



June 12, 2023

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 Semi-Annual Operation, Maintenance, and Optimization Progress Report #8
Ditch A Interim Action Treatment System (Jul. 1, 2022 – Dec. 31, 2022)
JCI/Tyco FTC PFAS, 2700 Industrial Parkway South, Marinette, WI
BRRTS #02-38-580694

Dear Ms. Nelson:

On Apr. 28, 2023, the Wisconsin Department of Natural Resources (DNR) received the *Semi-Annual Operation, Maintenance and Optimization Progress Report #8* (O&M Progress Report #8) for the Ditch A interim action at the above-referenced site (the “Site”). 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 review and response.

The DNR reviewed JCI/Tyco’s O&M Progress Report #8 and finds that the Ditch A treatment system, as currently maintained, is effective at removing per- and polyfluoroalkyl substances (PFAS) from the water it treats and the residual wastes from treatment are being properly managed. The Ditch A treatment system is documented to reduce the concentration of PFAS in the surface water immediately downstream of the treatment; however, the DNR finds that other migration pathways from the Site may contribute to PFAS farther downstream which are not considered by JCI/Tyco’s current monitoring program. Thus, per Wis. Admin. Code § NR 724.13(4), the DNR requests that JCI/Tyco implement updates to the long-term monitoring program in Operation, Maintenance and Monitoring Plan (OM&M Plan) for the Ditch A treatment system; the recommended updates are described herein.

Background

JCI/Tyco is investigating and responding to the discharge of per- and polyfluoroalkyl substances (PFAS) to the environment at the JCI/Tyco Fire Technology Center (FTC), located at 2700 Industrial Parkway South in Marinette, Wisconsin. The discharge occurred as the result of training, testing, research and development of PFAS-containing aqueous film forming foams (AFFF) at the Site starting in the early 1960s.

A surface water drainage feature identified as Ditch A flows south through the FTC property, continues south to the Little River and eventually discharges to the Bay of Green Bay in Lake Michigan. Elevated PFAS concentrations were detected in the surface water of Ditch A on the FTC property – perfluorooctanoic acid (PFOA) and up to 6,000 parts per trillion (ppt) and perfluorooctanesulfonic acid (PFOS) up to 1,100 ppt. In Jan. 2019, JCI/Tyco began an interim action to remove PFAS from surface water migrating off the FTC property in Ditch A.

The interim action includes a treatment system constructed adjacent to Ditch A on the southern boundary of the FTC property. The system captures surface water flowing in Ditch A at a check dam and treats the captured water using suspended solids settling, bag filtration and granular activated carbon (GAC). The treated water is then discharged back to Ditch A downstream of the check dam under a Wisconsin Pollutant Discharge Elimination

System (WPDES) General Permit (WI-0046566-07-0) and the associated coverage letter, which specifies the effluent criteria and monitoring requirements.

Operation of the Ditch A treatment system reduces the amount of PFAS in the surface water at the point where the ditch exits JCI/Tyco's FTC property. The system is designed to treat a maximum flow rate of 100 gallons per minute (gpm). The surface water in the ditch occasionally freezes, runs dry or flows at a rate lower than 100 gpm, such that the system captures and treats most of the surface water migrating from the FTC property in Ditch A. Occasional high flow events or system downtime may occur where surface water overtops the check dam and is not captured by the Ditch A system, and therefore goes untreated as it migrates downstream, but these events are minimal.

NR 205 WPDES Permit

The effluent from the Ditch A treatment system is regulated under WPDES General Permit No. WI-0046566-07-0 and the associated coverage letter (updated June 4, 2021). The DNR's Wastewater Program administers the WPDES permit and reviews the monthly electronic discharge monitoring reports submitted by JCI/Tyco. A review of the permit reporting is not included with this letter.

Summary and DNR Review of O&M Progress Report #8

System Operation and Performance

JCI/Tyco's O&M Progress Report #8 for Ditch A covered the period from Jul. 1 to Dec. 31, 2022. Measurable streamflow occurred in Ditch A periodically between Jul. 1 and Sept. 4, 2022, and no streamflow was measured beginning the week of Sept. 4th through the end of the reporting period. The Ditch A treatment system only operated during times of measurable flow, which amounted to a total of 32 days and approximately 3.7 million gallons of water treated during this reporting period. No overtopping of the check dam occurred in Ditch A during this reporting period, thus all measurable flow was captured and treated.

