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February 5, 2026

MS. DENICE NELSON
JOHNSON CONTROLS, INC
5757 N. GREEN BAY AVENUE
MILWAUKEE, WI 53209

*Via Email Only to denice.karen.nelson@jci.com*

SUBJECT: Response to *GETS Short-Term Monitoring Report #6* (Nov. 14, 2022 – Oct. 12, 2025)
JCI/Tyco FTC PFAS, 2700 Industrial Parkway South, Marinette, WI
BRRTS #02-38-580694

Dear Ms. Nelson:

On Nov. 17, 2025, the Wisconsin Department of Natural Resources (DNR) received a monitoring report for the Groundwater Extraction and Treatment System (GETS) for the above-referenced site (the "Site"); specifically, the *GETS Short-Term Monitoring Report #6* ("GETS Progress Report #6"). The report was submitted by Arcadis U.S., Inc. (Arcadis) on behalf of Johnson Controls, Inc. and Tyco Fire Products LP (JCI/Tyco) and was accompanied by the fee required under Wisconsin Administrative Code (Wis. Admin. Code) § NR 749.04(1) for DNR response.

The GETS Progress Report #6 documents GETS operations and monitoring of groundwater and surface water near the GETS. Moving forward, JCI/Tyco is approved to evaluate the influence GETS has on groundwater and surface water in the annual long-term monitoring reports for the Site. In addition, JCI/Tyco must also submit Operation and Maintenance (O&M) Progress Reports to document the GETS operations (Wis. Admin. Code § NR 724.13(3)). In this letter, the DNR reviews GETS Progress Report #6 and provides direction for what to include in the O&M Progress Reports.

**Background**

JCI/Tyco is investigating and responding to the discharge of per- and polyfluoroalkyl substances (PFAS) to the environment at the JCI/Tyco Ansul Fire Technology Center (FTC), located at 2700 Industrial Parkway South in Marinette, Wisconsin.

A significant groundwater contaminant plume of PFAS is present at the Site; the concentrations of perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) in groundwater on the FTC property are on the order of 10,000 – 100,000 parts per trillion (ppt). The contaminated groundwater migrates eastward and some upwells into the surface water ditches; all of which contribute to PFAS migrating to the Bay of Green Bay.

In Nov. 2022, JCI/Tyco began operating the GETS with stated goals to (1) reduce upwelling of PFAS-contaminated groundwater into Ditch B; (2) treat the recovered groundwater to reduce the PFAS concentration in the water; and (3) reduce PFAS-mass flux throughout groundwater plume.

Originally, the GETS included nine vertical groundwater extraction wells to pump and convey contaminated groundwater through buried pipes to a treatment building on the FTC property. Treatment includes oxidation, filtration, granular activated carbon (GAC) and ion exchange resins to remove PFAS from the groundwater. The treated water is discharged to Ditch B surface water downstream of where the ditch crosses Pierce Avenue.[1]

[1] The discharge of treated water to Ditch B is done under a Wisconsin Pollutant Discharge Elimination System (WPDES) General Permit No. WI-0046566-07-0 and the associated coverage letter dated Oct. 15, 2021. The DNR's Wastewater Program administers the WPDES permit.


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In 2025, six new extraction wells were added to the GETS, for a total of 15 extraction wells, and the treatment system was modified to accommodate the resulting nominal increase in flow. These changes to the GETS were documented in JCI/Tyco's Nov. 25, 2025, *Construction Documentation Report for the Interim Groundwater Extraction and Treatment System Optimization.* The DNR's review and response to the construction documentation report is provided under separate cover.

**Summary and DNR Review of GETS Progress Report #6**

GETS Progress Report #6 includes information on the operations of the GETS and the monitoring results for groundwater and surface water near the GETS. A summary of the DNR's review of GETS operations and its influence on changes to contamination in the environment is provided in **Attachment A.** Specific areas of focus for evaluation in future long-term monitoring reports are listed in this attachment.

