



June 18, 2024

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 May 2024 Additional Site Investigation Work Plan
JCI/Tyco Stanton (PFAS), 1 Stanton Street, Marinette, WI
ChemDesign (PFAS), 2 Stanton Street, Marinette, WI
BRRTS #02-38-581955 and #02-38-583852

Dear Ms. Nelson:

On May 20, 2024, the Wisconsin Department of Natural Resources (DNR) received the Additional Site Investigation Work Plan (the "SI Work Plan") that was submitted by Arcadis U.S., Inc. (Arcadis), on behalf of Johnson Controls, Inc. and Tyco Fire Products LP (JCI/Tyco) for the discharges of per- and polyfluoroalkyl substances (PFAS) for BRRTS #02-38-581955 and #02-38-583852¹ (collectively referred to herein as the "Stanton Site"). The SI Work Plan 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 SI Work Plan, which included a response to the comments that the DNR provided on Mar. 21, 2024, to JCI/Tyco's for its Feb. 2024 Site Investigation Status Report (SI Status Report). In this letter, the DNR approves the SI Work Plan, provides feedback on sampling planned for the Menominee River and sets a due date of Feb. 1, 2025, for the next SI Status Report (Wis. Admin. Code § NR 716.15(1)(a)).

Background

The Stanton Site includes multiple parcels along the Menominee River, which includes approximately 51 acres owned by JCI/Tyco and an adjacent 15-acre parcel previously owned by JCI/Tyco, but which is currently owned by KKIL Stanton LLC (KKIL).

Historically, much of the property was investigated and underwent corrective action measures for arsenic contamination under the U.S. Environmental Protection Agency (U.S. EPA) Resource Conservation and Recovery Act (RCRA). The RCRA project for arsenic contamination is tracked under BRRTS #02-38-000011. The RCRA corrective actions include a hydraulic barrier wall that encompasses a large portion of the 51-acre property and treatment of groundwater that is pumped to control the water level within the barrier wall.

¹ ChemDesign Product Inc. (ChemDesign) leases 12 buildings and two tank farms on JCI/Tyco's Stanton Street property. ChemDesign is the responsible party for PFAS discharges from its operations; however, because ChemDesign's and JCI/Tyco's operations are intermixed on the property, JCI/Tyco has opted to conduct a site investigation that covers both BRRTS cases.

JCI/Tyco and ChemDesign believe that the PFAS contamination at the Stanton Site is from incidental discharges from their respective industrial operations on the property. JCI/Tyco has blended and packaged PFAS-containing aqueous film forming foams (AFFF) at the Stanton Site since around 1964. ChemDesign, a synthetic organic chemistry toll service provider, has leased approximately 7.4 acres of the Stanton Site from JCI/Tyco since around 1983. ChemDesign provides JCI/Tyco reactor space to process a series of different perfluorinated compound intermediates from raw materials.

The adjoining KKIL property was historically used by JCI/Tyco for administrative buildings and is currently a parking lot. JCI/Tyco believes that the PFAS contamination detected on the KKIL property is from historical fill and/or migration of PFAS that occurred prior to construction of the hydraulic barrier wall that surrounds where JCI/Tyco and ChemDesign have their industrial operations.

Although RCRA corrective action measures are in place for the arsenic impacts, the sources, fate and migration pathways for PFAS can differ from those for arsenic at the Stanton Site. Thus, a site investigation to define the nature, degree and extent of the PFAS contamination must be completed in accordance with Wis. Admin. Code ch. NR 716. A complete site investigation is necessary to evaluate if enhancements or additions to the current remedial actions are needed to address the PFAS contamination (Wis. Admin. Code § NR 716.11(3)(b)) and to determine if and where continuing obligations to address residual PFAS contamination are needed for long-term protection (Wis. Admin. Code ch. NR 727).

Site investigation activities that have been completed to date for PFAS at the Stanton Site were summarized in the DNR's Mar. 21, 2024, review letter. In that letter, the DNR recommended additional actions that may help JCI/Tyco in its site investigation. The recommendations were broken into four categories: (1) the unconsolidated aquifer outside the containment wall, (2) shallow weathered bedrock, (3) the Menominee River and (4) soil and the unconsolidated aquifer inside the barrier wall.

