Fruits and vegetables that are usually peeled (such as citrus), skinned or cooked (such as potatoes, beans and squash) can be irrigated. Reclaimed water cannot be sprayed directly on fruits and vegetables that are eaten raw and are not peeled or skinned prior to eating (such as lettuce or tomatoes). Drip irrigation systems must be used for irrigating these types of crops with reclaimed water.”

(source: http://www.orangecountyfl.net/Portals/0/Library/Water-Garbage-Recycle/docs/Reclaimed_Water_Customer_Guide.pdf ,page 3)

The **City of Orlando** allows the use of reclaimed water on vegetable gardens:

“Vegetable gardens may be irrigated using **indirect irrigation methods** such as drip systems so that reclaimed water does not contact produce that will be eaten raw. Fruit and vegetables that must be skinned, peeled or cooked before eating may be irrigated using direct contact methods of irrigation such as sprinklers.”

(source: <http://www.cityoforlando.net/waterreclamation/reclaimed-water-for-urban-irrigation/>)

The **State of Florida** allows the use of reclaimed water on vegetable gardens. “The Florida Department of Environmental Protection states that reclaimed water should NOT be directly applied to the surfaces of vegetables or other edible crops that are not peeled, cooked, or thermally processed before being consumed. This statement essentially means that as long as you peel or cook your vegetables, they may be safely consumed after being grown with reclaimed irrigation water. The statement also means that indirect application methods, such as ridge or furrow irrigation, drip irrigation or a subsurface distribution system, which preclude direct contact, are allowed for edible crops that are not peeled, skinned, cooked, or thermally processed before consumption.” (source: <http://edis.ifas.ufl.edu/pdf/SS/SS54400.pdf> , see question #10)

Reclaimed Water: Frequently Asked Questions

by **marylusk** Posted: June 20, 2017

~A look at how reclaimed water is produced, what's in it and how it can be used on lawns and food crops.~

Reclaimed Water

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Florida is rightly known as the Sunshine State. My hometown of Tampa is blessed with an average of 244 days of sunny or partly sunny skies every year, and I love it! There's another name we could also proudly claim: the water state. Water unites us as Floridians because no matter where we live in the state we touch, cross, and interact with our abundant natural water resources in some way. A study released in 2016 by the [UF PIE Center](#) reports that Floridians rank water second only to healthcare as a "highly or extremely important" issue.

As nearly 1000 people a day move to Florida, development and urbanization impact both the supply and the quality of water available to our citizens. Looking ahead to future water demand scenarios, we are likely to need an additional 300 million gallons a day within the next 20 years. Recognizing this need, local and state government agencies and planners are putting more emphasis than ever on expanding the beneficial reuse of reclaimed water. While Florida already leads the nation in use of reclaimed water, we still put on average only 45% of statewide reclaimed water flows to some kind of beneficial reuse. [Projects are popping up all over the state](#) to grow that number, and it will be important that we understand the basics of how reclaimed water is produced, regulated, and put to use.

Below are some frequently asked questions about reclaimed water. You can also check out our [online publication series on Reclaimed Water in the Landscape](#).

What is Reclaimed Water?

Reclaimed water, also known as recycled water or reuse water, is former domestic wastewater that has been disinfected and treated to remove solids and certain impurities. After treatment at a wastewater treatment plant, the cleansed water can be safely discharged into a nearby stream, wetland, or ocean, or this water source may be piped back into communities for reuse by various residential, industrial, and commercial users. Unless the reclaimed water is sent back to communities for some kind of beneficial reuse (such as lawn irrigation), it can be discharged to a local water body as a means of "getting rid of it." Beneficial reuse by neighborhoods, cities, and counties is a promising way to recycle this water and save potable water resources from being used for activities such as lawn irrigation.

How is Reclaimed Water Produced?

Reclaimed water is produced at a wastewater treatment plant. At the treatment plant, domestic wastewater is collected from households, schools, offices, hospitals, and commercial and industrial facilities, and then undergoes several stages of treatment to prepare the water for reuse or discharge into the environment. The treatment processes are designed to ensure that reclaimed water is safe and reliable for its intended use.

The stages of treatment include the following:

- Primary treatment—the sewage is temporarily held in a basin so solid waste materials can settle to the bottom and be removed.
- Secondary treatment—after the solids are removed by primary treatment, the water left behind is further treated to remove or degrade any remaining wastes still suspended in the water.
- Tertiary treatment—a final stage that involves advanced removal of nutrients and other contaminants not fully removed by secondary treatment

Note that the minimum requirement in Florida for treating reclaimed water is secondary treatment and disinfection, although many treatment plants use tertiary treatment for advanced removal of nutrients.

How Does Reclaimed Water Differ from Drinking Water?

