Gray, Jane K - DNR

From: Pratap Singh <psingh@ksinghengineering.com>
Sent: Wednesday, December 18, 2024 5:33 PM
To: Gray, Jane K - DNR
Cc: Que El-Amin; Kathryn Balachandran; Shane LaFave; Robert Fedorchak; Taylor Bosacker; Walden, James E -DNR; Mylotta, Pamela A - DNR
Subject: RE: Community Within the Corridor – East Block (02-41-263675) - Technical Assistance Letter
Attachments: Air Flow Rate for Radiello 130 Samplers; CWC EB HVAC Report.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Hi Jane,

Thank you for sending the additional information about Radiello Passive Samplers. We selected passive sampling using the Radiello 130 based on the understanding that they do not require a minimum air flow rate in the traditional sense because they operate based on the principle of diffusion rather than an active air flow. The samplers are designed to passively collect target analytes from the air through molecular diffusion, where the compounds diffuse into the sampler over a specified exposure period. The diffusion process relies on the concentration gradient of the analyte in the air, so a higher air exchange or more open environments could lead to a greater diffusion rate, but this is not a "minimum flow rate" that the user must control. Moreover, with an active HVAC, air flow is controlled.

Further, per Attachment 1 that you sent and expanding on the text in the first paragraph, two things are important to note :

- The principle of operation of Radiello Passive sampler is based on mass transfer using Ficks Law which uses concentration gradient of analytes as a basis for contaminant transport. Momentum transfer by inducing speed is not considered in the equation.
- on page 52, it notes that “Sampling rate is invariant with humidity in the range 15 ÷ 90% and with wind speed between 0.1 and 10 m·s-1.” The passive samplers are more impacted by temperature, which we have accounted for and been documenting. Please also note that Attachment 1 provided by WDNR refers to the minimum air flow rate for passive sampling specifically in soil gas.

We also reached out to Eurofins Air Toxics and their response is attached. There is a typo in the 1st bullet where it should say 20 ft/min. Air Toxics interpretation is consistent with industry standard practices where there is no need for additional ventilation in a facility where HVAC is fully operational.

Please note that the air flow rate at CWC-East Block units is 120 cfm based on the HVAC report (refer to attachment). In our opinion, the flow rate is such that additional ventilation is not necessary.
Having said this, we are prepared to introduce additional air flow as required by WDNR. We will be starting the 4th round of commissioning tomorrow. Please let us know if you have any questions.

Thank you,

Pratap N. Singh, Ph.D., PE
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From: Gray, Jane K - DNR <jane.gray@wisconsin.gov>
Sent: Monday, December 16, 2024 1:04 PM
To: Angy Singh <angy.singh@ksinghengineering.com>
Cc: Que El-Amin <que@scott-crawford.com>; Pratap Singh <psingh@ksinghengineering.com>; Kathryn Balachandran <kbalachandran@ksinghengineering.com>; Shane LaFave <Shane@roerscompanies.com>; Robert Fedorchak <rfedorchak@patrioteng.com>; Taylor Bosacker <taylor.bosacker@roerscompanies.com>; Walden, James E -DNR <jamese.walden@wisconsin.gov>; Mylotta, Pamela A - DNR <Pamela.Mylotta@wisconsin.gov>
Subject: RE: Community Within the Corridor – East Block (02-41-263675) - Technical Assistance Letter

Hi Angy – Thank you for providing this email update. Attached are two reference documents for the Radiello passive samplers. Please refer to Figure 1 of "Attachment 2", which discusses the necessary air flow rates to achieve reliable indoor air results using the Radiello samplers. This document was taken from the sigma-aldrich.com/radiello webpage. "Attachment 1" is from the Radiello webpage (radiello.com).

Please do not hesitate to reach out if you have any further questions.

