

FLORIDA HOUSE OF REPRESENTATIVES BILL ANALYSIS

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BILL #: [CS/CS/HB 1019](#)

TITLE: Perfluoroalkyl and Polyfluoroalkyl Substances

SPONSOR(S): Conerly and Blanco

COMPANION BILL: [CS/SB 1230](#) (Harrell)

LINKED BILLS: None

RELATED BILLS: None

Committee References

[Natural Resources & Disasters](#)

18 Y, 0 N, As CS



[Agriculture & Natural Resources](#)

[Budget](#)

13 Y, 0 N



[State Affairs](#)

21 Y, 0 N, As CS

SUMMARY

Effect of the Bill:

The bill phases out, with exceptions, the use of firefighting foam that contains intentionally added perfluoroalkyl and polyfluoroalkyl substances (PFAS), known as aqueous film-forming foam (AFFF). Specifically, the bill:

- Effective July 1, 2026, prohibits the use of AFFF in nonemergency instruction, training, or testing, and requires entities possessing AFFF to submit inventories to the Department of Environmental Protection (DEP).
- Effective July 1, 2027, prohibits the sale, purchase, or distribution of AFFF, and requires entities to submit a disposal plan to DEP.
- Effective July 1, 2029, prohibits the possession and use of AFFF, except for certain federal aviation facilities, and certain military applications and emergency firefighting situations.

The bill also requires certain public entities disposing of domestic wastewater biosolids and treated effluent to quarterly sample for PFAS and submit the results to DEP.

Fiscal or Economic Impact:

The bill may have an indeterminate, negative fiscal impact on state and local government expenditures and an indeterminate, negative economic impact on the private sector.

JUMP TO

[SUMMARY](#)

[ANALYSIS](#)

[RELEVANT INFORMATION](#)

[BILL HISTORY](#)

ANALYSIS

EFFECT OF THE BILL:

The bill creates the "Joe Casello Act." (Section [1](#))

Effective July 1, 2026, the bill prohibits the use of [aqueous film-forming foam](#) (AFFF)¹ for nonemergency instruction, training, or testing. All entities in possession of AFFF are required to report their inventories to the Department of Environmental Protection (DEP). (Section [2](#))

Effective July 1, 2027, the bill prohibits the sale, purchase, or distribution of AFFF and requires all entities with remaining AFFF inventories to submit a disposal plan to DEP. (Section [2](#))

Effective July 1, 2029, the bill prohibits the possession and use of AFFF. However, the bill provides this prohibition does not apply to certain federal aviation facilities;² military applications where alternatives do not exist;

¹ The bill defines "aqueous film-forming foam" as any firefighting foam containing intentionally added perfluoroalkyl and polyfluoroalkyl substances (PFAS), including perfluorooctanoic acid and perfluorooctane sulfonate as defined by the United States Environmental Protection Agency.

² Specifically, this portion applies to any airport or portions of a joint-use or shared-use airport serving passengers in the United States serving scheduled passenger-carrying operations of an air carrier operating aircraft for more than nine

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emergency firefighting situations where alternatives do not exist, including mutual aid where state or local firefighting authorities may not have adequate equipment to dispense alternatives; and specific AFFF retrofit projects that have been submitted under an application with state or local firefighting authorities. (Section 2)

The bill creates several duties for DEP to implement the bill's provisions, such as:

- Adopting rules for containment, collection, and disposal of AFFF.
- Maintaining a registry of firefighting foam alternatives that do not contain [perfluoroalkyl and polyfluoroalkyl substances \(PFAS\)](#).
- Providing technical assistance and grants for transition to products that do not contain PFAS substances.
- Administering grants or cost-share programs to assist local fire departments and airports in transitioning to products that do not contain PFAS substances. (Section 2)

The bill provides penalties for violation of its provisions. Specifically, a person who violates the act is subject to civil penalties³ not to exceed \$10,000 for each violation for each day the violation persists and additional penalties for failure to report inventories or submit disposal plans. The bill authorizes DEP to seek injunctive relief⁴ to enforce compliance. (Section 2)

The bill requires all public entities disposing of domestic wastewater [biosolids](#)⁵ and [treated effluent](#) that have a designed average daily flow of 25,000 or more gallons per day to quarterly conduct at least one biosolids and treated effluent sampling for PFAS, including perfluorooctanoic acid and perfluorooctane sulfonate, as applicable. The results must be submitted to DEP and the sampling must be conducted in accordance with DEP rules. However, the bill provides that until [water quality standards for PFAS](#) are established by the United States Environmental Protection Agency and adopted by DEP, such sampling and reporting is for informational purposes only and may not serve as the basis for any DEP enforcement action or other cause of action. (Section 3)

The effective date of the bill is July 1, 2026. (Section 4)

RULEMAKING:

The bill requires DEP to adopt rules for the containment, collection, and disposal of aqueous film-forming foam.