Summary and Review of the 2024 Additional Site Investigation Work Plan

In the SI Work Plan, JCI/Tyco proposes to complete additional groundwater and surface water monitoring at the Stanton Site. Specifically, it plans to measure water levels and sample groundwater for PFAS at 41 monitoring wells (38 existing and three new monitoring wells) and sample surface water for PFAS at eight previously sampled locations in the Menominee River in fall 2024 and spring 2025.

The DNR's review of the SI Work Plan is organized based on the four categories listed above and the recommendations from its Mar. 21, 2024, letter.

Unconsolidated Aquifer – Outside Containment Wall:

JCI/Tyco's site investigation activities to date have identified PFAS contamination from the Stanton Site in the unconsolidated aquifer both inside and outside the barrier wall. JCI/Tyco believes the contaminated groundwater outside the wall migrated there before the barrier wall was installed and that the PFAS-impacted groundwater outside of the wall now flows around the barrier wall and discharges to the Menominee River. JCI/Tyco's proposed groundwater monitoring includes 25 existing and three new monitoring wells installed in the unconsolidated aquifer outside the barrier wall. The three new wells are proposed to help define the extent of the PFAS contamination in groundwater from the Stanton Site.

- In response to DNR's Recommendation #2c, JCI/Tyco plans to install a monitoring well MW130S screened from 5 to 15 feet below ground surface (bgs) near vertical aquifer profile VAP-66 to help define the extent of contamination in groundwater on the KKIL property.
- In response to DNR's Recommendation #3, JCI/Tyco plans to install monitoring well MW131S screened from 5 to 15 feet bgs and a monitoring well MW131M screened from 30 to 35 feet bgs east of the 6th Street Slip to help define the extent of PFAS contamination to the southeast along the Menominee River.

DNR's Recommendations #2a and #2b were related to the presentation of data. In response to these items, JCI/Tyco added the KKIL property boundary to the site maps and prepared a figure with the groundwater analytical results for a specific PFAS, 6:2 fluorotelomer sulfonate (FTS).

The DNR concurs with the proposed monitoring plan for the unconsolidated aquifer outside the barrier wall and recommends that JCI/Tyco use the groundwater flow paths around the KKIL property and the overall distribution of 6:2 FTS in the groundwater in future evaluations and interpretations of the extent of contamination from the Stanton Site.

Shallow Weathered Bedrock

JCI/Tyco's site investigation activities to date have identified PFAS in the shallow weathered bedrock. Most of the data supports that this PFAS contamination is from JCI/Tyco's Fire Technology Center (FTC), which is upgradient from the Stanton Site. However, the groundwater sampling results from two bedrock monitoring wells, MW040D and MW108D, did not align with this conclusion. Monitoring wells MW040D and MW108D are located in the weathered bedrock within the extent of the hydraulic barrier wall at the Stanton Site. These two monitoring wells had high concentrations of certain PFAS (e.g., 6:2 FTS) that were similar to the PFAS detected in the shallow groundwater at the Stanton Site. These results could indicate that PFAS from the Stanton Site are also contributing to the PFAS contamination into the weathered bedrock. JCI/Tyco does not believe that this migration is occurring and has attributed the PFAS detected in bedrock monitoring wells MW040D and MW108D to faulty well construction and not to migration from the shallow groundwater at the Stanton Site.

JCI/Tyco provided explanations in its response to comments to support its conclusion that the PFAS detected in the shallow bedrock is primarily from the FTC and not from the discharges at the Stanton Site (see bullets below). JCI/Tyco's proposed groundwater monitoring also includes 13 bedrock monitoring wells – seven outside the barrier wall and six within the extent of the barrier wall, which it will use to evaluate patterns and derive conclusions about the migration of PFAS in the weathered bedrock between the FTC and Stanton Sites.