Thank you, Jane

Jane Gray
she/her/hers
Phone: (414) 435-8021
jane.gray@wisconsin.gov

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From: Angy Singh <angy.singh@ksinghengineering.com>
Sent: Friday, December 13, 2024 4:54 PM
To: Gray, Jane K - DNR <jane.gray@wisconsin.gov>
Cc: Que El-Amin <que@scott-crawford.com>; Pratap Singh <psingh@ksinghengineering.com>; Kathryn Balachandran <kbalachandran@ksinghengineering.com>; Shane LaFave <Shane@roerscompanies.com>; Robert Fedorchak <rfedorchak@patrioteng.com>; Taylor Bosacker <taylor.bosacker@roerscompanies.com>
Subject: RE: Community Within the Corridor – East Block (02-41-263675) - Technical Assistance Letter

Hi Jane,

Thank you for the letter. As discussed this morning, we will be proceeding with our plan for commissioning next week and will be adjusting our plan according to WDNR's feedback. We did want to follow up on one item in the letter regarding the Radiello 130 passive samplers. Could you share the source/documentation detailing the air flow rate requirements for this type of sampler? We spoke with Eurofins Air Toxics who provide the passive samplers, and they did not indicate any such requirement. We'd like to confirm if you have additional information leading into next week and make sure we are prepared.

Thanks, and have a nice weekend!

Angy K. Singh, Ph.D.
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From: Gray, Jane K - DNR <jane.gray@wisconsin.gov>
Sent: Friday, December 13, 2024 11:09 AM
To: Shane LaFave <Shane@roerscompanies.com>
Cc: Que El-Amin <que@scott-crawford.com>; Pratap Singh <psingh@ksinghengineering.com>; Kathryn Balachandran <kbalachandran@ksinghengineering.com>; Robert Reineke <rreineke@ksinghengineering.com>
Subject: Community Within the Corridor – East Block (02-41-263675) - Technical Assistance Letter

Good morning Shane – As was discussed with K. Singh this morning, please see the attached DNR letter, and do not hesitate to reach out if you have any questions.

Thank you, Jane

Jane Gray
she/her/hers
Hydrogeologist Program Coordinator - Remediation and Redevelopment Program
West Central Region
Wisconsin Department of Natural Resources
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jane.gray@wisconsin.gov


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Gray, Jane K - DNR

From: Heidi Hayes <Heidi.Hayes@et.eurofinsus.com>
Sent: Wednesday, December 18, 2024 11:53 AM
To: Angy Singh
Cc: Kathryn Balachandran; Pratap Singh; Robert Reineke; rfedorchak@patrioteng.com; Jade White
Subject: Air Flow Rate for Radiello 130 Samplers

Dear Angy,

Thank you for providing the attachments and highlighting WDNR's requirement regarding air flow conditions for the Radiello 130 samplers. We've reviewed the materials and investigated the guidance referenced in the documents you shared.

1. **Air Flow Minimum Requirement (10 cm/s):**
   - The 10 cm/s value is the lower range of air velocity used by the Radiello vendor in determining the published sampling rates using their standard atmosphere chamber, with the upper range being 10 m/s. The 10 cm/s air velocity minimum condition cited in the Attachments (Radiello.com and Sigma-Aldrich documentation) ensures that the sampler operates under conditions where air movement supports the published diffusive sampling rate, preventing potential starvation of the sampler in stagnant environments. The Sigma-Aldrich specifically calls out soil gas as an application where lower face velocities affect the sampling rate.
2. **EPA Studies:**
   - Historically, the EPA has not monitored or documented air velocity (e.g., >10 cm/s) as a parameter during research with Radiello samplers for indoor air monitoring. Their studies focused on performance in a variety of environments, assuming typical air movement conditions with functioning HVAC systems.
   - These studies demonstrated reliable results in indoor air monitoring scenarios without specific documentation of air velocity.
3. **Practical Context for Air Flow:**
   - The required 10 cm/s air velocity corresponds to a very low air movement threshold (approximately 2 feet per minute). In buildings with active HVAC systems, this condition is typically considered easily achievable under normal operational circumstances by placing samplers in open and unobstructed areas.
   - However, in low-flow zones or areas with stagnant air (e.g., unoccupied rooms with no ventilation such as a closet), it may be necessary to consider supplementing air flow via fans or consider alternative sampling placements.

