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May 19, 2022

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 *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 March 22, 2022, the Wisconsin Department of Natural Resources (DNR) received the *Additional Site Investigation Work Plan* (the "SI Work Plan") submitted by Arcadis U.S., Inc. (Arcadis), on behalf of Johnson Controls, Inc., and Tyco Fire Products LP (JCI/Tyco). The SI Work Plan was accompanied by the appropriate fee of $700, required under Wisconsin Administrative Code (Wis. Admin. Code) § NR 749.04(1) for formal DNR review and response. The SI Work plan summarized next steps for the on-going investigations of discharges of per- and polyfluoroalkyl substances (PFAS) for both BRRTS 02-38-581955 and 02-38-583852[1] (collectively referred to as the "Site" for purposes of this response).

The DNR reviewed the SI Work Plan. During the review, the DNR referred to JCI/Tyco's March 22, 2022 *Site Status Report* ("SI Status Report"), JCI/Tyco's February 7, 2022 Response to Comments letter, ChemDesign's January 12, 2022 *Limited Site Investigation Report* ("Limited SI Report") and ChemDesign's May 2, 2022 Response to Comments letter. The DNR's review of the SI Status Report is provided under separate cover.

In this letter, the DNR approves the SI Work Plan and provides JCI/Tyco with recommended additions to include in the upcoming field investigation. The SI Work Plan is approved with the understanding that it provides next steps in the iterative site investigation process and that at completion of the proposed scope of work, additional investigation may be required to define the nature, degree and extent of PFAS contamination (Wis. Admin. Code § NR 716.11(3)(a)) and to evaluate remedial action options (Wis. Admin. Code § NR 716.11(3)(b)).

Background

The Site includes multiple parcels, of which, JCI/Tyco currently owns approximately 51-acres along the Menominee River. An adjacent 15-acre parcel, previously owned by JCI/Tyco, is now owned by KKIL Stanton LLC and contains an office building and a parking lot. JCI/Tyco retains responsibility for its historical discharges of PFAS that may have occurred on this adjacent 15-acre parcel.

[1] ChemDesign Product Inc. (ChemDesign) leases 12 buildings and two tank farms on approximately 7.4 acres of the Stanton Street property from JCI/Tyco. ChemDesign is the responsible party for PFAS discharges from their operations under BRRTS 02-38-583852. However, because ChemDesign's operations are co-located with JCI/Tyco's on the property, JCI/Tyco has included potential releases and evaluation of PFAS for BRRTS 02-38-583852 in this SI Status Report.

The PFAS contamination at the Site is associated with discharges from JCI/Tyco's and ChemDesign's operations. Since around 1964, JCI/Tyco has blended and packaged PFAS-containing aqueous film forming foams (AFFF), and currently they also manufacture fire extinguishers and other fire suppression system hardware at the Site. JCI/Tyco also conducted fire training on the parcel currently owned the KKIL Stanton LLC in the 1950s through early 1960s. ChemDesign is a synthetic organic chemistry toll service provider and since 1983 it has leased approximately 7.4-acres of the property from JCI/Tyco. Starting in 2005, ChemDesign has provided reactor space to process a series of different perfluorinated compound intermediates from raw materials for JCI/Tyco. While the specific discharge mechanisms for PFAS at the Site are not defined, JCI/Tyco and ChemDesign have indicated that the PFAS contamination at the Site is likely from incidental discharges of AFFF and PFAS-containing materials throughout their history of use on the property.

Summary of Prior Submittals

Historically, much of the Site was investigated and underwent Resource Conservation and Recovery Act (RCRA) corrective action measures for arsenic contamination, which is tracked under BRRTS case #02-38-000011. The corrective actions include a hydraulic barrier wall that encompasses a large portion of the 51-acre property. JCI/Tyco has suggested that the RCRA corrective action measures for arsenic will also control contaminant migration and address risk associated with PFAS. However, because the discharge sources and transport pathways for the PFAS contamination at the Site differ from the arsenic, a site investigation for PFAS completed in accordance with Wis. Admin. Code ch. NR 716 is required. The nature, degree and extent of the PFAS contamination must be defined (Wis. Admin. Code § NR 716.11(3)(a)) to evaluate effectiveness of the current corrective action measures and determine remedial action options to address PFAS contamination (Wis. Admin. Code § NR 716.11(3)(b)).

The DNR received submittals documenting JCI/Tyco's site investigation work completed to date for PFAS at the Site. The DNR provided JCI/Tyco with review comments on August 31, 2021 and on May 19, 2022. The DNR also received ChemDesign's Limited SI Report and provided comments to that report on March 2, 2022.