Reclaimed water is highly treated and disinfected but still contains some constituents at levels outside the desirable range for drinking water. Specifically, reclaimed water may have higher levels of salts, nutrients (nitrogen and phosphorus), and pathogens (e.g., bacteria and viruses). Reclaimed water has been safely used for non-drinking purposes in Florida for more than 40 years, but because of its composition, this water source should never be used for drinking or sanitary purposes.

Are There any Contaminants in Reclaimed Water?

Reclaimed water is known to contain small concentrations of inorganic and organic contaminants. There are NO documented cases of adverse health effects from contact with reclaimed water in Florida, but you should be aware that pathogens, nutrients, salts, metals, and emerging contaminants (for example, traces of pharmaceuticals) have been detected in reclaimed water. More information about these can be found [here](#).

Is Reclaimed Water Safe for Turf and Landscape Plants?

Reclaimed water can be safely used to irrigate turf and most other landscape plants. In fact, reclaimed water often contains nutrients (nitrogen and phosphorus) that can be considered part of the fertilizer needs of the landscape. Check with your reclaimed water provider to learn about the levels of nutrients in your reclaimed water and be sure to incorporate the results into your landscape nutrient management plans. (Learn how [here](#).) Occasionally, reclaimed water contains elevated levels of salts that can harm sensitive landscape plants. Azaleas (*Rhododendron* sp.) and crape myrtles (*Lagerstroemia* sp.) are two common landscape plants used in Florida that are

especially sensitive to high salt levels. If you live near the coast, you may also have higher than normal salt levels in your reclaimed water because of the influence of seawater. Your reclaimed water provider will have data about salt levels in your water.

Can I Use Reclaimed Water on my Vegetable Garden?

The Florida Department of Environmental Protection states that reclaimed water should NOT be directly applied to the surfaces of vegetables or other edible crops that are not peeled, cooked, or thermally processed before being consumed. This statement essentially means that as long as you peel or cook your vegetables, they may be safely consumed after being grown with reclaimed irrigation water. The statement also means that indirect application methods, such as ridge or furrow irrigation, drip irrigation or a subsurface distribution system, which preclude direct contact, are allowed for edible crops that are not peeled, skinned, cooked, or thermally processed before consumption.

What are the Benefits of Reusing Reclaimed Water?

The main benefit of using reclaimed water is that its use replaces the use of potable water. In 2009, use of reclaimed water substituted for more than 127 billion gallons of drinking water while serving to add more than 79 billion gallons back to available groundwater supplies. Using reclaimed water for non-drinking purposes extends our freshwater supplies and ensures sustainable use of a vital natural resource. Reclaimed water also reduces the cost of landscape irrigation compared to using potable water, which is generally priced higher to consumers. When used for irrigation, reclaimed water moves vertically and can recharge groundwater aquifers. Recharging our groundwater aquifers is critical because it replaces the water withdrawn to meet the needs of a rapidly growing population in Florida.

Can I Overuse Reclaimed Water?

Yes. Remember that overwatering is overwatering, regardless of the water source. If you use reclaimed water for lawn irrigation, overwatering will cause the same damage as overwatering with other water sources. Only irrigate when soil and turf conditions indicate that irrigation is necessary. As a rule of thumb, only 3/4th to 1 inch of water is needed each week for most Florida turfgrasses.

Also, nutrient (nitrogen, phosphorus) pollution may occur if the user over-irrigates the lawn because both reclaimed water that runs off on the surface and the water and nutrients that move below the root zone are lost. Maintenance of a high level of distribution uniformity in reclaimed water-irrigated sites is critical to prevent leaching and runoff of these nutrients.

UF study: Reclaimed water 'major' source of toxic 'forever' chemicals in Brevard soils

Story by Jim Waymer, Florida Today • 8mo • 5 min read

Health Topics mentioned in this article

Sprinkling our lawns with treated sewage, or reclaimed water, is a "major source" of cancer-causing forever chemicals in Brevard County soils, a new study suggests.

University of Florida's latest findings of so-called PFAS compounds in Space Coast soils strikes yet another alarm bell to those watering their backyard gardens with reclaimed water or private well water, implying they ought think twice before eating what they grow. But the UF researchers also warn of many gray areas when it comes to the wastewater we sprinkle on our lawns and gardens.

"It's difficult when there's not all the data to assess the risk," said Katherine Deliz Quiñones, assistant professor at University of Florida's Department of Environmental Engineering Sciences. "If you're in a region that has been detected with high concentrations in soil because of the proximity to a source site .. I would be cautious."

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The UF study, published this month in the journal Soil & Environmental Health, shows PFAS in soil at the highest levels near Patrick Space Force Base, a cement plant in Grant-Valkaria, and a chemical plant in Palm Bay. The specific compounds they're finding also could help rank sites for future cleanups, as scientists learn more about which PFAS chemicals are the most dangerous.