Please let us know if WDNR has provided specific guidelines on verifying air velocity or if further clarification is required from our team. We're committed to supporting your monitoring program and ensuring reliable data for your project.

Regards,

Heidi Hayes
Technical Director

Eurofins Environment Testing Northern California, LLC *(Eurofins Air Toxics)*

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AIR BALANCE TEST REPORT

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From The People Who Know Heating and Air Conditioning Best
2840 NORTH BROOKFIELD ROAD BROOKFIELD, WISCONSIN 53045

Project Name: CWC East Block 1 B North West Added Ventilation
3100 West Centerr St Milwaukee WI 53210

Page 1 of 1
Date 10/3/2024
Technician DA

System: Renewaire HE7IN 500 CFM Nominal ERV

	Registers/Diffuser			Design		Preliminary		Final		% of	
Area served	Type	Size	Ak	CFM	Vel.	Vel.	Vel.	Vel.	CFM	design	Notes
Fitness 1054	DCT	16 x 3		125					120		
Fitness 1054	DCT	16 x 3		125					120		
Womens 1055	CD	8		125					120		
Mens 1053	CD	8		125					125		
Total				500					485		
ERV on 24/7	Filter and unit maintence is required for satisfactory operation										

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Project Name:	CWC East Block 2A East Block	**Page**	1 OF 1
	3100 W Center St Milwaukee	**Date**	1/24/2024
	ERV - Bath Exhaust	**Technician**	DA
System:	HE1.5XRTR ERV/ RTU		

				Kitchen		Bath1		Bath2			
Area served	Type	Size		CFM		CFM		CFM			Notes
2B 2082	CD	4"		20		20		X			
2B 2083	CD	4"		20		20		X			
2B 2084	CD	4"		20		20		X			
2B 2085	CD	4"		20		21		X			
2B 2086	CD	4"		20		21		X			
2B 2087	CD	4"		20		20		X			
2B 2088	CD	4"		20		20		X			
2B 2092	CD	4"		20		20		X			
2B 2093	CD	4"		21		20		X			
2B 2094	CD	4"		20		20		X			
2B 2095	CD	4"		20		20		X			
2B 2096	CD	4"		20		20		X			
2B 2097	CD	4"		20		21		X			
2B 2098	CD	4"		20		21		X			
3B 3082	CD	4"		20		20		X			
3B 3083	CD	4"		20		20		X			
3B 3084	CD	4"		20		21		X			
3B 3085	CD	4"		20		21		X			
3B 3086	CD	4"		20		21		X			
3B 3087	CD	4"		20		21		X			
3B 3088	CD	4"		20		21		X			
3B 3092	CD	4"		20		21		X			
3B 3093	CD	4"		20		21		X			
3B 3094	CD	4"		20		21		X			
3B 3095	CD	4"		20		20		X			
3B 3096	CD	4"		20		21		X			
3B 3097	CD	4"		20		21		X			
3B 3098	CD	4"		20		21		X			

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Project Name: CWC East Block 1 B East Block
3100 W Center St Milwaukee
ERV - Bath Exhaust South west 2nd and 3rd floor