The bill also requires the sampling of domestic wastewater biosolids and treated effluent for PFAS by certain public entities to be conducted in accordance with DEP rules. DEP may need to engage in rulemaking for this provision of the bill to be implemented.

Lawmaking is a legislative power; however, the Legislature may delegate a portion of such power to executive branch agencies to create rules that have the force of law. To exercise this delegated power, an agency must have a grant of rulemaking authority and a law to implement.

passenger seats or unscheduled passenger-carrying operations of an air carrier operating aircraft for at least 31 passenger seats. It does not apply to airports serving scheduled air carrier operations only by reason of being designated as an alternate airport, airports operated by the U.S., or heliports. *See* 14 C.F.R. part 139.1.

³ A civil penalty is a non-criminal remedy for a party's violations of laws or regulations. *See* Cornell Law School, Legal Information Institute, *Civil Penalties* (Aug. 2002), available at [https://www.law.cornell.edu/wex/civil_penalties_\(civil_fines\)](https://www.law.cornell.edu/wex/civil_penalties_(civil_fines)) (last visited on Jan. 17, 2026).

⁴ Injunctive relief occurs when a court grants an injunction to require a party to do something or refrain from doing a particular thing to prevent irreparable injury. *See generally* Black's Law Dictionary (12th ed. 2024).

⁵ Domestic wastewater biosolids or "sewage sludge" are a solid byproduct that accumulates in the wastewater treatment plant. If properly treated, it may be used as a fertilizer supplement or soil amendment. *See* <https://floridadep.gov/water/domestic-wastewater/content/domestic-wastewater-biosolids>.

FISCAL OR ECONOMIC IMPACT:**STATE GOVERNMENT:**

The bill may have an indeterminate, negative fiscal impact on state expenditures associated with DEP's duties to implement the bill's provisions, which can be absorbed within existing departmental resources.

LOCAL GOVERNMENT:

The bill may have an indeterminate, negative impact on local governments if they need to contain, collect, dispose of, test for, and replace AFFFs with their fire departments, airports, and other government service providers. Public entities that dispose of domestic wastewater biosolids and treated effluent may incur indeterminate costs for quarterly PFAS testing.

PRIVATE SECTOR:

Private entities may incur indeterminate costs associated with transitioning to AFFF that does not contain PFAS, reporting AFFF inventories to DEP, and developing a disposal plan.

RELEVANT INFORMATION**SUBJECT OVERVIEW:****Perfluoroalkyl and Polyfluoroalkyl Substances**

Perfluoroalkyl and polyfluoroalkyl substances (PFAS) are a group of thousands of man-made compounds that provide oil and water repellency, chemical and thermal stability, and friction reduction to products.⁶ Perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) are the most common and best-studied of these compounds.⁷ PFAS have been widely used since the 1950s in many industries, including the aerospace, semiconductor, medical, automotive, construction, electronics, and aviation industries. The compounds have also been used as coatings in a variety of consumer products, such as non-stick cookware, waterproof and stain-resistant fabrics, carpets, furniture, outdoor equipment, cleaning products, food packaging, and firefighting foams.⁸

Although PFOA and PFOS are no longer manufactured in the United States, they are still produced internationally.⁹ PFAS chemicals do not break down in the environment, can move through soil and water, and can accumulate in fish and wildlife.¹⁰ Based on recent studies, health effects from PFAS potentially include increased risk of certain cancers, increased cholesterol levels, and kidney damage.¹¹ Some of the challenges to addressing PFAS are widespread opportunities for exposure¹² and that scientists are still learning about their effects.¹³

⁶ Interstate Technology Regulatory Council (ITRC), *History and Use of PFAS* (Aug. 2020), available at https://pfas-1.itrcweb.org/wp-content/uploads/2020/10/history_and_use_508_2020Aug_Final.pdf (last visited Jan. 26, 2026) at 1.