GETS Progress Report #6 is the last report for the "short-term" phase of monitoring. Beginning in 2026, the groundwater and surface water monitoring data and evaluations of the GETS performance will be included in the annual long-term monitoring reports for the whole Site. The wholistic approach for long-term monitoring and annual reporting for groundwater and surface water was approved by the DNR in letter dated July 31, 2025.

In addition, JCI/Tyco must submit O&M Progress Reports to document the long-term operations of the GETS (Wis. Admin. Code § NR 724.13(3)). The DNR's previous review letters dated July 31, 2025, provided this direction and general information to include in the O&M Progress Reports.

The performance parameters JCI/Tyco established for the GETS and whether future reporting on these best fit into the long-term monitoring reports or the long-term O&M Progress reports are summarized in **Attachment B.**

Detailed weekly operational data (like that in GETS Progress Report #6) is not required to be submitted in the long-term O&M Progress Reports. A streamlined approach to the long-term O&M Progress Reports is recommended. An outline for the data to include in this streamlined reporting is summarized in **Attachment C**.

**Next Steps**

Submit <u>semi-annual</u> O&M Progress Reports for the GETS as described below, or until otherwise approved by the DNR (Wis. Admin Code § NR 724.13(3)).

- The DNR recommends that JCI/Tyco develop a simple form or memorandum style template that can be consistently used for the long-term O&M Progress Reports.[2]
- The O&M Progress Reports must include, at a minimum, the data listed in **Attachment C** (Wis. Admin. Code § NR 724.05(3)(b)).
- Submit the O&M Progress Report on, or about, the same time as the annual long-term monitoring reports for groundwater and surface water (**March 31st**) and then 6 months thereafter (**Sept 30th**) each year.
- A Wis. Admin. Code ch. NR 749 review fee is <u>NOT</u> required for routine submittal of the GETS long-term O&M Progress Reports that meet the requirements listed herein. (A Wis. Admin. Code ch. NR 749 review fee is required, if JCI/Tyco requests a review and response from the DNR, such as a request for technical review to establish concurrence on proposed changes to the GETS or request for approval to change the O&M Progress Reports.)

[2] The DNR has a form for O&M Progress Reports (https://apps.dnr.wi.gov/doclink/forms/4400-194.pdf.) This form should ***<u>not</u>*** be used for this Site because it does not contain all the information applicable to GETS operations. However, it is an example of the level of detail and general format for the streamlined reporting recommended herein.

If you have any questions, please contact me at Alyssa.Sellwood@wisconsin.gov or (608) 622-8606.

Sincerely,

Alyssa Sellwood, PE
Water Resources Engineer
Remediation & Redevelopment Program

Attachments:

Attachment A: Summary of GETS Operations and Performance, Nov. 14, 2022, through Oct. 12, 2025
Attachment B: GETS Performance Parameters and Recommended Long-Term Reporting
Attachment C: Data to Include in Long-term GETS O&M Progress Reports

cc: Jodie Thistle, DNR (via email: jodie.thistle@wisconsin.gov)


