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December 16, 2021

MR. JEFFREY DANKO
JOHNSON CONTROLS, INC
5757 N. GREEN BAY AVENUE
MILWAUKEE, WI 53209

MR. SCOTT WAHL
TYCO FIRE PRODUCTS LP
1 STANTON STREET
MARINETTE, WI 54143

Via Email Only to jeffrey.howard.danko@jci.com and scott.wahl@jci.com

SUBJECT: Response to 4th Revised Long-Term Potable Well Sampling Plan
JCI/Tyco FTC PFAS, 2700 Industrial Parkway South, Marinette, WI
BRRTS #02-38-580694

Dear Mr. Danko and Mr. Wahl:

On October 1, 2021, the Wisconsin Department of Natural Resources (DNR) received the fourth *Revised Long-Term Potable Well Sampling Plan* (Sampling Plan v.4) for 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 appropriate fee of $425 required under Wisconsin Administrative Code (Wis. Adm. Code) § NR 749.04(1) for formal DNR review and response.

On July 16, 2021, JCI/Tyco submitted a letter responding to DNR's comments to Sampling Plan v.3, and on November 22, 2021, JCI/Tyco submitted a letter with updates to Sampling Plan v.4 for the Point of Entry Treatment (POET) systems. The DNR included these two letters in its review of Sampling Plan v.4.

This letter provides a summary of the DNR's review of Sampling Plan v.4. JCI/Tyco must continue to update the Sampling Plan semi-annually, and the next version (due April 1, 2022) must address the DNR's comments provided herein (Wis. Adm. Code § NR 716.17(1)). The updates are needed to keep the Sampling Plan current with respect to the wells and POET systems included in the plan, changes to the recommended groundwater standards and laboratory methods for per- and polyfluoroalkyl substances (PFAS) and new findings from advancements in the site investigation.

Background

JCI/Tyco is investigating and responding to the discharge of 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 fire suppressant training, testing, research and development of PFAS-containing aqueous film forming foams (AFFF) at the Site starting in the early 1960s.

Data collected to date by JCI/Tyco indicates PFAS contaminants have migrated from the FTC property and impacted drinking water wells and other media in the area. JCI/Tyco's site investigation to define the degree and extent of contamination is on-going. As part of the field investigation, JCI/Tyco is required to sample known and potentially impacted water supply wells per Wis. Adm. Code § NR 716.13(16).

Current Status of Private Drinking Water Wells

JCI/Tyco has sampled 173 drinking water wells ("wells") in an area south and east of the Site within the town of Peshtigo and city of Marinette; JCI/Tyco refers to the area as the private drinking water well sampling area (PWSA). The PWSA is shown on **Figure 1**. Initially, wells may have only been tested for 6 or 14 PFAS compounds; however, 18 PFAS compounds currently have recommended groundwater standards. Thus, in 2021 JCI/Tyco offered all wells in the PWSA testing for 36 PFAS compounds so that the results could be compared to the Wisconsin Department of Health Services' (DHS's) current and applicable recommended groundwater standards. As of June 2021, 140 well owners in the PWSA requested and received testing for 36 PFAS.

On August 6, 2021, JCI/Tyco documented sampling results collected through March 31, 2021 in the *Private Drinking Water Well Sampling Program Annual Summary Report* (PW Summary Report). A total of 37 wells in the PWSA have PFAS concentrations ≥ current and applicable recommended groundwater enforcement standards ("Recommended ES") [1]; some of these include wells not tested for 36 PFAS. An additional 47 wells in the PWSA had PFAS detected in the water samples, but the concentrations were less than the recommended ES.

The provision of alternative water supplies is required for persons whose water supply has, or is likely to be, affected by the contamination under Wis. Adm. Code § NR 708.05(4)(f). JCI/Tyco offers bottled water to all residents in the PWSA and has offered to install POET systems for wells where PFAS were detected at concentrations greater than the Recommended ES and where perfluorooctanoic acid (PFOA) or perfluorooctanesulfonic acid (PFOS) were detected above the reporting limit. JCI/Tyco maintains 45 POET systems at properties requesting a POET system in the PWSA (two additional POET system were installed but were since removed at the request of the owners).