Deliz Quiñones' student, Sanneri Santiago Borrés, who's earning a Ph.D. in Environmental Engineering, was lead author on the study.

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The compounds, called per- and polyfluoroalkyl substances (PFAS), enter drinking water and the Indian River Lagoon from soils contaminated with sewage, fire-fighting foams and countless consumer products. Experts say there's no cheap or easy way of getting them out of drinking water or the environment, or even of measuring them.

Why is PFAS bad?

Some PFAS chemicals are linked to a host of cancers, immune suppression, thyroid defects, fetal abnormalities, childhood diseases, reproductive harm, high cholesterol and other health issues. They can take millennia to break down in the environment and decades in our bodies. Their damage can be delivered in extremely trace doses — measured in parts per trillion. A 2020 Danish study found people with higher blood levels of PFAS had more severe COVID-19 cases. Other studies have shown the compounds also can inhibit the effectiveness of COVID and other vaccines.

Last month, EPA issued its first-ever national limits on PFAS in drinking water. Utilities have five years to meet the new limits. So scientists are scrambling to provide the baseline data for how to deal with the compounds.

Where did UF find the highest PFAS levels?

Of the 12 sites UF tested, the highest PFAS diversity and concentration were near FAR Chemical Inc. in Palm Bay; CEMEX Malabar Valkaria cement factory; Patrick Space Force Base; and at a military disposal site several miles south of Patrick.

Military leaves long legacy of health fears near Patrick

PFAS was among the newest of a litany of known pollutants in the ground at and near Patrick that local activists have pointed to for decades as causing cancer and other health problems. Many water their lawns from private irrigation wells that tap the same groundwater where PFAS and other pollutants have been detected for years.

The concerns culminated in a visit from famous activist Erin Brockovich in September 2018, after another spate of cancers in Satellite Beach were brought to her attention by

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Julie Greenwalt, a Jacksonville oncologist who graduated from Satellite High School and is a cancer survivor.

More than 300 homes lie within the 52-acre area south of Patrick Space Force Base targeted for cleanup. Some residents fear what dangers a shovel might one day find in their yards, from World War II-era airplane parts to unexploded ordinance and drums of unknown chemicals.

University of Florida graduate student Emily Griffin holds up a sample of the seagrass taken from the Indian River Lagoon in January of 2019. In the background is UF assistant professor John Bowden. A UF study published in May 2024 found high levels of PFAS "forever" chemicals in some Brevard soils. The researchers suspect reclaimed water is a major source of those chemicals.

University of Florida graduate student Emily Griffin holds up a sample of the seagrass taken from the Indian River Lagoon in January of 2019. In the background is UF assistant professor John Bowden. A UF study published in May 2024 found high levels of PFAS "forever" chemicals in some Brevard soils. The researchers suspect reclaimed water is a major source of those chemicals.

© MALCOLM DENEMARK/FLORIDA TODAY

Enter University of Florida researchers

For the past several years, UF has been finding PFAS in Brevard's swimming pools, in the lagoon and seagrass. Their latest study was among several others done under a \$798,193 grant the U.S. Environmental Protection Agency awarded UF in 2020 to study PFAS in Brevard. The project examines pathways of PFAS exposures in areas of the county vulnerable to flooding and ways for the public to counter those exposures.

Local government tests also have found high PFAS levels three years ago in Cocoa Beach sewage, South Patrick Shores soil and groundwater. Low levels of one of the compounds, PFBA, showed up in tap water of several beachside schools on Melbourne's water system but city officials said that chemical was among the least harmful of PFAS compounds and is safe to drink.

Other studies have found high PFAS in freshwater fish, alligators and other wildlife.

What was PFAS for?

PFAS consists of more than 12,000 compounds designed to repel grease, water and oil. They had been used in the fire-fighting foams in fire-training exercises on military bases since the 1960s. The chemicals were also used in pesticides, Teflon coatings and many other consumer and industrial products. Their use has been phased out but the compounds remain in the environment for decades and are not regulated.

How did UF do the study?

Soil samples were taken from the first six inches of topsoil in February 2021 from a dozen sites in Brevard, chosen in part via community knowledge and concerns, with help from volunteers with the nonprofit Fight for Zero.

Exposure risks can be greater on barren land, where soil dust can be inhaled or children can be exposed by digging in the dirt.

"In areas that we've detected higher concentrations, if the area is covered with grass, the risk should be minimal," Deliz Quiñones said. "If it's covered soil, the risk will definitely be lower."

Deliz Quiñones said UF hopes to win more grants to continue studying how environmental PFAS levels in Brevard correlate with health risks.

"How concentrations relate to body burden, we don't know," she said.

Contact Waymer at (321) 261-5903 or jwaymer@floridatoday.com. Follow him on X (Twitter) at [@JWayEnviro](https://twitter.com/JWayEnviro).