- In response to Recommendation #4, JCI/Tyco shared that monitoring wells MW040D and MW108D were slow to recharge, indicating that these wells are not hydraulically connected to the fracture flow network in the shallow weathered bedrock. Thus, the PFAS detected in these two wells is not likely indicative of the PFAS throughout the weathered bedrock in this area and the faulty well construction does not act as a pathway that allows PFAS to migrate from the Stanton Site into this weathered bedrock layer. To test this theory, JCI/Tyco plans to sample bedrock monitoring wells MW105D and MW107D in the next groundwater monitoring event. Bedrock monitoring wells MW105D and MW107D are located inside the hydraulic barrier wall near the presumed faulty wells and are expected to provide results representative of the concentrations of PFAS in the weathered bedrock layer for the area in question.

- In response to DNR's Recommendation #5, JCI/Tyco reiterated slight increases in the concentration of PFAS that has been observed in groundwater in the weathered bedrock near the Stanton Site are due to the heterogenous and anisotropic fracture network in this weathered bedrock layer and not to sources coming from the Stanton Site. Based on this, JCI/Tyco did not propose any new bedrock monitoring wells because it does not believe adding another bedrock monitoring well upgradient from the Stanton Site would add value to the site investigation.

The DNR concurs with the monitoring plan currently proposed for the weathered bedrock.

Menominee River

JCI/Tyco's conceptual site model states that PFAS in the groundwater outside the barrier wall and in the shallow weathered bedrock discharges to the Menominee River. The concentrations of PFAS previously measured in the surface water in the Menominee River near the Stanton Site were below Wisconsin's current surface water standards. Sediment along the bed of the river near the Stanton Site has not been tested for PFAS.

JCI/Tyco plans to collect two additional rounds of surface water samples from the Menominee River in fall of 2024 and spring of 2025 to confirm that the PFAS discharges to the river from groundwater are not resulting in conditions that exceed Wisconsin's current surface water standards for PFAS.

JCI/Tyco can collect additional surface water samples to confirm the previous sampling results; however, there is no reason to believe that conditions have changed that would significantly alter the concentration of PFAS detected in the surface water at the previously sampled locations. The concentrations of PFAS in surface water at these locations are expected to remain below the current Wisconsin surface water standards because of the dilution that occurs when the contaminated groundwater enters this large body of flowing surface water.

In lieu of, or in addition to, the proposed surface water sampling, the DNR recommends that JCI/Tyco estimate the mass flux of PFAS from its groundwater plume(s) to the river and characterize the PFAS concentrations in the sediment where the groundwater and storm water impacted by PFAS from its contaminated sites discharge to the Menominee River. These actions will help with decision making for remedial action and management of sediment dredged near the Stanton Site.

Soil and Unconsolidated Aquifer Inside Barrier Wall:

JCI/Tyco did not propose any additional sampling for soil and groundwater in the unconsolidated materials inside the barrier wall.

Additional investigation may be needed to evaluate remedial alternatives and set continuing obligations that provide long-term protection from the PFAS contamination that is within the extent of the hydraulic barrier wall. For example, JCI/Tyco is working with the DNR Storm Water Program to evaluate the cause for contamination detected in storm water discharging to the Menominee River from inside the barrier wall at the Stanton Site (**Attachment A**). Depending on the outcomes of this work, additional investigation for PFAS inside the barrier wall may be needed to understand if and how the PFAS from historical discharges at the Stanton Site are getting into the storm water and to design an effective solution.

New Extraction Well

In the SI Work Plan, JCI/Tyco shared its plans to modify the hydraulic containment system for the RCRA site (BRRTS #02-38-000011). Specifically, it plans to add an extraction well located to the north, outside of the barrier wall along the Menominee River, near monitoring well MW003. While the DNR understands that groundwater captured by the new extraction well will contain PFAS, the modification to the hydraulic containment system for the RCRA site is *not* included in the DNR's review of the SI Work Plan for the PFAS sites (BRRTS #02-38-581955 and #02-38-583852). Any request involving modifications or additions to the current RCRA corrective action components must be submitted to the U.S. EPA and DNR project managers for the RCRA site for review and approval.

Next Steps

The DNR approves the SI Work Plan for next steps in the site investigation for PFAS at the Stanton Site and suggests that JCI/Tyco incorporate the DNR's recommended changes to the evaluations JCI/Tyco completes for the Menominee River. JCI/Tyco should initiate the field investigation proposed in the SI Work Plan within 60 days of the date of this letter (Wis. Admin. Code § NR 716.11(2r)).