Expanded Site Investigation Area

The DNR previously directed JCI/Tyco to sample wells beyond the PWSA; an area referred to as the expanded site investigation area (ESIA). The ESIA is shown on **Figure 1**. JCI/Tyco refused to complete the sampling in the ESIA; thus, to evaluate impacts to potential drinking water receptors in a timely manner, the DNR conducted the sampling of wells within the ESIA under the statutory authority provided by Wis. Stat. § 292.11(7)(a). On October 27, 2021, the DNR provided a letter to JCI/Tyco documenting the results of sampling efforts and outlining next steps JCI/Tyco is required to take within the ESIA, which includes sampling and provision of alternative drinking water supply to affected wells.

Sampling Plan Updates

The Sampling Plan documents the methods, frequency, and rationale for testing of wells in the PWSA and the maintenance and testing frequency for POET systems in the PWSA. JCI/Tyco states that the purpose of the sampling of private drinking water wells is to inform residents of their specific groundwater conditions relative to PFAS and the data are not a source of remedial decision-making data.

JCI/Tyco updates the Sampling Plan semi-annually to keep the plan current with respect to the wells and POET systems included in the plan, updates to the recommended PFAS standards and laboratory methods and

[1] In June 2019, the DHS recommended the Cycle 10 groundwater standards for PFOA and PFOS, and in November 2020 the DHS recommended groundwater standards for 16 additional PFAS (Cycle 11). The Cycle 11 recommended groundwater standards include PFOA and PFOS as part of a combined standards for six PFAS. In prior correspondence with JCI/Tyco, the DNR's reference to "Cycle 11" was intended to mean "Recommended ES" (current and applicable recommended groundwater enforcement standards for PFAS, inclusive of PFOA and PFOS).

advancements in the understanding of the degree and extent of contamination or trends in PFAS concentration in groundwater at the Site. JCI/Tyco submitted the first Sampling Plan on March 8, 2018. The Sampling Plan has been revised and updated on several occasions, and all the documents are posted to BRRTS on the Web. The DNR's comments to last version of the plan (Sampling Plan v.3) were provided to JCI/Tyco on June 18, 2021.

Summary of Sampling Plan v.4

Sampling Plan v.4 addresses many of the comments in the DNR's June 18, 2021 letter, and provides the current schedule and rationale for the sampling frequency applied to wells and POET systems in the PWSA. The sampling frequency is based on the number of prior samples, the PFAS concentrations detected in the prior samples and whether the well has a POET system. The DNR's understanding of Sampling Plan v.4 is summarized in **Attachment A**. (This summary includes the revisions to the sampling plan for the POET systems that JCI/Tyco submitted on November 22, 2021).

Sampling Plan v.4 includes the following:

- Lists all wells that have been tested for PFAS in the PWSA and categorizes them based on their testing results: PFAS ≥ Recommended ES; PFAS < Recommended ES; or PFAS below the laboratory reporting limit. The category is based on the highest concentration of PFAS detected in each well.
- Identifies which wells have a POET system and summarizes the carbon changeout frequency for each. The carbon changeout frequency is based on the results of at least 1 year of quarterly monitoring for each POET system. Moving forward, once a carbon changeout schedule is established, JCI/Tyco plans to collect a sample of the effluent prior to carbon changeout to verify that PFAS breakthrough has not occurred. If breakthrough is observed, the POET will return to a quarterly monitoring schedule to determine a new changeout frequency.
- Specifies that each property owner, tenant (if applicable) and the DNR will be notified of the sampling results within 10 days of receipt of the laboratory data.
- States plan to provide the DNR with database updates every two weeks and to submit a comprehensive PW Summary Report to document and evaluate the results by July 31st each year.

In Sampling Plan v.3, JCI/Tyco planned to discontinue sampling of the POET systems after 1 year and revert to a maintenance-only schedule based on the testing results. The DNR did not approve of this plan and directed JCI/Tyco to continue influent sampling for all POET systems, and to continue effluent sampling prior to carbon changeout for POET systems servicing wells with PFAS ≥ Recommended ES or Hazard Index ≥ 1.0.

Initially, in Sampling Plan v.4, JCI/Tyco added influent sampling for all POET systems but did not include any effluent sampling. However, in its November 22, 2021 letter, JCI/Tyco revised the POET system sampling plan to include effluent sampling for all POET systems, but no influent sampling. Those POET systems servicing wells with PFAS < Recommended ES will be tested biannually, and systems serving wells with PFAS ≥ Recommended ES will be sampled at least once a year prior to carbon change out (see **Attachment A**).

DNR Review

The DNR reviewed Sampling Plan v.4 and approves of the stated purpose, the current monitoring programs for wells and POET systems in the PWSA and the approach for reporting results to residents and the DNR.