The above article originally appeared on Florida Today: UF study: Reclaimed water 'major' source of toxic 'forever' chemicals in Brevard soils

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RAIN BIRD

What You Need to Know about Irrigating with Reclaimed Water (Tue, 01/07/2025)

The adoption of water recycling is gaining momentum nationwide as communities recognize its potential for securing safe and dependable water supplies. This trend has far-reaching benefits, including promoting healthier environments, thriving economies,

and improved quality of life. In fact, a recent survey conducted by [Bluefield Research](#) reveals that recycled water production in the United States is **projected to rise significantly, with an estimated 37% increase from 4.8 billion gallons per day to 6.6 billion gallons per day by 2027**. Such promising statistics underscore the positive impact of water reuse on our overall water management strategies.

With more and more communities and businesses incorporating water recycling into their operations, there are more opportunities for developers to make utilizing recycled water easier. That's where Rain Bird comes in. Rain Bird continues to enhance its irrigation system components to optimize their use with reclaimed or recycled water. This exciting development enables you to efficiently irrigate using water that was once discarded. Read on to explore the advantages and obstacles associated with reclaimed water usage and discover how to successfully implement it in your home or business.

What Is Reclaimed Water?

Reclaimed water refers to treated wastewater that has undergone a rigorous purification process, making it suitable for various non-potable uses such as irrigation, industrial processes, and groundwater replenishment. Advanced treatment technologies remove contaminants and impurities, ensuring the reclaimed water meets specific quality standards for its intended applications. This environmentally sustainable approach allows for the efficient and responsible reuse of water resources, reducing strain on freshwater supplies and providing an alternative water source for non-drinking purposes. Reclaimed water plays a vital role in promoting [water conservation](#), enhancing water availability, and supporting sustainable development practices.

Simply put, recycled or reclaimed water is used water that has been cleaned to be used again. While the process does not make the water suitable for drinking, it can be used for irrigation, industrial cooling, street sweeping, and more. Reclaimed water is heavily regulated to ensure that it is used safely and efficiently.

Who Can Utilize Reclaimed Water?

The process of cleaning used water and putting it back into use is regulated by local and state governments. It is not potable, and therefore proper steps must be taken to ensure that there is no cross-contamination between drinking water and reclaimed water that can be used for flushing toilets, irrigation systems, and other similar uses. There are also location restrictions as the reclaimed water cannot be piped everywhere. Your home or business must be located within a certain distance of the existing water mains.

Collecting Rainwater

If reclaimed water isn't available in your area, don't worry. There are other options for reducing your freshwater use, including [collecting rainwater](#).

Collecting rainwater is an excellent way to reduce the amount of freshwater your home or business uses. According to the United States Environmental Protection Agency, an average American family consumes more than [300 gallons of water](#), with 30% dedicated to outdoor activities. Among these outdoor uses, watering lawns and

gardens account for over half of the water consumption. Nationally, landscape irrigation alone represents nearly one-third of residential water usage, totaling a staggering volume of almost 9 billion gallons each day. And while certain water methods like [drip irrigation](#) can lessen your water use by 80%, collecting rainwater for irrigation and cleaning can also help reduce the amount of freshwater used significantly.

Is It Illegal to Collect Rainwater in the US?

Despite its benefits, a few outdated laws do prohibit collecting rainwater. In Colorado, for example, [collecting rainwater is technically illegal](#). However, residents can collect water in two rain barrels not exceeding 110 gallons. Hopefully, these antiquated laws will soon be updated to allow this practice in these areas as well.

In the rest of the country, certain rules and regulations apply to collecting. The practice is certainly encouraged, but you must follow the rules and laws to comply with your area's government. Some areas require permits for rainwater collection, many regulate the type of containers that can be used, and some require certain filtration systems.

Using Reclaimed Water for Irrigation

With a little knowledge, your apprehensions about using reclaimed water are hopefully appeased. It's better for the environment and it's better for your budget. Now comes the easy part. Rain Bird has been a prominent supporter of The Intelligent Use of Water™ for more than 80 years. As water conservation gains significance, we are at the forefront of reclaimed water usage. Our end-to-end solutions help us maximize every drop.

Are There Any Challenges with Using Reclaimed Water?

Outside of the laws and regulations in place that were mentioned above, there are a few other [challenges associated with reclaimed water use](#), especially in regard to irrigation.

1. The process of reclaiming water leads to an elevation in its salinity (salt) levels, which can pose risks to the soil, fauna, and irrigation equipment. By carefully choosing appropriate plant species and implementing efficient irrigation practices, it is possible to mitigate the impact of elevated salt levels and minimize any associated challenges.

