



BEAZER EAST, INC.

c/o Three Rivers Management, Inc. (Agent for Beazer East, Inc.)
600 River Avenue, Suite 200, Pittsburgh, PA 15212-5994

April 24, 2020

Mr. Christopher Saari
Wisconsin Department of Natural Resources
2501 Golf Course Road
Ashland, WI 54806

Re: Response to WDNR March 20, 2020 Letter
Former Koppers Inc. Facility – Superior, Wisconsin
DNR BRRTS #02-16-000484

Mr. Saari,

Beazer East, Inc. (Beazer) is writing in reply to the Wisconsin Department of Natural Resources' (WDNR's) March 20, 2020 letter concerning the *Human Health and Ecological Risk Assessment (2009 HHERA)* for the off-property portion of the Former Koppers Inc. Facility (the Site), and its use as part of the Great Lakes Legacy Act (GLLA) Focused Feasibility Study (FFS) Project. In its March 20 letter, WDNR states that it is "unable to approve the HHERA under Wis. Admin. Code § NR 722.11(2)" and "unable to support the inclusion of Beazer's HHERA as a line of evidence under a weight-of-evidence approach for the FFS prepared under the GLLA project."

In summary, Beazer is disappointed with WDNR's March 20 determination that it is unable to support its use as a line of evidence for the GLLA FFS Project. Beazer continues to believe that use of the 2009 HHERA as a line of evidence for determining media/areas/volumes potentially requiring remediation is appropriate and justifiable.

The remainder of this letter provides Beazer's responses to specific statements from WDNR's March 20 letter. Excerpts from WDNR's letter are provided in *italics*, followed by Beazer's response in **bold**.

Although the DNR considered Beazer's request to prepare and submit a risk assessment to develop environmental standards for the site and Beazer submitted the Human Health and Ecological Risk Assessment referenced above, Beazer, as a responsible party, is required under Wis. Admin. Code § NR 722.11 (1) to demonstrate to the satisfaction of the DNR that compliance with applicable environmental standards in Wis. Admin. Code § NR 722.09 (2) will not be protective of public health, safety and welfare and the environment, or that compliance with the applicable residual contaminant levels in Wis. Admin. Code ch. NR 720 is not practicable. This demonstration is necessary under Wis. Admin. Code § NR 722.11 (1) for the DNR to grant approval for the preparation and submittal of a risk assessment.

Beazer Response:

First, WDNR's assertion that "DNR considered Beazer's request to prepare and submit a risk assessment..." does not acknowledge the fact that it was WDNR that initially proposed that Beazer prepare a Site-specific risk assessment, and that WDNR and Beazer worked collaboratively over a five year period from 2004 to 2009 to develop an agreed-upon approach to preparing a Site-specific risk assessment, including a work plan for supplemental data collection to support the risk assessment (which was implemented and the results subsequently incorporated into the risk assessment) and a series of memoranda that outlined

specific approach and assumptions to be used for the human health and ecological risk assessments (which WDNR provided comments on and Beazer addressed or provided responses to those comments). In response to WDNR's recommendation, significant costs and resources were expended by Beazer collecting and compiling data to support the evaluation of site-specific risk. The following timeline summarizes the key communications and correspondence related to development, submittal, and review of the 2009 HHERA:

- **01/22/2004:** WDNR issued a letter to Beazer stating that “Based on the existing compiled data, a preliminary scoping level risk assessment should be done for all the contaminants of concern as listed above in the off site areas.” and “Based on the screening level information provided on the above, WDNR will discuss with Beazer the need for any additional studies that may include conducting more formal, structured screening level and baseline risk assessments for the off site areas.”
- **11/17/2004:** BBL, in behalf of Beazer, submitted a “Work Plan for Outfall 001 Drainage Ditch and Crawford Creek Investigation Activities” to WDNR. The Work Plan included the collection of fish, insect, sediment and floodplain soil samples to support subsequent risk evaluations.
- **01/21/2005:** WDNR submitted a letter to Beazer providing comments on the 11/17/04 Work Plan.
- **02/10/2005:** BBL, on behalf of Beazer, submitted a letter to WDNR responding to WDNR’s 1/21/05 Work Plan comments, including providing additional information regarding how the data to be collected would subsequently be used for risk evaluations; the field work was subsequently implemented from April to December 2005.
- **02/21/2006:** BBL, on behalf of Beazer, submitted the “Off-Property Investigation Data Summary Report” to WDNR, which summarized the scope and findings of the off-property investigations completed in 2005 (i.e., implementation of the 11/17/04 Work Plan) and presented a compilation of all (2005 and pre-2005) data for the off-property portion of the Site. The report concluded that “These investigations provide a sufficient dataset and understanding of Site conditions to proceed with human health and ecological risk characterizations.”
- **03/21/2006:** BBL, on behalf of Beazer, submitted technical memoranda prepared by AMEC, entitled “Approach to Ecological Risk Assessment” and “Approach to Human Health Risk Assessment,” to WDNR identifying Beazer’s proposed approach for developing Site-specific human health and ecological risk assessments. The transmittal letter stated that “The overall purpose in submitting these memoranda is to provide a basis for discussions and consensus-building with the WDNR (and supporting agencies) regarding the risk assessment approaches such that, when submitted to WDNR, the documents will be deemed complete with respect to scope and will only require review and evaluation of numeric calculations and written conclusions.”
- **10/30/2006:** WDNR submitted a letter to Beazer providing comments on the 3/31/06 Approach to Ecological Risk Assessment memorandum.
- **01/16/2007:** AMEC, on behalf of Beazer, submitted a letter to WDNR responding to WDNR’s 10/30/06 comments on the 3/21/06 Approach to Ecological Risk Assessment memorandum. This response incorporated outcomes from conference calls with WDNR on 12/1/06 and 1/2/07.