The DNR agrees that sampling of the effluent from POET systems should be prioritized because it is a direct measure of drinking water quality provided to these residents. The DNR's approval assumes that JCI/Tyco will

always collect effluent samples prior to carbon changeout for POET systems servicing wells with PFAS Recommended ES, which may be quarterly in some situations. Revisions to the effluent sampling frequency will be required if the DNR's interpretation (presented in **Attachment A**) is incorrect.

The DNR accepts JCI/Tyco's plan to forego influent sampling in each POET system after the minimum of five influent samples are collected during POET system startup. The DNR's approval is based on expectation that JCI/Tyco will install NR 141-compliant monitoring wells to measure changes in groundwater quality over time in the PWSA. Influent sampling may be required in some locations in the future if the future groundwater conditions cannot be adequately assessed with NR 141 monitoring wells.

The two comments listed below, from the DNR's June 18, 2021 letter, were not fully addressed in Sampling Plan v.4 and must be addressed in Sampling Plan v.5.

Comment 1: Hazard Index Evaluation

The DHS uses a Hazard Index (HI) approach to evaluate cumulative risk from exposure to multiple PFAS in drinking water. The DNR directed JCI/Tyco to include plans to evaluate the hazard index in Sampling Plan v.4; specifically, this only needed to be done for wells having PFAS < Recommended ES.

JCI/Tyco states in the Sampling Plan v.4 that it disagrees with the HI methodology and that moving forward it will only complete the HI evaluation for new parcels added to the program that were not previously sampled. JCI/Tyco may disagree with the approach, but on March 30, 2021, the DNR adopted the DHS's HI approach and shared this with the community as a method to evaluate the risk from exposure to mixtures of PFAS. Thus, the directions remain the same and JCI/Tyco must use the DHS's hazard index approach to calculate the HI for all future testing results from private drinking water wells with PFAS < Recommended ES.

JCI/Tyco calculated the HI from prior testing results and found that all wells in the PWSA with PFAS < Recommended ES also had a HI < 1.0. A copy of JCI/Tyco's email from June 22, 2021 with this evaluation is provided in **Attachment B**.

- Based on past results from private drinking water wells in the PWSA, it is expected that most, if not all, future results will have HI < 1.0. Thus, the only action following the HI calculation will be for JCI/Tyco to add a narrative statement in the notification letters that inform residents that "the hazard index calculated from their testing results was less than the DHS's recommended limit of 1.0".
- However, if future results find that the HI ≥ 1.0 for one or more private drinking water wells having PFAS < Recommended ES, JCI/Tyco must provide an alternative water supply under Wis. Adm. Code § NR 708.05(4)(f) and communicate to users of these wells that "the hazard index calculated from their testing results was greater than the DHS's recommended limit of 1.0, and that an alternative drinking water source is recommended."

Comment 2: On-Going Evaluations and Revisions

JCI/Tyco is reminded that the finding and conclusions from the on-going site investigation and those presented in the annual PW Summary Reports are to be used as a basis for future revisions to the Sampling Plan. At a minimum, JCI/Tyco must evaluate any wells with PFAS < Recommended ES that show an increasing trend to determine if a more frequent sampling schedule is needed.

Next Steps:

JCI/Tyco is currently working with stakeholders and municipalities to advance discussions on the long-term drinking water solution(s) for the Site. JCI/Tyco must keep the Sampling Plan up to date and implement the approved Sampling Plan until other long-term water solution(s) are in place (Wis. Adm. Code § NR 716.17(1)). The updates are needed to keep the Sampling Plan current with respect to the wells and POET systems included in the plan, changes to the recommended groundwater standards and laboratory methods for PFAS and new findings from advancements in the site investigation.

At this time, JCI/Tyco should continue to update the Sampling Plan every 6 months; the next version (Sampling Plan v.5) is due **April 1, 2022**. In Sampling Plan v.5, JCI/Tyco must include the HI criteria discussed above and comment if any changes in the plan were needed based on the findings and conclusions from the on-going site investigation or private drinking water well testing results. If no changes are needed, this can be directly stated to document the evaluation.

On October 27, 2021, the DNR directed JCI/Tyco to submit a long-term monitoring plan for drinking water wells in the ESIA by January 2022. Following the DNR's review of JCI/Tyco's plan for the ESIA, it may be possible to merge the Sampling Plans for the PSWA and ESIA into Sampling Plan v.5.