System: HE1.5XRTR ERV2 AND RTU 1

Page 1 of 1
Date 1/24/2024
Technician DA

				Kitchen		Bath 1		Bath 2			
Area served	Type	Size		CFM		CFM		CFM		design	Notes
1 B SW 2039 4 BR	CD	4"		21		22		21			
1 B SW 2040 3 BR	CD	4"		22		21		21			
1 B SW 2041 3 BR	CD	4"		21		22		21			
1 B SW 2042 3 BR	CD	4"		22		22		22			
1 B SW 2043 3 BR	CD	4"		21		22		22			
1 B SW 2044 3 BR	CD	4"		21		21		22			
1 B SW 2045 1 BR	CD	4"		22		22		X			
1 B W 2056 3 BR	CD	4"		21		21		22			
1 B W 2057 3 BR	CD	4"		20		22		22			
1 B W 2058 3 BR	CD	4"		21		22		21			
1 B W2059 3 BR	CD	4"		22		21		21			
1 B SW 3039 3 BR	CD	4"		21		21		21			
1 B SW 3040 3 BR	CD	4"		20		20		21			
1 B SW 3041 3 BR	CD	4"		21		20		21			
1 B SW 3042 3 BR	CD	4"		21		21		20			
1 B SW 3043 3 BR	CD	4"		22		22		20			
1 B SW 3045 1 BR	CD	4"		21		21		X			
1 B W 3056 3 BR	CD	4"		22		21		21			
1B W 3057 3 BR	CD	4"		21		21		20			
1 B W 3058 3 BR	CD	4"		22		21		21			
1 B W 3059 3 BR	CD	4"		22		22		22			
1 BW 3044 3 BR	CD	4"		22		21		22			

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Project Name:	CWC East Block 1 B East Block 3100 W Center St Milwaukee ERV - Bath Exhaust 1 B South East 2nd and 3rd	**Page**	1 of 1
		Date	1/24/2024
		Technician	DA
System:	HE1.5XRTR ERV2 AND RTU 1		

				Kitchen		Bath 1		Bath 2			
Area served	Type	Size		CFM		CFM		CFM			Notes
1B SE 2015 1 BR	CD	4"		20		21		X			
1B SE 2016 1 BR	CD	4"		20		21		X			
1B SE 2017 4 BR	CD	4"		20		20		20			
1B SE 2018 3 BR	CD	4"		21		21		20			
1 B SE 2019 3 BR	CD	4"		20		20		20			
1B SE 2022 1 BR	CD	4"		20		20		X			
1B SE 2023 1 BR	CD	4"		21		20		X			
1B SE 2014 1 BR	CD	4"		20		20		X			
1B SE 3014 1 BR	CD	4"		21		21		X			
1B SE 3015 1 BR	CD	4"		20		20		X			
1 B SE 3016 1 BR	CD	4"		20		21		X			
1 B SE 3017 4 BR	CD	4"		20		21		20			
1 B SE 3020 1 BR	CD	4"		20		20		X			
1 B SE 3021 1 BR	CD	4"		20		21		X			
1 B S 3025 1 BR	CD	4"		20		20		X			
1 B S 3026 3 BR	CD	4"		20		21		20			
1 B S 3035 3 BR	CD	4"		21		21		21			
1B S 3036 3 BR	CD	4"		21		20		20			
1 B S 3037 3 BR	CD	4"		20		21		21			
1B S 2025 1 BR	CD	4"		20		20		X			
1B S 2026 3 BR	CD	4"		21		20		21			
1 BS 2035 3 BR	CD	4"		21		20		20			
1 B S 2036 3 BR	CD	4"		21		20		21			
1B S 2037 3 BR	CD	4"		20		21		20			

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Project Name:	CWC East Block 2 B East Block 3100 W Center St Milwaukee	**Page**	1 of 1
		Date	1/24/2024
	ERV - Bath Exhaust	**Technician**	DA
System:	HE1.5XRTR ERV / RTU		

				Kitchen		Bath1		Bath2			
Area served	Type	Size		CFM		CFM		CFM			Notes
2B 2110	CD	4"		20		20		X			
2B 2111	CD	4"		20		21		X			
2B 2112	CD	4"		20		20		X			
2B 2113	CD	4"		20		20		X			
2B 2114	CD	4"		20		20		X			
2B 2115	CD	4"		20		21		X			
2B 2116	CD	4"		20		20		X			
2B 2117	CD	4"		21		21		X			
2B 2079	CD	4"		20		20		21			
3B 3104	CD	4"		21		20		X			
3B 3109	CD	4"		21		20		20			
3B 3110	CD	4"		20		21		X			
3B 3111	CD	4"		20		21		X			
3B 3112	CD	4"		21		21		X			
3B 3113	CD	4"		21		21		X			
3B 3114	CD	4"		21		20		X			
3B 3115	CD	4"		21		21		X			
3B 3116	CD	4"		21		20		X			
3B 3117	CD	4"		21		21		X			
3B 3079	CD	4"		21		21		21			