⁷ Florida Department of Health (DOH), *Chemicals in Drinking Water Fact Sheet*, available at <https://www.floridahealth.gov/wp-content/uploads/2025/07/pfoa-pfos-fs-20161.pdf> (last visited Jan. 26, 2026).

⁸ ITRC, *History and Use of PFAS* (Aug. 2020), available at https://pfas-1.itrcweb.org/wp-content/uploads/2020/10/history_and_use_508_2020Aug_Final.pdf (last visited Jan. 26, 2026) at 1.

⁹ *Id.* at 3.

¹⁰ U.S. Centers for Disease Control and Prevention, *PFAS and Your Health*, <https://www.atsdr.cdc.gov/pfas/about/index.html> (last visited Jan. 26, 2026).

¹¹ U.S. Centers for Disease Control and Prevention, *How PFAS Impacts Your Health*, <https://www.atsdr.cdc.gov/pfas/about/health-effects.html> (last visited Jan. 17, 2026).

¹² ITRC, *History and Use of PFAS* (Aug. 2020), available at https://pfas-1.itrcweb.org/wp-content/uploads/2020/10/history_and_use_508_2020Aug_Final.pdf (last visited Jan. 26, 2026) at 4.

¹³ U.S. for Disease Control and Prevention, *How PFAS Impacts Your Health*, <https://www.atsdr.cdc.gov/pfas/about/health-effects.html> (last visited Jan. 26, 2026).

Aqueous Film-forming Foams

PFAS is common in firefighting foams that have been stored and used for fire suppression, fire training, and flammable vapor suppression.¹⁴ These firefighting agents include aqueous film-forming foam (AFFF).¹⁵ AFFFs are complex mixtures that contain both known and unidentified PFAS.¹⁶ Uncontrolled releases of AFFF to the environment can result in adverse environmental impacts, particularly when the foam reaches drinking water sources, groundwater, or surface waters. Depending on the location and circumstances of a discharge, potential impacts include acute aquatic toxicity, increased biological and chemical oxygen demand, and nutrient loading.¹⁷ Studies demonstrate AFFF use at airports is a source of PFAS in soil and groundwater.¹⁸

Florida and Aqueous Film-forming Foam

In Florida, the Department of Environmental Protection (DEP) has surveyed 45 fire training facilities to assess each facility's historic use of AFFF and the source of its drinking water. In addition, the survey identified the likely locations of nearby public and private potable wells.¹⁹ Where contamination is identified, DEP can help the facility develop a cleanup plan to remove or contain the contamination to prevent future environmental impact and human exposure.²⁰ DEP then completed environmental assessments at 26 fire training facilities where AFFF use was confirmed or suspected. Where contamination is identified, DEP will assist the facility in developing a cleanup plan to remove or contain the contamination and prevent future environmental impacts and human exposure.²¹ Finally, DEP is in the preliminary stages of evaluating fire training facilities no longer in operation that may have endured environmental impacts caused by AFFF releases.²²

The Federal Government and Aqueous Film-forming Foam

In April 2024, the Environmental Protection Agency (EPA) announced final drinking water regulations for PFOA, PFOS, and several other PFAS compounds (perfluorohexanesulfonic acid or PFHxS, perfluorononanoic acid or PFNA, GenX, and the hazard index mixture of these three PFAS plus perfluorobutanesulfonic acid or PFBS).²³ At that time, the EPA established legally enforceable Maximum Contaminant Levels (MCLs) for these PFAS in drinking water and gave public water systems until 2029 to comply with the MCLs.²⁴ The EPA also finalized a rule to designate PFOA and PFOS as hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability Act.²⁵ The EPA has also updated interim guidance on PFAS destruction and disposal, restricted PFAS in federal custodial contracts, and proposed new rules under the Resource Conservation and Recovery Act to regulate additional PFAS as hazardous constituents.²⁶

¹⁴ ITRC, *PFAS — Per- and Polyfluoroalkyl Substances* (Jan. 2026), <https://pfas-1.itrcweb.org/3-firefighting-foams/> (last visited Jan. 26, 2026).

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ Lutz Ahrens, et al., *Stockholm Arlanda Airport as a source of per- and polyfluoroalkyl substances to water, sediment and fish*, *Chemosphere*, vol. 129, 33-38 (2015), available at <https://www.sciencedirect.com/science/article/abs/pii/S0045653514005281?via%3Dihub>; Xavier Dauchy, et al., *Per- and polyfluoroalkyl substances in firefighting foam concentrates and water samples collected near sites impacted by the use of these foams*, *Chemosphere*, vol. 183, 53-61 (2017), available at <https://www.sciencedirect.com/science/article/abs/pii/S0045653517307580?via%3Dihub>.