As a reminder, this Site is subject to an enforcement action and therefore all submittals to the DNR under Wis. Adm. Code chs. NR 700-799 and submittals directed by the DNR must be accompanied by an Wis. Adm. Code ch. NR 749 fee per Wis. Stat. § 292.94. These fees are not pro-ratable or refundable per Wis. Adm. 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.

The DNR appreciates your efforts to investigate and remediate this Site. 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

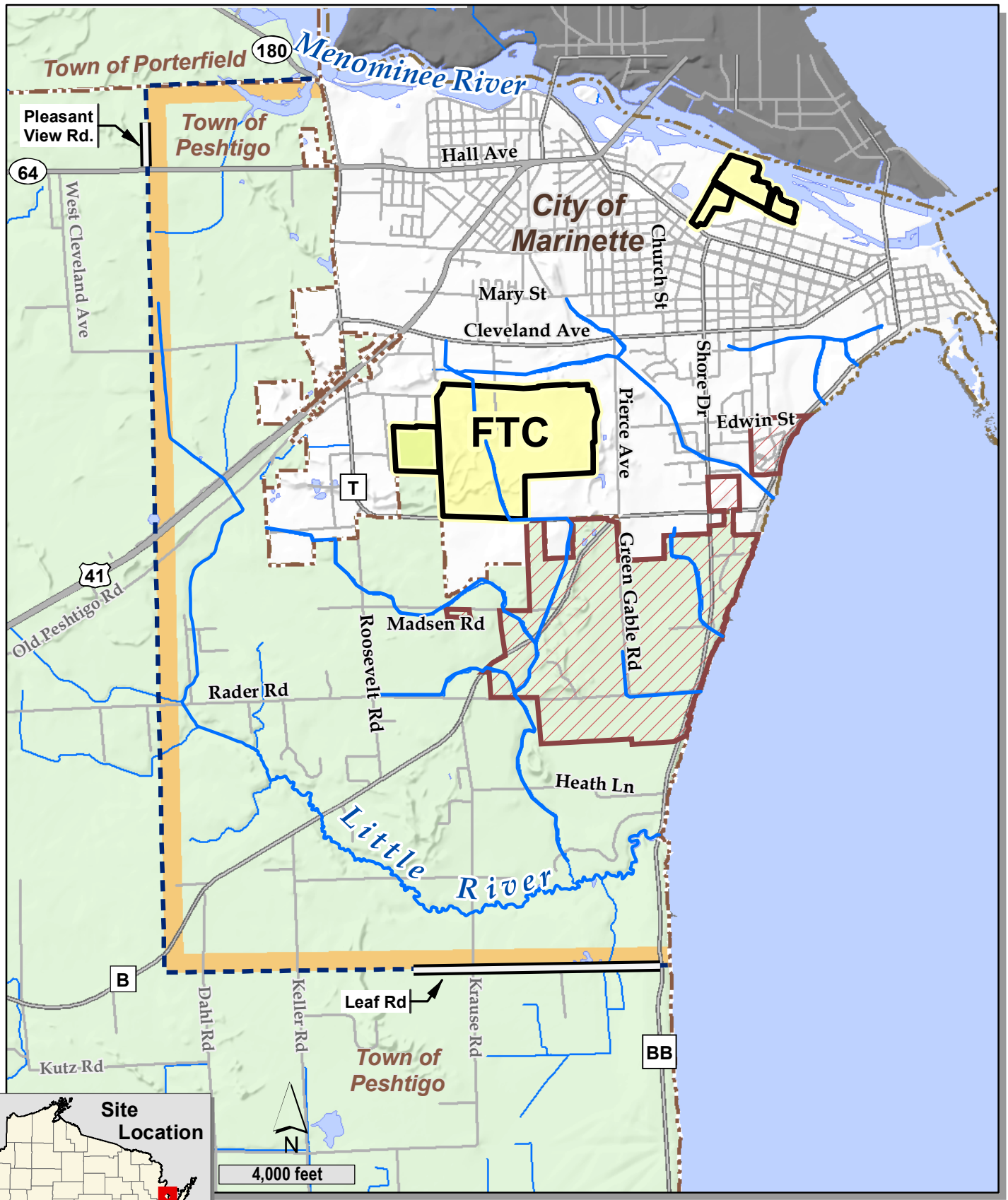
Alyssa Sellwood, PE
Complex Sites Project Manager
Remediation & Redevelopment Program