2. **Chlorine is often used to disinfect reclaimed water but can also cause irrigation system components to deteriorate faster.** Microbes and other solids that remain after treatment can also contribute to this breakdown. Plumbing made of proper materials and equipment suitable for reclaimed water can lessen the effects on your irrigation system.

[Rain Bird products](#) are designed to withstand the harsh chemicals commonly found in recycled water. The benefits certainly outweigh the risks when it comes to using reclaimed water.

Reduce. Reuse. Recycle. Rain Bird.

Everyone should want to do their part to protect the environment. Whether that means you recycle your aluminum cans or you start collecting compost or you place your [hose on a timer](#) to conserve water, every little bit helps. By responsibly reusing water resources, we can conserve freshwater supplies, enhance water availability, and foster sustainable development practices. While certain challenges are associated with reclaimed water use, such as salinity levels and chlorine effects, Rain Bird's innovative products are designed to withstand the demands of recycled water, making the benefits far outweigh any potential risks. Together, we can maximize every drop and contribute to a more sustainable future.

When you're ready to design the perfect reclaimed water irrigation system for your home or business, contact Rain Bird. Our [design service](#) can help you bring your irrigation dreams to reality.

Pump Stations and Filtration

Rain Bird is the only irrigation manufacturer to offer pump stations, so you can take a fully integrated approach to reclaimed water irrigation with one trusted partner. By ensuring correct water pressure and delivering the right flow of water, our pump stations allow you to maximize the efficiency of your system. Rain Bird automatic filters keep irrigation systems free of the contaminants that degrade performance and efficiency.

Valves and Control Zone Kits

Reclaim water valves are designed and built with heavy-duty, glass-filled nylon to deal with chlorine- and chemical resistant diaphragms and components.

Rain Bird's reclaimed water compatible valves will perform effectively year after year. Valve boxes with purple lids ensure everyone is aware of reclaimed water use.

Emission Devices

Designed to handle the challenges of all irrigation applications, Rain Bird's reclaimed water compatible emission devices are engineered and built to last. Rain Bird's technology features special internal components that filter debris from your system and can easily withstand chlorine and other chemicals that reduce a regular spray head's lifespan. Visible purple indicators ensure everyone knows reclaimed water is being used.

PESB-R Series Valves Durable chlorine-resistant valves for recycled water irrigation applications A true recycled water irrigation valve, able to handle chlorine and other chemicals found in recycled water systems PESB-R Series valves offer long life and efficient, trouble-free performance – even in harsh recycled water applications

Constructed of heavy-duty, glass-filled nylon, these valves resist clogging and feature a patented scrubber to actively fight dirt, algae and other particles from blocking the pilot flow Advanced Features

- Stronger, glass-filled nylon bonnet
- Enhanced diaphragm materials
- Robust, one-piece solenoid
- Stainless steel studs molded into the body
- External bleed
- Slow-closing operation
- Self-cleaning pilot filter scrubber
- Chlorine-resistant materials

150-PESB-R Model Description Height Length Width 100-PESB-R 1" (26/34) 6 1/2" (165 cm) 4" (102 cm) 4" (102 cm) 150-PESB-R 1 1/2" (40/49) 8" (203 cm) 6" (152 cm) 6" (152 cm) 200-PESB-R 2" (50/60) 8" (203 cm) 6" (152 cm) 6" (152 cm)

How To Specify 100 - PESBR - PRS-D Size 100: 1" (26/34) 150: 1 1/2" (40/49) 200: 2" (50/60) Model PESB-R: scrubber model optional Feature PRS-Dial: pressure regulating module (must be ordered separately)

Note: Valve and PRS-Dial module must be ordered separately. For non-U.S. applications, it is necessary to specify NPT or BSP thread type. Specifications • Pressure: 20 to 200 psi (138 to 1380 bar)

- Flow: 025 to 200 gpm (006 to 4540 m³/h; 0,02 to 12,60 l/s)
- Flow with PRS-Dial: 5 to 200 gpm (114 to 4540 m³/h; 0,32 to 12,60 l/s)
- Temperature: Up to 150° F (66° C)
- 24VAC 50/60Hz (cycles/sec) solenoid power requirement
- Inrush current: 041A (99VA) at 60Hz
- Holding current: 014A (343VA) at 60Hz
- Solenoid coil resistance: 30-39 Ohms, nominal

Is reclaimed water a cost-effective resource for irrigation?

- The benefit-to-cost ratio (BCR) of 17.02 estimated for reclaimed water highlights its high return on investment, suggesting that it offers substantial economic and environmental benefits. This high BCR indicates that reclaimed water as a resource for irrigation is highly cost-effective, particularly if it is combined with nutrient management.