¹⁹ DEP, *Fire Training Facility Preliminary Site Assessments*, <https://floridadep.gov/waste/waste-cleanup/content/fire-training-facility-preliminary-site-assessments> (last visited Jan. 26, 2026).

²⁰ *Id.*

²¹ *Id.*

²² *Id.*

²³ [89 Fed. Reg. 32532 \(Apr. 26, 2024\)](https://www.federalregister.gov/documents/2024/04/26/89-fed-reg-32532).

²⁴ [89 Fed. Reg. 32532, 32533 \(Apr. 26, 2024\)](https://www.federalregister.gov/documents/2024/04/26/89-fed-reg-32532-32533).

²⁵ EPA, *Designation of [PFOA and PFOS] as CERCLA Hazardous Substances*, <https://www.epa.gov/superfund/designation-perfluorooctanoic-acid-pfoa-and-perfluorooctanesulfonic-acid-pfos-cercla> (last visited Jan. 26, 2026). (last visited Jan. 14, 2026).

²⁶ See EPA, *Key EPA Actions to Address PFAS*, <https://www.epa.gov/pfas/key-epa-actions-address-pfas> (last visited Jan. 14, 2026).

In May 2025, the EPA announced it intends to keep the drinking water MCLs for PFOA and PFOS but rescind and reconsider the regulations for the other PFAS compounds (PFHxS, PFNA, GenX, and the hazard index mixture of these three PFAS plus PFBS).²⁷ The EPA also announced its intent to extend the MCL compliance deadlines for PFOA and PFOS to 2031 and establish a federal exemption framework.²⁸ To date, the EPA has not finalized standards for PFAS in groundwater or soil. DEP has set provisional groundwater and soil cleanup target levels for PFOA and PFOS.²⁹

Biosolids

The proper treatment and disposal or reuse of domestic wastewater is an important part of protecting Florida's water resources. The majority of Florida's domestic wastewater is controlled and treated by centralized treatment facilities regulated by DEP.

When domestic wastewater is treated, solid, semisolid, or liquid residue known as biosolids³⁰ accumulates in the wastewater treatment plant and must be removed periodically to keep the plant operating properly.³¹ Biosolids also include products and treated material from biosolids treatment facilities and septage management facilities regulated by DEP.³² The collected residue is high in organic content and contains moderate amounts of nutrients.³³

DEP has stated wastewater treatment facilities produce about 340,000 dry tons of biosolids each year.³⁴ Biosolids can be disposed of in several ways including placement in a landfill, distribution and marketing as fertilizer, and land application to pasture or agricultural lands.³⁵ Biosolids are subject to regulatory requirements established by DEP to protect public health and the environment.³⁶

Biosolids are regulated under Rule 62-640 of the Florida Administrative Code. The rules provide minimum requirements, including monitoring and reporting requirements, for the treatment, management, use, and disposal of biosolids.³⁷ The rules are applicable to wastewater treatment facilities, applicators, and distributors³⁸ and include permit requirements for both treatment facilities and biosolids application sites.³⁹

There is increasing concern over the presence of PFAS in biosolids. While many PFASs have been found in biosolids, PFOA and PFOS are among the most abundant.⁴⁰ PFAS in biosolids is the result of the continued manufacture and use of these compounds throughout society, including by households, as well as industrial

²⁷ EPA, *EPA Announces It Will Keep Maximum Contaminant Levels for PFOA, PFOS*, <https://www.epa.gov/newsreleases/epa-announces-it-will-keep-maximum-contaminant-levels-pfoa-pfos> (last visited Jan. 26, 2026).

²⁸ *Id.*

²⁹ DEP, *Pre- and Polyfluoroalkyl Dynamic Plan*, (March 2022), available at https://floridadep.gov/sites/default/files/Dynamic_Plan_March_2022.pdf at 10.

³⁰ Section 373.4595, F.S., defines biosolids as the solid, semisolid, or liquid residue generated during the treatment of domestic wastewater in a domestic wastewater treatment facility and include products and treated material from biosolids treatment facilities and septage management facilities. The term does not include the treated effluent or reclaimed water from a domestic wastewater treatment facility, solids removed from pump stations and lift stations, screenings and grit removed from the preliminary treatment components of domestic wastewater treatment facilities, or ash generated during the incineration of biosolids.