Attachments: Figure 1 – Sampling Areas
Attachment A: Summary of Potable Well and POET Sampling Programs – Sampling Plan v.4
Attachment B: Hazard Index Evaluation

cc: Denice Nelson, JCI (via email: Denice.karen.nelson@jci.com)
Scott Potter, Arcadis (via email: Scott.Potter@arcadis.com)
Bridget Kelly, DNR (via email: bridgetb.kelly@wisconsin.gov)
Jodie Peotter, DNR (via email: Jodie.Peotter@wisconsin.gov)
Kyle Burton, DNR (via email: Kyle.Burton@wisconsin.gov)

BRRTS 02-38-580694

Sampling Areas



Legend

- Expanded Site Investigation Area
- JCI/Tyco Property Boundary
- JCI/Tyco Potable Well Sampling Area

Figure 1

Wisconsin Department of Natural Resources
Remediation & Redevelopment Program
- JJP, Dec 10, 2021

Path: C:\Users\papezj\Documents\ArcGIS\Projects\JCI_LOCAL_COPY_GIS\GIS_Working_New\JCI_FTC_PWLTMP_20211104.mxd, Date Saved: 12/10/2021 3:49:14 PM, Saved By: papezj

Potable Well Sampling Program (without POET system) - Sampling Plan v.4

Potable Well Sample Result	Year 1	Year 2	Year 3	Year 4+*
PFAS < Recommended ES	Quarterly (or four events[1])	Semi-annually	Annually	Biannually (Every 2 years)
PFAS ≥ Recommended ES or HI ≥ 1.0 (one or more prior sampling events)		Quarterly	Annually	Annually

Footnotes:

[1] If wells previously tested could not be sampled quarterly for four events, then those wells will be sampled semi-annually until they reach the four events after which they will start on the frequency described under Year 4+ based on the results.

Grey Highlights = Item not included in Sampling Plan v.4 that must be added during to Sampling Plan v.5

HI: Hazard Index

PFAS: Per- and polyfluoroalkyl substances

POET: Point of entry treatment

POET System Sampling and Maintenance Program - Sampling Plan v.4

POET System Effluent[1] (First Year or More)	PFAS Potable Well (Influent) Result	PFAS Sampling			POET System Maintenance[2,3]	
		Influent	Mid-Point	Effluent[4]	GAC Changeout	POET ID[5]
Breakthrough before 3 mos.	< Recommended ES	--	--	Biannually	Every 2-3 mos.	
	≥ Recommended ES or HI ≥ 1.0			Every 2-3 mos.		5, 7, 19
Breakthrough before 6 mos.	< Recommended ES	--	--	Biannually	Every 3 mos.	
	≥ Recommended ES or HI ≥ 1.0			Every 3 mos.		4, 6, 12, 37
Breakthrough between 6 and 9 mos.	< Recommended ES	--	--	Biannually	Every 6 mos.	
	≥ Recommended ES or HI ≥ 1.0			Every 6 mos.		11, 17, 30
Breakthrough between 9 and 12 mos.	< Recommended ES	--	--	Biannually	Every 9 mos.	10, 36
	≥ Recommended ES or HI ≥ 1.0			Every 9 mos.		1, 2
No Breakthrough by 12 mos.	< Recommended ES	--	--	Biannually	Every 12 mos.	13, 14, 15, 18, 20, 21, 22, 23, 24, 25, 26, 33, 35, 40
	≥ Recommended ES or HI ≥ 1.0			Every 12 mos.		16, 27, 28, 29, 31, 32, 34
To Be Determined[1,4]	< Recommended ES	Quarterly	Quarterly	Quarterly	To Be Determined	38, 39, 42, 45, 46, 47
	≥ Recommended ES or HI ≥ 1.0					8, 41, 43, 44

Footnotes:

[1] The influent, mid-point and effluent are sampled when the POET system is installed and then quarterly thereafter for 1 year (five total events). The frequency of POET system sampling and maintenance that follows is based on these results.

[2] Maintenance also includes replacement of sediment filters every 3 months and replacement of the UV lights and quartz sleeve every 12 months.

[3] When systems are taken off-line for winterization or other extended vacancy, the GAC is replaced and sampling and maintenance restart when occupancy resumes.

[4] Effluent sampling to occur just before GAC changeout. If breakthrough is observed in the effluent sample, then POET moves to the "To Be Determined" program for up to year to select new changeout schedule for the GAC.

[5] POET systems 3 and 9 were removed at request of owner.