[A Cost-Benefit Analysis of Reclaimed Water and Desalinated ...](#)

www.mdpi.com/2073-445X/13/12/2156

<https://www.tampa.gov/document/managing-healthy-landscape-using-reclaimed-water-17406>

Chloride Salts

Chloride salt concentrations for Tampa's reclaimed water range from 150 to 300 parts per million (ppm). Most landscape plants will tolerate chloride salt concentrations of up to 400 ppm, while others such as Dwarf azalea and Chinese privet are totally intolerant.

Some other common species, such as Camellia and Gardenia will tolerate chloride salt levels greater than 100 ppm, although may show leaf burn (yellowing) if the foliage is exposed to overhead irrigation.

If leaf yellowing occurs, sprinkler heads may need to be adjusted so the spray pattern avoids direct contact with plant foliage. If leaf yellowing persists, it may be necessary to use drip irrigation to water the more sensitive plant varieties.

Effects of Overwatering

Leaf burn and wilting, commonly mistaken for leaf damage associated with chloride salts in reclaimed water, are also well-known indications of overwatering. Allowing water to pool on foliage in direct sunlight, regardless of the water source (rain water, potable water or reclaimed water), may also cause foliage to yellow.

Salt Accumulation and Drainage

Poor drainage and pooling water may also allow accumulation of salts in the soil. Adjust slopes, eliminate compacted soil and amend soil structure to help improve landscape drainage problems.

Plant Selection

To help reclaimed water customers manage their landscape, a listing of common landscape plants grouped by their chloride salt tolerance level is provided below. When referring to the plant list, please note the list is intended as a general guide and the chloride salt tolerance level for many landscape plants has not been documented.

For information about selecting the right plants for your landscape, contact the Clay County UF Extension Service (horticulturalist).

CHLORIDE SALT TOLERANCE OF FLORIDA PLANTS

The chloride salt tolerance levels of these plants was established through Project Greenleaf, a research study performed by the City of St. Petersburg, and may only represent a small sampling of plants tolerant of reclaimed water.

For specific information on landscape plants adapted to our Northeast Florida region we'll be asking our local Master Gardeners and horticulture agent at the Clay County University of Florida Extension Service to help localize this list.

HIGH TOLERANCE

Plants which are highly tolerant of chloride salt levels up to and greater than 400 parts per million (ppm). Note: Chloride salt concentrations for Tampa's reclaimed water range from 150 to 300 ppm. GCS is yet to be determined.

Ground Covers

- Aloe (Aloe vera)
- Boston fern (Nephrolepis exaltata)
- Coontie (Zamia foridana)
- Creeping fig (Ficus pumila)
- Creeping juniper (Juniperus horizontalis)
- Dwarf carissa boxwood (Carissa macrocarpa)
- Dwarf pittosporum (Pittosporum tobira "Wheeleri")
- Hottentot fig (Carpobrotus edulis)
- Mondo grass (Ophiopogon japonicus)
- Purple queen (Setcreasea pallida)

Palms

- Cabbage palm (*Sabal palmetto*)
- Chinese fan palm (*Livistonia chinensis*)
- European fan palm (*Chamaerops humilis*)
- Pindo palm (*Butia capitata*)
- Saw palmetto (*Serenoa repens*)
- Washingtonia palm (*Washingtonia robusta*)

Shrubs

- African bush daisy (*Gamolepis chrysanthemoides*)
- Chinese holly (*Llex cornuta* “Burford”)
- Carissa boxwood [Natal plum] (*Carissa grandifora*)
- Century plant (*Agave americana*)
- Crown-of-thorns (*Euphorbia milii*)
- Dwarf yaupon holly (*Llex vomitoria* “nana”)
- Hibiscus (*Hibiscus rosa-sinensis*)
- Indian hawthorn (*Raphiolepis indica*)
- Lantana (*Lantana* sp.)
- Oleander (*Nerium oleander*)
- Pittosporum (*Pittosporum tobira*)
- Plumbago (*Plumbago auriculata*)
- Silver thorn (*Elaeagnus pungens*)
- Spanish bayonet (*Yucca aloifolia*)
- Sweet viburnum (*Viburnum odoratissimum*)
- Yaupon holly (*Llex vomitoria*)

Trees

- Dahoon holly (*Llex cassine*)
- Live oak (*Quercus virginiana*)
- Norfolk Island pine (*Araucaria heterophylla*)
- Sand pine (*Pinus clausa*)
- Southern Red cedar (*Uniperus silicicola*)
- Sea grape (*Coccoloba uvifera*)
- Silk oak (*Grevillea robusta*)
- Wax myrtle (*Myrica cerifera*)

Turf Grass

- St. Augustine (*Stenotaphrum secundatum*)

Vines

- Algerian ivy (*Hedera canariensis*)
- Bougainvillea (*Bougainvillea* sp.)
- Cape honeysuckle (*Tecomaria capensis*)
- Confederate jasmine (*Trachelospermum jasminoides*)
- Creeping fig (*Ficus pumila*)
- Railroad vine (*Lpomea pes-caprae*)

GOOD TOLERANCE

Plants which have demonstrated a tolerance to chloride salt concentrations of less than 400 parts per million (ppm). Monitor plants for signs of leaf yellowing. If yellowing or wilting persists, consider using drip irrigation.