³¹ DEP, *Domestic Wastewater Biosolids* (Dec. 13, 2024), <https://floridadep.gov/water/domestic-wastewater/content/domestic-wastewater-biosolids> (last visited Jan. 26, 2026).

³² R. 62-640.200(6), F.A.C.

³³ *Id.*

³⁴ DEP, *Biosolids in Florida* (Jun. 2019), available at <https://www.florida-stormwater.org/assets/MemberServices/Conference/AC19/02%20-%20Frick%20Tom.pdf> at 5.

³⁵ *Id.* at 5-6.

³⁶ R. 62-640.100, F.A.C.

³⁷ R. 62-640.650, F.A.C.

³⁸ R. 62-640.100, F.A.C.

³⁹ R. 62-640.300, F.A.C.

⁴⁰ EPA, *EPA Biosolids PFOA & PFOS Problem Formulation Meeting Summary* (Nov. 10 and 12 2020), available at <https://www.epa.gov/sites/default/files/2021-02/documents/biosolids-pfoa-pfos-meeting-summary-nov-2020.pdf> at 1.

discharges of PFAS to wastewater.⁴¹ The EPA’s Office of Water, the Environmental Council of the States, and the National Association of State Departments of Agriculture have jointly developed Principles for Preventing and Managing PFAS in Biosolids.⁴²

Treated Effluent

Raw wastewater undergoes preliminary, primary, secondary, and in some cases, additional treatment in order to yield treated effluent.⁴³ The treated effluent is discharged to both surface waters and used to irrigate agricultural land.⁴⁴ Within the U.S., this treated effluent typically has secondary or higher levels of treatment before it is used for agricultural purposes.⁴⁵

In Florida, there are approximately 2,000 domestic wastewater facilities, which treat over 1.5 billion gallons per day of effluent⁴⁶ and reclaimed water.^{47,48} Reclaimed water is wastewater that has been disinfected⁴⁹ and received a certain level of treatment so that water may then be reused.⁵⁰ DEP establishes effluent limitations, which are limits on chemical, physical, biological, or other constituents that are discharged into waters of the state.⁵¹

Reuse of reclaimed water can replace using potable water in certain circumstances, allowing the state to conserve potable water. This is particularly important for Florida because the majority of the population lives near the coast where groundwater supplies are limited and are particularly vulnerable to saltwater intrusion.⁵² Florida is a national leader in water reuse, and in 2024, approximately 958 million gallons per day (mgd) of reclaimed water were used for beneficial purposes.⁵³ This represents about 62 percent of total permitted domestic wastewater treatment capacity in the state.⁵⁴ Reclaimed water can be reused for a number of purposes, including:

- Irrigation of golf courses, parks, residential properties, highway medians, and other landscaped areas.
- Urban uses such as toilet flushing, car washing, dust control, and aesthetic purposes (i.e., decorative lakes, ponds, and fountains).
- Agricultural uses such as irrigation of edible food crops (citrus, corn, and soybeans); pasture lands, grasslands, and other feed and fodder crops; and irrigation at nurseries.
- Wetlands creation, restoration, and enhancement.
- Recharging groundwater with the use of rapid infiltration basins (percolation ponds), absorption fields, and direct injection to ground waters.
- Augmentation of surface waters that are used for drinking water supplies.

⁴¹ EPA, et al., *Joint Principles for Preventing and Managing PFAS in Biosolids* (Jul. 24, 2023), available at <https://www.epa.gov/system/files/documents/2023-07/Joint-Principles-Preventing-Managing-PFAS.pdf>.

⁴² See *Id.*

⁴³ National Academies, *Use of Reclaimed Water and Sludge in Food Crop Production: Municipal Wastewater and Sludge Treatment* (1996), available at <https://www.nationalacademies.org/read/5175/chapter/5> (last visited on Jan. 28, 2026).

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ “Effluent” means water that is not reused after flowing out of any plant or other works used for the purpose of treating, stabilizing, or holding wastes. R. [62-600.200\(22\), F.A.C.](#)

⁴⁷ “Reclaimed water” means water that has received at least secondary treatment and basic disinfection and is reused after flowing out of a domestic wastewater treatment facility. R. [62-600.200\(57\), F.A.C.](#)

⁴⁸ DEP, *General Facts and Statistics About Wastewater in Florida* (Apr. 22, 2022), <https://floridadep.gov/water/domestic-wastewater/content/general-facts-and-statistics-about-wastewater-florida> (last visited Jan. 28, 2025).

