



August 11, 2023

MS. DENICE NELSON  
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MILWAUKEE, WI 53209

Via Email Only to [denice.karen.nelson@jci.com](mailto:denice.karen.nelson@jci.com)

SUBJECT: Response to GETS Operation, Maintenance and Monitoring Plan  
JCI/Tyco FTC PFAS, 2700 Industrial Parkway South, Marinette, WI  
BRRTS #02-38-580694

Dear Ms. Nelson:

On May 23, 2023, the Wisconsin Department of Natural Resources (DNR) received the *Operation, Maintenance and Monitoring Plan* for the Groundwater Extraction and Treatment System (the “GETS OM&M Plan”) at the above-referenced site (the “Site”).<sup>1</sup> The report was submitted by Geosyntec Consultants (Geosyntec) 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 review and response.

The DNR reviewed the GETS OM&M Plan (as revised<sup>1</sup>), which includes details on the operations, routine maintenance and troubleshooting of the GETS, and which references the July 16, 2021, *Long Term Monitoring Plan for the GETS* (GETS LTMP)<sup>2</sup> for details on reporting on the performance of the GETS. Together these documents satisfy the requirements for operation and maintenance plans for a remedial action under Wis. Admin. Code § NR 724.13(2). In this letter, the DNR reminds JCI/Tyco about proper management of water and products used for well redevelopment and reminds JCI/Tyco of content to include in the GETS semi-annual progress reports, which are required under Wis. Admin. Code § NR 724.13(3).

## 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. The discharge occurred as the result of fire suppressant training, testing, research and development of PFAS-containing aqueous film forming foams (AFFF) at the Site starting in the early 1960s.

JCI/Tyco’s site investigation revealed PFAS concentrations greater than 10,000 parts per trillion (ppt) in groundwater beneath and to the east of the FTC property, which contributes to the PFAS in surface water in Ditch B and PFAS migration into the Bay of Green Bay. In Feb. 2021, JCI/Tyco proposed an interim remedial action – the GETS – to capture and treat some of the highly contaminated groundwater moving toward Ditch B.

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<sup>1</sup> A revised version of the GETS OM&M Plan was submitted on Aug. 2, 2023. The revised version added reference to the Water Use permits and copies of the permit coverage letters, which included with the maximum approved withdrawal rates.

<sup>2</sup> The DNR reviewed and approved the GETS LTMP on Oct. 7, 2021.

On May 18, 2021, the DNR approved the *Interim Remedial Action Design Report* for the GETS (the “GETS RADR”). The GETS includes nine vertical groundwater extraction wells to capture contaminated groundwater migrating toward Ditch B, buried conveyance pipes to bring the contaminated water to a treatment building on the FTC property, and a groundwater treatment system with oxidation, filtration, granular activated carbon (GAC) and ion exchange resins to remove PFAS from groundwater. The system also includes buried conveyance pipes for the treated water to be discharged to surface water in Ditch B. The discharge of the treated water is currently approved and regulated under Wisconsin Pollutant Discharge Elimination System (WPDES) General Permit No. WI-0046566-07-0 and the associated coverage letter dated Oct. 15, 2021.

The GETS began full-scale operations on Jan. 16, 2023, following a 2 to 3-month commissioning period. The DNR’s approval of the GETS RADR included a condition that JCI/Tyco submit a GETS OM&M Plan (Wis. Adm. Code § NR 724.13(2)) with the construction documentation report (Wis. Adm. Code § NR 724.15) within 120 days after startup of the GETS, which would have been May 16, 2023. JCI/Tyco requested an extension to June 16, 2023, which was approved by the DNR. Both documents<sup>3</sup> were received by the DNR prior to June 16, 2023.

### **Summary and DNR Review of GETS OM&M Plan**

The GETS OM&M Plan provides a summary of the treatment system operations, startup and shutdown procedures, maintenance plans for the primary elements of the water treatment system, building features and extraction wells and troubleshooting measures for possible system issues. Permits for operations are included in Appendix A, manufacture’s product manuals in Appendix B and OM&M Forms in Appendix C. The elements of the GETS OM&M Plan follow Wis. Admin. Code § NR 724.13(2) and satisfy the intended purpose – provide information to keep the system operating within the design parameters.