JCI/Tyco should submit its next SI Status Report to the DNR **by Feb. 1, 2025** (Wis. Admin. Code § NR 716.15(1)(a)). In the SI Work Plan, JCI/Tyco proposed to submit the SI Status Report within 60 days after receiving of the analytical results, which the DNR has interpreted to mean the summer of 2025 (i.e., after the spring 2025 surface water sampling event). The surface water results are not anticipated to change significantly; therefore, JCI/Tyco can evaluate the results and submit the SI Status Report prior to this second proposed sampling event. If JCI/Tyco collects the second round of surface water data from the Menominee River in spring 2025, then this additional data can be provided as an addendum to the report. The SI Status Report should include a summary of the field investigation, interpretation of the monitoring results and recommendations (Wis. Admin. Code § NR 716.15).

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

Attachment A: Letter dated May 7, 2024, Re: Storm Water Sampling – Tyco One Stanton Street.

cc: Jodie Thistle, DNR (via email: Jodie.Thistle@wisconsin.gov)
Sarah Krueger, DNR (via email: Sarah.Krueger@wisconsin.gov)
Sarah Anderson, DNR (via email: Sarah.Anderson@wisconsin.gov)
Dave Mielke, ChemDesign (via email: dmielke@chemdesign.com)



May 7, 2024

Ryan Suennen
Tyco Fire Products LP
One Stanton Street
Marinette, WI 54143

ATTACHMENT A

Subject: Storm Water Sampling – Tyco One Stanton Street

Dear Mr. Suennen:

On March 28, 2024, the department received data from your February 8, 2024 sample event to characterize the storm water discharging from the One Stanton Street site. Concentrations for several parameters are greater than surface water quality standards per chs. NR 102 and 105, Wis. Adm. Code. Parameters that remain at concentrations of concern include: arsenic, PFOS, zinc, and total suspended solids (TSS).

Please proceed with your plan to continue to investigate all potential storm water contamination sources, as outlined in your letter to the department dated March 27, 2024. The department requests the storm water source investigation be completed by August 31, 2024. If surface and/or operational issues are identified as sources of contaminated storm water, that facility is required to modify the Storm Water Pollution Prevention Plan (SWPPP) to address the sources and notify the storm water program.

If the facility determines through storm water source investigations that elevated results are from historical discharges of contaminants to soil and groundwater at the facility, then further investigation into the migration of the historical contamination is required per Wis. Admin. Code § NR 716.11(5). Corrective action activities performed under the 2009 consent order with the US EPA were designed to prevent highly contaminated groundwater and surface water from leaving the site. Recent actions have been undertaken in attempt to limit potential groundwater and surface water interaction with a french drain for the JCI/TYCO (ANSUL) Site (BRRTS # 02-38-000011). As noted in the March 21, 2024, letter for the JCI/TYCO Stanton (PFAS) Site (BRRTS # 02-38-581955) that the facility received from the department's Remediation and Redevelopment Program, if any contaminant concentrations in the storm water discharging to the Menomonee River remain over surface water criteria, then additional characterization to evaluate interim or remedial actions to reduce contaminant concentrations in the storm water is required under Wis. Admin. Code § NR 716.17(3) .

If surface and/or operational issues are identified as sources of contaminated storm water with respect to zinc and the wastewater treatment process where zinc bond cake sludge or other operational item is identified, the facility should determine if this should be addressed through the wastewater permit, or if modifications to the Storm Water Pollution Prevention Plan (SWPPP) will address the source(s).

The department appreciates Tyco's attention to this matter. Please let us know if you have any questions.

Sincerely,

Melissa Yarrington
Storm Water Program Coordinator

Cc: Scott Wahl, JCI/Tyco
Denice Nelson, JCI/Tyco
Angela Carey, DNR
Alyssa Sellwood, DNR

Sarah Anderson, DNR
Heidi Schmitt Marquez, DNR
Sarah Krueger, DNR

Joe Baeten, DNR
Laura Gerold, DNR