⁴⁹ “Disinfection” means the selective destruction of pathogens in wastewater effluents, reclaimed water, and biosolids. R. [62-600.200\(18\), F.A.C.](#)

⁵⁰ S. [373.019\(17\), F.S.](#)

⁵¹ S. [403.031\(3\), F.S.](#)

⁵² DEP, *Reuse Facts* (Apr. 20, 2022), <https://floridadep.gov/water/domestic-wastewater/content/reuse-facts> (last visited Jan. 28, 2026).

⁵³ DEP, *Florida’s Reuse Activities*, <https://floridadep.gov/water/domestic-wastewater/content/floridas-reuse-activities> (last visited Mar. 5, 2025).

⁵⁴ *Id.*

- Industrial uses including plant wash down, processing water, and cooling water purposes.⁵⁵

The concern is the presence of PFAS and PFOS in this treated effluent and reclaimed water when they are used in irrigation,⁵⁶ which could lead to their introduction into the human and animal food chains through contaminated crops.⁵⁷ Additionally, PFAS can accumulate in livestock that drink PFAS-contaminated water or consume PFAS-contaminated feed. The PFAS can then, in turn, accumulate in organs, tissues, and milk of these animals, which may pose health issues when the milk or meat from such animals is consumed.⁵⁸

BILL HISTORY

COMMITTEE REFERENCE	ACTION	DATE	STAFF DIRECTOR/ POLICY CHIEF	ANALYSIS PREPARED BY
Natural Resources & Disasters Subcommittee	18 Y, 0 N, As CS	1/28/2026	Skinner	Weiss
THE CHANGES ADOPTED BY THE COMMITTEE:	<ul style="list-style-type: none"> Named the bill’s provisions the “Joe Casello Act.” Required certain public entities disposing of domestic wastewater to sample treated effluent for PFAS, in addition to such sampling for biosolids. Required such sampling to occur quarterly, rather than annually. 			
Agriculture & Natural Resources Budget Subcommittee	13 Y, 0 N	2/4/2026	Topp	Perez
State Affairs Committee	21 Y, 0 N, As CS	2/17/2026	Williamson	Weiss
THE CHANGES ADOPTED BY THE COMMITTEE:	<ul style="list-style-type: none"> Revised the start date for the prohibition on the possession and use of AFFF from July 1, 2028, to July 1, 2029. Defined “department” as the Department of Environmental Protection. Included certain AFFF retrofit projects among the exceptions to the prohibition on the possession and use of AFFF. Specified that the exception for certain emergency firefighting situations to the prohibition on the possession and use of AFFF includes a certain mutual aid circumstance. Specified that the PFAS sampling and reporting by certain facilities required by the bill is for informational purposes only until water quality standards for PFAS are established by the federal government and adopted by DEP. 			

THIS BILL ANALYSIS HAS BEEN UPDATED TO INCORPORATE ALL OF THE CHANGES DESCRIBED ABOVE.

⁵⁵ DEP, *Use of Reclaimed Water* (Sep. 6, 2023), <https://floridadep.gov/water/domestic-wastewater/content/uses-reclaimed-water> (last visited on Jan. 28, 2026).

⁵⁶ Specifically, in Florida, according to DEP, 6 percent of reclaimed water is used for agricultural irrigation. See DEP, *Florida’s Reuse Activities* (Jan. 27, 2026), <https://floridadep.gov/water/domestic-wastewater/content/floridas-reuse-activities> (last visited on Jan. 28, 2026).

⁵⁷ Pia Ramos and Daniel J. Ashworth, *Per- and poly-fluoroalkyl substances in agricultural contexts and mitigation of their impacts using biochar: A review*, *Science for the Total Environment* (June 1, 2024), <https://www.sciencedirect.com/science/article/abs/pii/S0048969724024185?via%3Dihub> (last visited on Jan. 28, 2026).

⁵⁸ Minnesota Department of Agriculture, *PFAS and Livestock* (Oct. 2023), available at <https://www.mda.state.mn.us/sites/default/files/docs/2023-11/35%20PFAS%20and%20Livestock%20Fact%20Sheet%20CURRENT%2010.25.23.pdf>