As a reminder, when redeveloping or jetting conveyance lines, as described in Section 5, the water must be containerized and properly treated prior to discharge and any products used for well rehabilitation must come from the list of products approved by the DNR<sup>4</sup>.

### **Semi-Annual Progress Reports**

Semi-annual progress reports are required for remedial actions under Wis. Admin. Code § NR 724.13(3). In the GETS LTMP, JCI/Tyco proposed to combine the semi-annual progress reports and the long-term monitoring for the GETS into one semi-annual OM&M report. The DNR approved the content proposed for the combined semi-annual OM&M report in its Oct. 7, 2021, letter. (The GETS OM&M Plan refers to the approved GETS LTMP for details on the semi-annual OM&M reporting.)

The first semi-annual OM&M report was anticipated to be received 6 months after startup of the GETS. On June 15, 2023, the DNR received a monitoring report for the GETS without a review fee. The DNR compared the content of the June 15<sup>th</sup> report to the content proposed for semi-annual OM&M reports in the GETS LTMP; the DNR found that many of the proposed elements were not included in the June 15<sup>th</sup> report.

The DNR recognizes that the June 15<sup>th</sup> report came following a series of frequent status updates to the DNR during startup of the GETS and that the June 15<sup>th</sup> report followed the content and format of those prior status updates. Thus, the DNR uses this opportunity to remind JCI/Tyco that the semi-annual OM&M reports must include the content and evaluations proposed in Section 6 of the approved GETS LTMP, which are copied in *italics* below for reference:

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<sup>3</sup> The construction documentation report was reviewed and approved by the DNR in a separate letter dated Aug. 11, 2023.

<sup>4</sup> This approved product list is currently found at <https://dnr.wisconsin.gov/topic/Wells/drillerPumpInstall.html>

*The semi-annual progress reports will include the following:*

- *Summary of the GETS OMM activities, optimizations, modifications, and contingency actions taken, if any*
- *GETS operational data (e.g., influent/effluent rates and volumes; sample results associated with WPDES permitting)*
- *Summary tables, plots, and figures, as applicable, of gauged water levels, validated analytical results, and stage measurements (collected at monthly, quarterly, or semi-annual intervals, as detailed in the LTM Plan)*
- *Attainment or exceedance of applicable criteria and a preliminary analysis of the potential cause(s)*
- *Summary table and plot of continuous flow measurements collected at the existing Ditch B treatment system*
- *Laboratory analytical reports.*

*The summarized data will be processed and evaluated using the parameters described in Table 4.*

A copy of Table 4 is attached to this letter and includes a summary of the elements that, based on the DNR's evaluation, were not included in the June 15<sup>th</sup> report and need to be added to future semi-annual OM&M reports.

### **Next Steps**

Within 3 months of receipt of this letter, submit the first semi-annual OM&M report with the content proposed in the GETS LTMP that was approved by the DNR. If revisions are needed to the GETS OM&M Plan – including any changes from the reporting proposed in the GETS LTMP – these revisions must be submitted to the DNR for approval (Wis. Admin. Code § NR 724.13(4)). A Wis. Admin. Code ch. NR 749 review fee is required to be submitted with each semi-annual OM&M report and with any revisions to the GETS OM&M Plan that required DNR review and approval.

As a reminder, this Site is subject to an enforcement action and therefore all submittals to the DNR under Wis. Admin. Code chs. NR 700-799 and submittals directed by the DNR must be accompanied by an Wis. Admin. Code ch. NR 749 fee per Wis. Stat. § 292.94. These fees are not pro-ratable or refundable per Wis. Admin. Code § NR 749.04(1). If you have any questions about whether to include a fee with a submittal, please contact DNR staff prior to submitting a document without a fee.