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**Attachment A**

**Summary of GETS Operations and Performance - Nov. 14, 2022, through Oct. 12, 2025**

*GETS Operations:*

- A total of 1,670,000 kilowatt hours (kWh) were used to extract and treat approximately 346.7 million gallons of contaminated groundwater.
- Approximately, 829,000 pounds of regenerated granular activated carbon (GAC) and 211,000 pounds of virgin GAC were used to treat the extracted groundwater.
- The total amount of ion exchange resin used-to-date should be verified in next O&M Progress Report – the reported total quantity was less than listed in the previous report.
- Approximately 27.5 pounds of PFOA and 1.8 pounds of PFOS have been removed by the treatment.
- All treated groundwater was discharged to surface water in Ditch B where it crosses Pierce Avenue.
- The GETS removes PFOA and PFOS from the groundwater it treats:
    - The average combined influent concentrations from all the extraction wells are approximately 10,000 ppt for PFOA and 600 ppt for PFOS.
    - The highest effluent concentrations during the reporting period were 0.75 ppt for PFOA and 1.7 ppt for PFOS. All samples of the treated effluent had concentrations below the Wis. Admin. Code § NR 102.04 surface water standards for PFOA and PFOS.
- The combined groundwater extraction rate of the GETS increased during the reporting period from approximately 250 gpm to 350 gpm. The addition of six new extraction wells and the upgrades to the treatment system that were completed during the reporting period are the reason for the increase.
- The pumping rates vary between each extraction well from approximately 15 to 55 gpm.
    - Extraction wells EX-12, EX-14 and EX-15 have the highest sustained pumping rates.
    - Extraction well EX-9 remains off, except for sampling, because it was found to be outside the desired capture area of the plume.
- The concentration and mixture of PFAS varies in the groundwater captured by each extraction well:
    - Extraction well EX-1S captures the highest concentration of total PFAS (over 100,000 ppt).
    - 6:2 fluorotelomer sulfonate (FTS) is the dominant PFAS detected in the extraction wells located on the FTC property (EX-1S, EX-2S and EX-10/11).
    - PFOA is the dominant PFAS detected in extraction wells EX-6, EX-7, EX-8, EX-9 and EX-14.
    - Similar percentages of FTS and PFOA are detected in extraction wells EW-3, EX-4 and EX-5.

**Attachment A**

**Summary of GETS Operations and Performance - Nov. 14, 2022, through Oct. 12, 2025**

*GETS Performance:*

- The concentration of PFAS at the FTC and in groundwater coming into and near the GETS extraction wells has been relatively stable; however, increasing trends were observed the following locations:
    - PZ-29: Increasing trends were measured in monitoring wells PZ-29-43 and PZ-29-68, which are downgradient of Ditch B. The groundwater monitoring results for these wells should be discussed in future monitoring reports, specifically to evaluate if new extraction wells EX-12 and EX-13 are effective at stopping and reversing this increasing trend.
    - EX-10/EX-11: Increasing trends were detected following startup of extraction wells EX-10 and EX-11. In particular, the concentration of 6:2 FTS has increased significantly in the groundwater captured by these two extraction wells. JCI/Tyco has stated that extraction wells EX-10 and EX-11 were added to the GETS to "*alleviate potential impacts to the environment near Ditch A*" and JCI/Tyco says it "*expects that operation of these extraction wells will decrease the concentration of PFAS in local groundwater and surface water*." Establish more specific performance parameters and set monitoring criteria to evaluate the performance of the GETS relative to these goals in future monitoring reports.
- The surface water concentrations of PFOA and PFOS have decreased in Ditch B; however, further decreases in concentrations must occur and be sustained to meet the criteria JCI/Tyco set for stopping its operation of the downstream surface water treatment system on the ditch (i.e., concentrations less than the Wis. Admin. Code § NR 102.04 surface water standards for PFOA and PFOS). Lines of evidence supporting that the operation of the optimized GETS has reduced the upwelling of PFAS-contaminated groundwater into Ditch B include:
    - The concentrations of PFOA in streambed piezometer M09 decreased from levels over 1,000 ppt to 170 ppt during the most recent monitoring event in Oct. 2025.
    - The percentage of 6:2 FTS and 8:2 FTS making up the PFAS detected in the surface water in Ditch B has decreased following GETS optimization.
    - Downward hydraulic gradients were measured in the streambed near the extraction wells in the most recent monitoring event.
    - The monitoring data for surface water monitoring points SW-P1B and SW-P4B following optimization of the GETS were not included in Table 14. However, these points were sampled in August 2025 and the data was provided to the DNR in the monthly notification of monitoring results. Based on these initial results, the addition of new extraction wells EX-12 and EX-13 appear to have improved the surface water quality (i.e., lowered the PFAS concentration) in the tributary flowing into to Ditch B. Additional monitoring is planned for this tributary and can be used evaluate if the improved condition can be sustained long-term and during other seasons.
- Seasonal and regional changes and short-term precipitation events were the strongest influence water levels and stream flow in Ditch B.