Ground Covers

- African iris (*Dietes* sp.)
- Bromeliad (*Bromeliaceae* sp.)
- Daylily (*Hemerocallis* sp.)
- Gerbera daisy (*Berbera jamesonii*)
- Heather (*Cuphea hyssopifolia*)
- Iris (*Moraea hexagona*)
- Japanese boxwood (*Buxux microphylla*)
- Joseph's coat (*Alternanthera ficoidea*)
- Chinese juniper (*Juniperus chinensis*)
- Juniper (*Juniperus procumbens nana*)
- Kalanchoe (*Kalanchoe* sp.)
- Lirope [Lilyturf] (*Liriope muscari*)
- Maidenhair fern (*Adiantum* sp.)
- Pampas grass (*Cortaderia selloana*)
- Periwinkle (*Catharanthus roseus*)
- Purslane [Moss rose] (*Portulaca grandiflora*)
- Rosemary (*Rosmarinus officinalis*)
- Sedge (*Cyperus alternifolius*)
- Society garlic (*Tulbagnia violacea*)
- Spider plant (*Chlorophytum comosum*)

Palms

Magnolia Point Reclaim Irrigation Water Education Team (MP:RIWET)

Information and Questions compiled by Art Yeaman, Green Cove Irrigation

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- Areca palm (*Chrysalidocarpus lutescens*)
- Canary Island date palm (*Phoenix canariensis*)
- Fishtail palm (*Caryota mitis*)
- Lady palm (*Rhapsis excelsa*)
- Paurotis palm (*Acoelorrhaphe wrightii*)
- Ponytail palm (*Nolina recurvata*)
- Pygmy date palm (*Phoenix roebelinii*)
- Queen palm (*Syagrus romanzofanum*)
- Senegal date palm (*Phoenix reclinata*)

Shrubs

- Bamboo (*Bambusa* sp.)
- Bird of paradise (*Stelitzia reginae*)
- Bottlebrush (*Callistemonrigidus*)
- Canna lilies (*Canna generalis*)
- Copper leaf (*Acalypha wilkesiana*)
- Coral plant (*Jatropha multifida*)
- Crape jasmine (*Gardenia augusta*)
- Croton (*Codiaeum variegatum*)
- Dracena (*Dracena deremensis*)
- Dwarf schefflera (*Scheffera arboricola*)
- Firecracker plant (*Russelia equisetiformis*)
- Heliconia (*Heliconia* sp.)
- Red firethorn (*Pyracantha coccinea*)
- Sandankwa viburnum (*Viburnum suspensum*)

Trees

- Banana (*Musa acuminata*)
- Black sapote (*Diospyros dignya*)
- Carambola (*Averrhoa carambola*)
- Chinese elm (*Ulmus parvifolia*)
- Drake elm (*Ulmus parvifolia* "Drake")
- Edible fig (*Ficus carica*)
- Florida slash pine (*Pinus elliottii*)
- Franjipani (*Plumari* spp.)
- Grapefruit (*Citrus paradisi*)
- Guava (*Psidium guajava*)

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- Italian cypress (*Cupressus sempervirens*)
- Citrus bottlebrush (*Callistemon citrinus*)
- Japanese privet (*Ligustrum japonicum*)
- Loquat (*Eriobotrya japonica*)
- Oriental arbor vitae (*Platycladus orientalis*)
- Peach (*Prunus persica*)
- Pecan (*Carya illinoensis*)
- Pomegranate (*Punica granatum*)
- Sapodilla (*Manilkara zapota*)
- Schefflera (*Scheffera actinophylla*)
- Southern magnolia (*Magnolia grandiflora*)
- Sweet gum (*Liquidambar styraciflua*)

Turf Grass

- Bahia (*Paspalum notatum*)

Vines

- Allamanda (*Allamanda sp.*)
- Coral vine (*Antigonon leptopus*)
- English ivy (*Hedera helix*)
- Monstera (*Monstera deliciosa*)
- Night blooming cereus (*Hylocereus undatus*)
- Philodendron (*Philodendron williamsii*)
- Pothos (*Epipremnum aureum*)
- Purple allamanda (*Allamanda violacea*)
- Trumpet vine (*Campsis radicans*)

NOT RECOMMENDED (ADDITIONAL MAINTENANCE)

Plants which may require extra maintenance if chloride salt concentrations exceed 200 parts per million (ppm). Avoid reclaimed water contact with plant leaves. Drip-irrigation may prevent leaf burn.