- **04/24/2007:** WDNR submitted a letter to Beazer providing comments on the 3/31/06 Approach to Human Health Risk Assessment memorandum.
- **09/24/2007:** Arcadis BBL, on behalf of Beazer, submitted technical memoranda prepared by AMEC, entitled “Approach to Ecological Risk Assessment (Part 2)” and “Approach to Human Health Risk Assessment (Part 2),” to WDNR.
- **05/12/2008:** WDNR submitted a letter to Beazer providing comments on the 9/24/07 Approach to Human Health Risk Assessment (Part 2) memorandum.
- **05/28/2008:** WDNR submitted a letter to Beazer providing comments on the 9/24/07 Approach to Ecological Risk Assessment (Part 2) memorandum.
- **06/25/2008:** AMEC, on behalf of Beazer, submitted a letter to WDNR responding to WDNR’s 5/12/08 comments on the 9/24/07 Approach to Human Health Risk Assessment (Part 2) memorandum.
- **07/18/2008:** AMEC, on behalf of Beazer, submitted a letter to WDNR responding to WDNR’s 5/28/08 comments on the 9/24/07 Approach to Ecological Risk Assessment (Part 2) memorandum.
- **07/23/2008:** WDNR submitted a letter to Beazer responding to AMEC’s 6/25/08 letter, which responded to WDNR’s 5/12/08 comments on the 9/24/07 Approach to Human Health Risk Assessment (Part 2) memorandum. WDNR’s 7/23/08 letter includes specific exposure assumptions that were to be utilized in the off-property human health risk assessment.
- **01/15/2009:** AMEC, on behalf of Beazer, submitted the 2009 HHERA to WDNR. Regarding the human health risk assessment (HHRA) portion of the HHERA, two sets of potential exposures and risks are estimated. One set followed the approaches presented in the March 2006 and September 2007 technical memoranda, including the use of COPC-specific dermal absorption adjustment factors (AAFs) developed by AMEC and exposure assumptions AMEC believes are representative of reasonable maximum exposures, as recommended by USEPA guidance. These are referred to as the “AMEC exposure scenarios” in the HHRA. The other set incorporates WDNR responses to the technical memoranda, including the use of default AAFs recommended by WDNR as well as WDNR-recommended exposure frequencies and durations. These latter scenarios are referred to as the “WDNR exposure scenarios” in the HHRA. For both sets of exposure scenarios, the risk assessment demonstrates that for the expected uses, the off-property areas addressed in this HHRA do not pose an unacceptable cancer or non-cancer risk to potential human receptors.
- **08/01/2011:** The Wisconsin Department of Health Services (WDHS) submitted a memorandum to WDNR providing comments on the HHRA portion of the 2009 HHERA.
- **02/03/2012:** The United States Environmental Protection Agency (USEPA) submitted a memorandum to WDNR providing comments on the ecological risk assessment (ERA) portion of the 2009 HHERA.
- **08/22/2014:** Arcadis, on behalf of Beazer, submitted the “Off-Property Focused Corrective Measures Study” (FCMS) to WDNR. Appendix A to the FCMS presented 1) responses to WDHS’s 8/1/11 comments on the HHRA portion of the 2009 HHERA; updates to the HHRA portion of the 2009 HHERA based on USEPA’s non-cancer toxicity value (oral RfD) for 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) that was released in February 2012; and 3) responses to USEPA’s 2/3/12 comments on the ERA portion of the 2009 HHERA. In

summary, WDHS's HHRA comments, USEPA's new non-cancer toxicity value for TCDD, and USEPA's ERA comments did not change the conclusions of the 2009 HHERA. Note that the HHERA conclusions were used as a line of evidence in the FCMS for determining the media/areas requiring corrective actions for the off-property portion of the Site. The presence/extent of non-aqueous phase liquid (NAPL) and related sheens was also considered as a line of evidence.

As you can see, a significant amount of time and effort went into developing the 2009 HHERA, including substantial up-front coordination with WDNR. To now have WDNR say that they cannot support the use of the HHERA is disappointing.