**Attachment B**
**GETS Performance Parameters(1) and Recommended Long-Term Report**

| Performance Parameter | Long-Term Report |
|---|---|
| Document reductions of upwelling in upper, middle, and lower reaches of Ditch B and/or identify locations or conditions contributing to observed upwelling | O&M Progress Note (2) |
| Monitor and assess groundwater migration from the FTC (as it relates to the GETS and Ditch B specifically) | LTM(3) |
| Document PFAS reductions in Ditch B surface water and/or identify locations or conditions contributing to potential increases | O&M Progress and/or LTM |
| Document PFAS trends in groundwater (decreasing, stable, increasing) within the area of the GETS | LTM |
| Document PFAS mass removal over time | O&M Progress |
| Evaluate sustainability of the GETS operation in accordance with NR 722.09(2m) | O&M Progress |

**Notes:**

(1) Adapted from Table 4 in the July 16, 2021, GETS Long-Term Monitoring Plan.

(2) The first 3 years of monitoring have demonstrated that operation of the GETS has net minimal effect on the streamflow in Ditch B and that natural seasonal changes and precipitation events control the streamflow. The detailed evaluation of streamflow is not needed for future long-term O&M Progress Reports. Evaluation of gradients in streambed piezometers should continue.

(3) LTM = Long-term Monitoring Report for groundwater and surface water for the Site, currently approved to be submitted to the DNR annually, by March 31st each year.

**Attachment C**

Include, at a minimum, the data listed below in the GETS long-term O&M Progress Reports (Wis. Admin. Code §§ NR 724.05(3)(b) and 724.13(3)). The format shown is *not* required.

**Site Name:**
**BRRTS#:**
**GETS O&M Progress Report #** *(number sequentially):*
**GETS Operations Start Date:**
**Reporting Period: From ___ to ___**
**Weeks** __ to ___
**Consultant Preparing Report**:

## TREATMENT SYSTEM OPERATIONAL SUMMARY

| Item | Reporting Period | Operations to Date |
|---|---|---|
| Days Operating (days) | | |
| Volume of water treated (gal) | | |
| Mass of PFOA removed (lb) | | |
| Mass of PFOS removed (lb) | | |
| GAG Used – Regenerated (lb) | | |
| GAC Used – Virgin (lb) | | |
| Ion Exchange Resin (lb) | | |
| Electricity Used (kWh) | | |
| Disposal Quantity of Treatment Solids (tons) | | |
| Avg combined influent concentration PFOA (ppt) | | |
| Max combined effluent concentration PFOA (ppt) | | |
| Avg combined influent concentration PFOS (ppt) | | |
| Max combined effluent concentration PFOS (ppt) | | |
| Cost – Capital* | | |
| Cost – O&M* | | |

*Not required but encouraged for long-term evaluation of cost effectiveness.

## EXTRACTION PUMPING SUMMARY

| Extraction Well ID | Reporting Period | | | Operations to Date | | |
|---|---|---|---|---|---|---|
| | Avg Rate (gpm) | Total (gal) | Days | Avg Rate (gpm) | Total (gal) | Days |
| *List Wells* | | | | | | |
| Total | | | | | | |

## EXTRACTION CAPTURE SUMMARY– AVERAGE CONCENTRATIONS (ppt)

| Extraction Well ID | Reporting Period | | | Operations to Date | | |
|---|---|---|---|---|---|---|
| | PFOA | PFOS | 6:2 FTS | PFOA | PFOS | 6:2 FTS |
| *List Wells** | | | | | | |

* Identity combined samples where applicable (e.g., EX-10/EX-11 and EX-4/EX-13). include a line for EX-4 to summarize the data before it was combined with the flow from EX-13.

- Include trend plots like those in Appendix A of GETS Progress Report #6

## DITCH B SHORT-TERM RESPONSE:

- Summarize or attach data like that reported in Tables 10, 11, 14, Figure 15 (PFOA and PFOS individually vs. standard) and Appendix B in GETS Progress Report #6

## CHANGES TO OPERATIONS:

- List repairs or changes made during the Reporting Period and why.
- Described any recommended repairs, modifications or other changes to the GET and why.

## SIGNATURES AND CERTIFICATIONS:

- Signed and include applicable Wis. Admin. Code NR ch. 712 certifications.