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Project Name:	CWC East Block 1 B East Block	**Page**	1 of 1
	3100 W Center St Milwaukee	**Date**	1/24/2024
	ERV - Bath Exhaust NE , NW	**Technician**	DA
System:	HE1.5XRTR ERV2 AND RTU 1		

				Kitchen		Bath 1		Bath 2			
Area served	Type	Size		CFM		CFM		CFM			Notes
1 B NW 2061 1 BR	CD	4"		20		21		X			
1 B NW 2062 4 BR	CD	4"		21		23		21			
1 B NW 2063 4 BR	CD	4"		21		22		22			
1B NW 2064 4 BR	CD	4"		22		22		23			
1B NW 2065 4 BR	CD	4"		22		22		21			
1B NE 2068 3 BR	CD	4"		20		20		22			
1B NE 2070 1 BR	CD	4"		20		21		X			
1 B NE 2071 1 BR	CD	4"		20		22		X			
1 B NE 2077 1 BR	CD	4"		20		23		X			
1 B NW 3061 2 BR	CD	4"		20		20		X			
1 B NW 3062 4 BR	CD	4"		21		21		21			
1 B NW 3063 4 BR	CD	4"		22		21		20			
1 B NW 3064 4 BR	CD	4"		21		21		22			
1 B NW 3065 3 BR	CD	4"		22		22		22			
1 B NE 3067 3 BR	CD	4"		21		22		22			
1 B NE 3068 3 BR	CD	4"		20		22		21			
1 B NE 3069 Std	CD	4"		22		22		X			
1 B NE 3071 2 BR	CD	4"		20		21		X			
1B NW 2067 3 BR	CD	4"		21		21		22			
1B NW 3077 1 BR	CD	4"		20		21		X			
									0		

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Project Name:	CWC East Block 1 B East Block	**Page**	1 of 1
	3100 W Center St Milwaukee	**Date**	1/24/2024
	ERV - Bath Exhaust 1B S and SE	**Technician**	DA
System:	EV300		

				Kitchen		Bath 1		Bath 2			
Area served	Type	Size		CFM		CFM		CFM			Notes
1B SE 1014 2 BR	CD	4"		22		22		X			
1B S 1025 1 BR	CD	4"		22		22		X			
1B S 1026 3 BR	CD	4"		22		22		23			
1B S 1035 3 BR	CD	4"		23		22		23			
1B S 1036 3 BR	CD	4"		22		22		23			
1B S 1037 3 BR	CD	4"		23		23		22			
									0		

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2840 NORTH BROOKFIELD ROAD BROOKFIELD, WISCONSIN 53045

Project Name:	CWC East Block 2 B East Block	**Page**	1 of 1
	3100 W Center St Milwaukee	**Date**	1/24/2024
	ERV - Bath Exhaust 1 B SW 1 ST FLOOR	**Technician**	DA
System:	HE1XINV ERV		

				Kitchen		Bath 1		Bath 2			
Area served	Type	Size		CFM		CFM		CFM			Notes
1 B SW 1039 4 BR	CD	4"		20		20		20			
1 B SW 1040 3 BR	CD	4"		21		20		20			
1 B SW 1041 3 BR	CD	4"		20		20		21			
1 B SW 1042 3BR	CD	4"		21		21		21			
1 B SW 1043 3 BR	CD	4"		20		20		21			
1 B SW 1044 3 BR	CD	4"		20		20		20			
1 B SW 1045 1 BR	CD	4"		21		21		X			
1 B W 1050 STUD	CD	4"		20		21		X			
1B W 1051 STUD	CD	4"		21		21		X			
				184					0		