The system was effective at removing PFAS from the surface water it captured and treated. Water coming into the system had concentrations up to 470 ppt for PFOA and up to 160 ppt for PFOS, and treated water exiting the system has no PFOA or PFOS detected.

Based on JCI/Tyco's measurements on the volume of water treated and the PFAS concentrations in the system influent and effluent, JCI/Tyco estimated that during the reporting period the Ditch A treatment system removed 0.006 pounds of PFOA and 0.002 pounds of PFOS; and cumulatively, since startup in Jan. 2019, the system has removed approximately 0.82 pounds of PFOA and 0.43 pounds of PFOS from the surface water.

In Oct. 2022, during a period of no measurable flow in Ditch A, JCI/Tyco replaced the sandbags and performed maintenance on the check dam where the surface water in Ditch A is captured for treatment. Documentation of the maintenance of the check dam was provided in Appendix F. Other routine system maintenance that occurred during this reporting period included removal of accumulated sediment, replacement of spent bag filters and replacement of spent GAC. The spent bag filters were collected in drums and disposed by End Point Solutions, and the spent GAC was shipped to a Cabot Corporation facility in Pryor, Oklahoma to be reactivated and reused in the treatment system. Documentation of the handling of these waste materials was included in Appendix E.

Surface Water Long-Term Monitoring

The DNR finds that Ditch A treatment system, as currently maintained, is effective at reducing PFAS to meet the Wis. Admin. Code § NR 102.04 surface water standards (PFOA ≤ 95 ppt and PFOS ≤ 8 ppt) in Ditch A immediately downstream of the treatment system. JCI/Tyco collected a surface water sample once per month at SW-40; this sample point is located immediately downstream of the treatment system and just before Ditch A exits the FTC property. The monthly samples were only collected when there was measurable flow at SW-40,

which was in July and August during this reporting period. The concentrations measured at SW-40 were less than 19 ppt for PFOA and less than 6.6 ppt for PFOS.

The DNR finds that additional routine monitoring is needed to characterize PFAS concentrations in Ditch A downstream from SW-40. Recent monitoring conducted by JCI/Tyco for its site investigation shows that the PFOA and PFOS concentrations in Ditch A increase to levels over the Wis. Admin. Code § NR 102.04 surface water standards at SW-26 – the next sampling location downstream from SW-40 that receives water coming from the FTC¹. The PFAS concentrations at SW-26 suggests that other contaminant migration pathways from the Site contribute to PFAS in surface water downstream of the Ditch A treatment system (e.g., migration within the stream hyporheic zone, groundwater-surface water interactions and/or flow through wetlands).

Next Steps

Per Wis. Admin. Code § NR 724.13(4), the DNR requests that JCI/Tyco update Table 4-1 and Sections 7.5 of the OM&M Plan for Ditch A to improve characterization of PFAS in the surface water downstream of the Ditch A treatment system. This should include, at a minimum, collection of surface water samples at SW-26 concurrent with the monthly sampling at SW-40. Please submit the updated Sections of the OM&M plan to the DNR within **45 days** of date of this letter and begin implementing these changes to the long-term surface water monitoring program for Ditch A. (If JCI/Tyco includes the recommendations presented herein, then a fee for additional DNR review and response is not required).

Because the concentrations of PFOA and PFOS in the surface water in Ditch A on the FTC property remain above the Wis. Admin. Code § NR 102.04 surface water standards, the DNR recommends that JCI/Tyco continue to operate an interim remedial action to remove PFAS from the surface water. If the PFAS concentrations at SW-26 are found to be greater than the Wis. Admin. Code § NR 102.04 surface water standards during operation of the Ditch A treatment system, then JCI/Tyco must evaluate and report on the cause and significance per Wis. Admin. Code § NR 724.17(3m)(f) and may need to evaluate if modification or additional interim actions are needed.

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 about this letter, please contact me, the DNR Project Manager, at (608) 622-8606 or Alyssa.Sellwood@wisconsin.gov.

Sincerely,



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

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

¹ The next surface water sampling location downstream from SW-40 is SW-26. JCI/Tyco reported results for samples collected at SW-26 in its Apr. 2023 Site Investigation Status Report. Samples collected from standing water at SW-26 in Sept. and Nov. 2022 had concentrations of 500 and 680 ppt for PFOA and 210 and 240 ppt for PFOS, respectively.