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

Sincerely,



Alyssa Sellwood, PE  
Complex Sites Project Manager  
Remediation & Redevelopment Program

Attachment – Copy of Table 4 from GETS LTMP

cc: Jodie Thistle, DNR (via email: [Jodie.Thistle@wisconsin.gov](mailto:Jodie.Thistle@wisconsin.gov))

**Table 4 from Long Term Monitoring Plan for the Groundwater Extraction and Treatment System  
With DNR's Comparison to content of JCI/Tyco's GETS Monitoring Report received July 15, 2023**

Performance Parameter	Evaluation Process	DNR's Comparison to June 15 <sup>th</sup> Monitoring Report
Document reductions of upwelling in upper, middle, and lower reaches of Ditch B and/or identify locations or conditions contributing to observed upwelling	Calculate and track (in a table) head differentials in mini-piezometers and surface water	✓
	Calculate and track (in a table) the average system effluent rate and streamflow rate (at the existing Ditch B system) on days that mini-piezometers and surface water are gauged	✓
	Calculate and track (in a table) daily average flow rate in Ditch B and daily average effluent discharge rate and stream gauge measurements (when available)	✓
Monitor and assess groundwater migration from the FTC (as it relates to the GETS and Ditch B specifically)	Create tables and graphical plots (as needed) to summarize groundwater and surface water levels within the area of the GETS	✓
	Create figures illustrating groundwater elevations and approximate capture zones of the extraction wells	✓
	Create cross-sections through the monitoring area (including Ditch B) illustrating wells, groundwater elevations, and approximate capture zones of the extraction wells	Add See Note 1
Document PFAS reductions in Ditch B surface water and/or identify locations or conditions contributing to potential increases	Create tables summarizing PFAS concentrations detected in groundwater and surface water PFAS concentrations at mini-piezometers.	Add
	Create post-maps and trend plots illustrating PFOA and PFOS concentrations in groundwater and surface water at mini-piezometers overtime.	Add
	Create graphical trend plots showing contemporaneous flow rates and PFOA and PFOS concentrations for both GETS effluent and Ditch B surface water.	Add See Note 2
Document PFAS trends in groundwater (decreasing, stable, increasing) within the area of the GETS	Create tables to summarize groundwater PFAS concentrations at monitoring wells over time	✓
	Create graphical plots (as needed) to track concentration trends of specific PFAS constituents (e.g., PFOA, PFOS, PFHxA, and FTSA) at monitoring wells	Add
	Create figures (e.g., isoconcentrations and cross-sections) illustrating concentrations of specific PFAS constituents (e.g., PFOA) in groundwater within the area of the GETS	Add iso-concentrations to Figs. 9 & 10
Document PFAS mass removal over time	Create a tabular summary of the average operating flow rate, run time, and volume of groundwater removed per month in each extraction well	✓
	Calculate and track (in tables and graphical plots) estimates of PFAS mass extracted from each well for the reporting period, and include updated cumulative estimated mass of PFAS extracted from each well since startup	Add, as needed, to optimize pumping rate
	Create a tabular summary of the total volume of groundwater extracted and treated per reporting period and cumulatively since GETS startup	✓
	Create a tabular summary of the influent and effluent concentrations of PFAS from the GETS during the reporting period	✓
	Calculate and track (in tables and graphical plots) estimates of PFAS mass removed by the GETS for the reporting period, and include updated cumulative estimated mass of PFAS removed since startup	Add
Evaluate sustainability of the GETS operation in accordance with NR 722.09(2m)	Create a tabular summary of run time and down time of the GETS during the reporting period	✓
	Estimate energy usage by the GETS per reporting period and cumulatively	Add
	Summarize the carbon regeneration volume/mass per reporting period and cumulatively	Add
	Summarize the disposal volume/mass for filters and ion exchange resin per reporting period and cumulatively	Add

**DNR Notes**

✓ = content was included in the June 15<sup>th</sup> Monitoring Report and should continue to be reported the GETS semi-annual OM&M reports.

“Add” = content not found in the June 15<sup>th</sup> Monitoring Report and to be added in the GETS semi-annual OM&M reports.

1. Suggest a focused view of the unconsolidated aquifer through EX-8 to EX-6 or EX-7, that shows well screens, water levels and PFAS concentrations.
2. At a minimum provide trend plots of the PFOA and PFOS concentrations measured at the influent of the Ditch B Treatment system.