Ground Covers

- Blue sage (*Salvia farinacea*)
- Bugle weed (*Ajuga reptans*)
- Caladium (*Caladium sp.*)
- Peperomia (*Peperomia obtusifolia*)

- Verbena (Verbena sp.)

Trees

- Avocado (Persea americana)
- Crape myrtle (Lagerstoemia indica)
- Jacaranda (Jacaranda mimosifolia)
- Laurel oak (Quercus laurifolia)
- Lychee (Litchi chinensis)
- Mango (Mangifera indica)
- Orchid tree (Bauhinia purpurea)
- Oriental persimmon (Diospyros virginiana)
- Red maple (Acer rubrum)

Plants which have not demonstrated tolerance of chloride salt levels greater than 100 parts per million (ppm).

Shrubs

- Chinese privet* (Ligustrum sinense) *Japanese privet is more commonly used in Florida landscapes than Chinese privet.
- Dwarf azalea (Rhododendron sp.)

Vines

- Bleeding heart (Clerodendrum thomsoniae)
- Passion flower (Passifora incarnata)

Element laboratories (Soil pH and Salinity Testing)

Talk to an expert today [Contact Us](#)

<https://www.element.com/environmental-testing/soil-salinity-and-acidity>

Element laboratories provide comprehensive soil salinity tests and pH testing to help farmers diagnose and manage problems associated with soil fertility.

Expert pH and salinity testing is critical in agriculture, as these factors affect plant nutrition and soil fertility. Most plant nutrients are optimally available to plants within a

pH range of 6.0 to 7.5 and high salt levels in soil hinder water absorption, causing drought-like effects in the plant.

At-home soil testing kits for hobbyists and homeowners in the US and Canada are now available at elementcertified.com.

Factors affecting soil salinity

Salts tend to accumulate in low, poorly drained areas and in areas with low rainfall and high evaporation. Soils may also become saline because of land use, including the use of fertilizers, most of which are salts, or irrigation water with high salt levels. By undertaking soil salinity testing, you can minimize the damaging impact of high salinity on plant growth.

Element's soil laboratories offer expert pH testing and salinity analysis to help you address problems caused by salt accumulation in soil. This can help you maximize yields and improve the quality of your land.

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Organic halogen compounds are a large class of natural and synthetic chemicals that contain one or more halogens (fluorine, chlorine, bromine, or iodine) combined with carbon and other

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Summary of Florida's Water Reuse Guideline or Regulation for Potable Water Reuse

<https://www.epa.gov/waterreuse/summary-floridas-water-reuse-guideline-or-regulation-potable-water-reuse#table>

62-600.445 pH Requirements.

All facilities shall be designed and operated to maintain the pH in the reclaimed water or effluent, after disinfection, within the range of 6.0 to 8.5, except as provided in Chapters 62-610 and 62-611, and Rule 62-600.430, F.A.C.

Rulemaking Authority 403.051, 403.061, 403.086, 403.087, 403.088 FS. Law

Implemented 403.021, 403.051, 403.061, 403.062, 403.085, 403.086, 403.087, 403.088

FS. History—New 1-30-91, Formerly 17-600.445, Amended 2-8-16.

Soil that is rich in magnesium

- Soil that is rich in magnesium is known as **sweet soil**. This type of soil contains a high concentration of calcium, sodium, and boron. It's less acidic than acidic soil. It's also more water-soluble, so it's a great choice for vegetable gardens.

Soil salinity and pH testing

Our experts perform soil salinity tests in conjunction with pH tests using a 1:2 soil-to-water mixture and a conductivity meter. Electrical conductivity (EC) measures the ability of the soil solution to conduct electricity and is expressed in decisiemens per meter (dS/m). An EC greater than 2 dS/m generally indicates salinity levels high enough to harm plants.

The tolerance of crops to salinity can vary, and some may be negatively affected at ECs less than 2 dS/m. For example, Timothy grass, peas, and field beans can be sensitive to salinity. Canola, flax, oats, and wheat are slightly more salt-tolerant, and beets and asparagus tend to be very tolerant.

The Element advantage

At Element, we provide a complete suite of laboratory [soil testing services](#). We employ a variety of soil testing methodologies and advanced technology to deliver accurate, reliable results that help you ensure compliance with the relevant regulations for your industry.

While some of our services include the analysis of soil and water for nutrients, Element also specializes in the analysis of potentially harmful contaminants such as [volatile and](#)

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[semi-volatile compounds](#), metals, [petroleum](#), herbicides, and [pesticides](#).

To learn more about our soil testing services, or to speak to one of our experts, [contact us](#) today.

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Here's a link to what they did in Edgewater, FL

https://www.cityofedgewater.org/sites/default/files/fileattachments/environmental_services/page/2081/reclaim_water_new_customer.pdf