Summary of SI Work Plan

On March 22, 2022, JCI/Tyco submitted the SI Work Plan to perform additional monitoring of groundwater, soil and surface water at the Site based on the findings and conclusions presented in the SI Status Report. The data objectives for the SI Work Plan were summarized in Section 1 and included:

- Characterize PFAS in the former fire-training area that operated from the 1950s to early 1960s
- Define the upgradient extent of Site-related PFAS in shallow groundwater south of the barrier wall.
- Evaluate surface water quality in the Menominee River
- Define the extent of Site-related PFAS in the shallow bedrock beneath the Site
- Evaluate groundwater flow patterns northwest of the Site.

Soil Sampling: JCI/Tyco proposed to collect soil samples from five vertical aquifer profile (VAP) borings located within the former fire-training area (see Figure 4 in the SI Work Plan). JCI/Tyco proposed to continuously log each of the borings to the top of bedrock and to collect up to two soil samples from each boring for analysis for PFAS in accordance with the Quality Assurance Project Plan (QAPP). JCI/Tyco will collect the soil samples from zone above the water table and below the fill used as the base grade for current paved parking lot.

Groundwater Monitoring: The locations proposed for groundwater monitoring in the SI Work Plan were shown on Figure 4 and the proposed groundwater monitoring program was summarized in Section 5 and Table 2. JCI/Tyco proposed to measure water levels and sample groundwater for PFAS in accordance with the QAPP. An initial sampling event is scheduled at ten VAP points in the summer of 2022, and one groundwater monitoring event is planned using permanent NR 141 monitoring wells in fall of 2022. JCI/Tyco will attempt to conduct the fall 2022 sampling event in coordination with the groundwater sampling of approximately 125 monitoring wells

planned for its other PFAS site in Marinette – the Fire Technology Center (BRRTS 02-38-580694). The fall 2022 sampling for Stanton Site will include the following wells:

- Nine bedrock wells that are both inside and outside the extent of the barrier wall on the Stanton property.
- Up to four *new* monitoring wells to be installed in the overburden upgradient of the barrier wall at locations selected based on the VAP sampling results.
- Fourteen existing overburden monitoring wells that are located outside the barrier wall

In addition to these wells, JCI/Tyco plans (access permitting) to also measure the water levels in monitoring wells located on the Marinette Marine property and on the Marinette Wastewater Treatment Plant property, which are to the northwest of the Site along the Menominee River. This gauging of water levels will help to establish local groundwater flow directions relative to the Site in this area.

Surface Water Monitoring: The locations proposed for surface water monitoring in the SI Work Plan were shown on Figure 5 and the proposed evaluation and monitoring program was summarized in Section 6. JCI/Tyco proposed to sample the surface water in the Menominee River for PFAS at five locations near the Site twice in 2022 (summer and fall events are anticipated to evaluate the wet and dry seasons). The water depth and velocity will be measured at each location, and then samples will be collected from below the surface at two depths in the water column. Samples will be analyzed for PFAS and other water quality parameter in accordance with the QAPP.

Reporting: JCI/Tyco proposed to submit a status report to the DNR at completion of the field investigation to document the results and make recommendations for next steps in the SI based on the findings and conclusions.

DNR Review and Recommendations

The DNR approves the SI Work Plan with understanding that the field investigation will not result in a complete site investigation and additional work may be required for JCI/Tyco to define the nature and extent of PFAS contamination in groundwater and other media (Wis. Admin. Code § NR 716.11(3)(a)) and to evaluate remedial action options (Wis. Admin. Code § NR 716.11(3)(b)).

Additional Objectives and Monitoring Locations: In its review of the SI Work Plan, the DNR identified additional items that it recommends JCI/Tyco incorporate into the 2022 field investigation to the extent practicable. The recommendations are summarized in **Attachment A.** Based on the findings and conclusions from this next phase of work, additional sampling for PFAS may been needed farther upgradient and side gradient from the current groundwater monitoring network to define the degree and extent of contamination from the Site.

Preliminary Remediation Goals: In the SI Work Plan (and SI Status Report), JCI/Tyco identified that it plans to use the U.S. Environment Protection Agency (EPA) Preliminary Remediation Goals (PRG) of 70 parts per trillion (ppt), individual or combined, for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS), for comparison purposes when evaluating groundwater data. JCI/Tyco also commented that the Wisconsin Natural Resource Board (NRB) rejected the Wisconsin Department of Health Services (DHS) Cycle 10 recommended groundwater standard of 20 ppt, individual or combined, for PFOA and PFOS.