Grey Highlights = Items not included in Sampling Plan v.4 or JCI/Tyco's email addendum dated November 22, 2021 (see Attachment C) that must be added to Sampling Plan v.5

GAC: Granular activated carbon

HI: Hazard Index

PFAS: Per- and polyfluoroalkyl substances

POET: Point of entry treatment

From: Jeffrey Howard Danko
To: Sellwood, Alyssa A - DNR
Cc: Tim Maciolek; Scott D Wahl
Subject: Potable Well Sampling Area Hazard Index Evaluation
Date: Tuesday, June 22, 2021 10:29:21 AM

Alyssa:

I am writing in response to your request to evaluate whether any of the 172 wells within the Private Well Sampling Area (PWSA) sampled by Tyco, using the Wisconsin Department of Health Services Hazard Index analysis, had a score that moved above 1 on the Hazard Index analysis. While we did perform the analysis at your request, we have strong concerns about the use of the Hazard Index scoring analysis and our evaluation of the well sampling data (all of which has been previously provided to the WDNR) using the new Hazard Index criteria should not be construed as an acceptance by Tyco that the Hazard Index criteria/scoring method should be used going forward, and should not be construed as Tyco's agreement that the underlying assumptions used in the Hazard Index analysis are applicable or appropriate.

Tyco has received data on 125 samples collected within the PWSA that were analyzed for the 36-analyte list of PFAS compounds. It is important to note that analysis is pending on 10 additional samples; the remaining 37 private wells are either no longer in use or well owners have been non-responsive to requests for additional sampling. An evaluation of the private well results with PFAS detections below the recommended Cycle 11 enforcement standards was completed to assess whether they met or exceeded a hazard Index of 1. The evaluation found that none of the wells resulted in a change of status.

I trust the information meets with your request. Please let me know if you have additional questions.

Jeffrey Danko
Director Remediation Programs
Johnson Controls
5757 N. Green Bay Avenue
Milwaukee, WI 53209
262.349.2528
jeffrey.howard.danko@jci.com

From: Sellwood, Alyssa A - DNR
To: Jeffrey Howard Danko
Cc: Scott D Wahl; Kelly, Bridget B - DNR
Subject: PFAS Hazard Index (HI) Information and Directions
Date: Thursday, April 15, 2021 4:37:00 PM
Attachments: image001.png
image002.png
image003.png
image004.png
image007.png

Jeff – In response to the recent notice "DNR Adopts DHS Hazard Index for PFAS", you requested additional information on the Hazard Index (HI) calculation and reporting.

The HI formula and examples of the calculation can be found in the DHS's PFAS Hazard Index Memo.

Please note, the HI is not intended to be used to develop cleanup standards under ch. NR 722, but does apply to assessing the cumulative risk of exposure to PFAS in drinking water. As such, if the HI is equal to or exceeds 1.0 in drinking water, DHS and DNR recommend a safe alternative drinking water source be provided to the affected party as soon as possible.

JCI/Tyco has provided alternative water to parties where its testing found drinking water exceeded the Cycle 10 and Cycle 11 recommended groundwater standards for PFAS based on previous sampling results. With that in mind, here are directions to focus your efforts when evaluating and reporting on the newly adopted HI for PFAS:

Future Private Well Sampling:

- Complete the HI calculation when evaluating PFAS results for all future private well sampling.
- Include the results of the HI calculation in the notification letters sent to property owners and tenants.
    - Where HI calculation is less than 1.0, include a note in the text stating that the HI calculation was completed and was not over 1.0.
    - Where HI calculation is equal to or exceeds 1.0, include the HI calculation results in in the summary table and discuss the finding is the text.
- Prepare two template notification letters (one for each HI scenario), and provide drafts to the DNR for review prior to use.

Past Private Well Sampling:

- Complete the HI calculation on past private well sample results where concentrations of PFAS were less than the Cycle 10 or Cycle 11 recommended standards. (Private wells that are already receiving alternative water, but which were below Cycle 10 and Cycle 11 recommended standards must still be included in HI evaluation because the calculation results may change the risk communication provided to those parties.)
- Notify any parties where the HI is equal to or exceeds 1.0 and provide safe alternative drinking water to those affected parties; if requested by the well owner, send them an additional sample results notification letter utilizing the HI template letter described above.
- Summarize the findings and conclusions in a memo to DNR by May 7, 2021; in the summary, distinguish between wells that have been analyzed for 36 PFAS and wells where one or more

PFAS having recommended standards are missing from the analyte list.

Please let me know if you have any questions. Glad to discuss further if needed.

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