The DNR would like to clarify two points and offer a recommendation:

- While it is true that the Wisconsin Natural Resource Board (NRB) did not advance the DHS's Cycle 10 recommended groundwater standards to the governor and legislature, the DHS did not change its recommendation of 20 ppt, individual or combined, for PFOA and PFOS. The DHS's health-based recommendation for PFOA and PFOS remains current and valid.
- The PRG of 70 ppt has not been approved by the DNR as a standard for selecting remedial actions under Wis. Admin. Code ch. NR 722 for the Site. The selection of standards can come at a later phase in the

process, once the site investigation is complete and may include consideration of any DHS health-based recommendation (Wis. Admin. Code § NR 722.09(2)(b)).

- **Recommend**: In the absence of established groundwater standard, Wis. Admin. Code § NR 722.09(2)(b)2. provides that a responsible party may be required to develop a site-specific standard in cooperation with the department of health services to protect public health safety and welfare. At this stage of the process, it is reasonable for JCI/Tyco to use the PRGs for comparison purposes during the site investigation; however, the DNR recommends that JCI/Tyco continue to monitor groundwater at locations that can define the extent of contamination based on the DHS recommendations to protect public health (Wis. Admin. Code § NR 722.09(2)(b)(2)).

Next Steps

The next steps related to this SI Work Plan are as follows:

1) *Field Investigation:* JCI/Tyco to complete the field investigation according to the scope and schedule presented in the SI Work Plan. The DNR recommends that JCI/Tyco include the additions summarized in **Attachment A**. JCI/Tyco may implement these recommendations without further review and approval by the DNR. The DNR recommends the JCI/Tyco also review the general recommendations in the DNR's response to the SI Status Report, to determine if there are additions to the field investigation that can be completed at this time.

2) *Status Report:* JCI/Tyco should submit the site investigation status report within **60 days** after completion of the field investigation and receipt of the laboratory data (Wis. Admin. Code § NR 716.15(1)(a)).

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

Attachments: Attachment A: Recommended Additions to the 2022 Field Investigation

cc: Scott Potter, Arcadis (via email: Scott.Potter@arcadis.com)
Jodie Peotter, DNR (via email: Jodie.Peotter@wisconsin.gov)
Dave Mielke, ChemDesign (via email: dmielke@chemdesign.com)

Attachment A – Recommendations for 2022 Field Investigation

Recommendation	Data Objective(s)	Basis of Recommendation
Add surface water sampling locations near the shoreline adjacent to MW046, MW047 and MW108	Evaluate surface water quality in the Menominee River	Evaluate PFAS in the Menominee river at points that may be influenced from groundwater discharging from bedrock and/or overburden adjacent to the Site (Wis. Admin. Code § NR 716.11(3)(a)).
To the extent practicable, attempt to measure surface water samples on or about the same time as the groundwater monitoring events.	Evaluate surface water quality in the Menominee River	Evaluate PFAS in the Menominee river at points that may be influenced from groundwater discharging from bedrock and/or overburden adjacent to the Site (Wis. Admin. Code § NR 716.11(3)(a)).
Install at least one permanent monitoring well near temporary well P-2 and screen the well across the water table; sample for 36 PFAS.	*Confirm if PFAS concentrations at the water table on the Stanton property are significantly higher than in the submerged shallow groundwater.*	Resolve if the concentration of PFAS (specifically FTSs) at the water table are significantly higher than in the submerged shallow groundwater. This finding could affect future evaluation and decisions on remedial action options (Wis. Admin. Code § NR 716.11(3)(b)).
Continue to sample a subset of wells in the overburden inside the barrier wall (e.g., MW008S/M, MW044S/M, MW011S/M and MW106S/M)	*Characterize the stability in PFAS concentrations inside the barrier wall and determine if FTSs are transforming to perfluoroalkyl carboxylic acids (PFCAs).*	Characterize the stability in PFAS concentrations inside the barrier wall. Increasing concentrations may indicate on-going sources that need to be identified and controlled (Wis. Admin. Code § NR 708.05(1)). Other trends may help determine if the FTSs are transforming to PFCAs in the groundwater at the Site, which could improve the understanding of the composition of PFAS detected outside the barrier wall (Wis. Admin. Code §§ NR 716.11(3)(a) and NR 716.11(4)) and could affect future evaluation and decisions on remedial action options (Wis. Admin. Code § NR 716.11(3)(b)).

Notes:

Italic = Suggested data objective, not included in the SI Work Plan