Second, to date, Beazer has never submitted, nor has WDNR ever requested Beazer to submit, a formal demonstration per NR 722.11(1). In the absence of such a submittal which would provide a detailed evaluation of either the protectiveness or the impracticability of Residual Contaminant Level (RCL) achievement, WDNR does not have a basis for making such a determination. A discussion regarding impracticability did occur during a November 19-20, 2015 meeting attended by Beazer, WDNR and USEPA in Madison, Wisconsin. At the November 2015 meeting, Beazer presented slides summarizing removal volumes and preliminary remediation cost estimates for remedial scenarios based on compliance with various potential numeric cleanup goals, including WDNR's default non-industrial RCLs specified in NR 720. As presented at that meeting, if WDNR's default non-industrial RCLs were applied as a numeric cleanup goal for the Crawford Creek floodplain, the entirety of the floodplain in Sub-Areas B, C, and D would require remediation. WDNR and USEPA both acknowledged at that meeting that such remediation scenarios/costs were impracticable.

The DNR and Beazer, with input from the Wisconsin Department of Health Services and U.S. Environmental Protection Agency (EPA) Region 5, have discussed and corresponded on the overall approach to Beazer's development of the HHERA including land use considerations, exposure assumptions, and the adequacy of the investigation used to develop the HHERA. DNR and Beazer have not been able to reach consensus, therefore, the DNR is not able to approve the HHERA under Wis. Admin. Code § NR 722.11 (2).

Beazer Response:

Beazer disagrees with WDNR's statement that "DNR and Beazer have not been able to reach consensus..." As indicated in the response above, Beazer collected supplemental data to support the HHERA in accordance with a work plan that WDNR reviewed, and Beazer and WDNR did reach consensus on the HHERA approach/assumptions prior to Beazer's preparation and submittal of the 2009 HHERA. The 2009 HHERA included exposure assumptions specifically requested by WDNR. On behalf of WDNR, the WDHS and USEPA reviewed and commented on the HHRA and ERA portions of the 2009 HHERA, respectively. Responses to WDHS's and USEPA's comments were submitted to WDNR as Appendix A to the 2014 FCMS (note that the WDHS/USEPA comments did not change the conclusions of the 2009 HHERA).

A written explanation of the DNR's action, required under Wis. Admin. Code § NR 722.11 (2), follows:

- *Beazer has not demonstrated to the satisfaction of DNR that compliance with applicable environmental standards in Wis. Admin. Code § NR 722.09 (2) will not be protective of public health, safety and welfare and the environment.*
- *Beazer has not demonstrated to the satisfaction of DNR that compliance with the applicable residual contaminant levels in Wis. Admin. Code ch. NR 720 is not practicable.*

Beazer Response:

Per NR 722.11(1) only one of the two “demonstration requirements” outlined above needs to be met, not both. As indicated in the responses above, to date, Beazer has never submitted, nor has WDNR ever requested Beazer to submit, a formal demonstration per NR 722.11(1).

- *The HHERA does not use standard exposure assumptions approved by the DNR as required by Wis. Admin. Code § NR 722.11(2).*

Beazer Response:

At WDNRs request, a site-specific risk assessment was developed, and exposure assumptions provided by WDNR were included in the HHERA in lieu of the standard exposure assumptions. Specifically, the “WDNR exposure scenarios” evaluated in the 2009 HHERA use exposure assumptions specifically requested by WDNR in letters dated May 12 and July 23, 2008. A comparison of the exposure parameters/assumptions used in the 2009 HHERA (including those specifically requested by WDNR) to the default values specified in NR 720.12 is provided in Attachment A to this letter.

In addition:

- **Per NR 720.12(2), “Responsible parties shall determine a residual contaminant level to protect public health from direct contact with soil contamination using scientifically valid procedures and toxicological values approved by the department and the default exposure assumptions identified in sub. (3) or alternative assumptions specifically approved by the department in writing. [emphasis added]**
- **WDNR’s default “non-industrial” (i.e., residential) exposure assumptions listed in NR 720.12(3) are not reasonable or appropriate for the Crawford Creek floodplain setting. There are currently no houses located within the floodplain, and future housing developments in the floodplain are prohibited per Douglas County’s Floodplain Zoning Ordinance. The presence of wetlands throughout the floodplain also limits the potential for future development.**
- *The HHERA does not account for the presence or distribution of non-aqueous phase liquid (NAPL) or the resulting concentration of contaminants from NAPL or sheen when estimating potential risk.*

Beazer Response:

As noted above, the 2009 HHERA conclusions were used as a line of evidence in the FCMS for determining the media/areas requiring corrective actions for the off-property portion of the Site. The presence/extent of NAPL and related sheens was also considered as a line of evidence. Regardless of the HHERA conclusions, Beazer has acknowledged that corrective actions are necessary to address potential exposure to NAPL/sheens to the Tributary to Crawford Creek and Crawford Creek. Accordingly, the FCMS included (and the GLLA FFS will include) remedial alternatives that address potential exposure to NAPL/sheens (one of the agree-upon Remedial Action Objectives [RAOs] for the GLLA FFS is to “address the potential for exposure to DNAPL and sheens”).

- *The Crawford Creek floodplain investigation was conducted almost exclusively from the 0 to 6-inch depth interval. Investigation from the surface to a depth of 4 feet is necessary for evaluation of the direct contact pathway in Wisconsin.*

Beazer Response:

WDNR has provided input for all the investigation programs conducted in the off site area to date, and has never suggested that investigation of the upper 4 ft was necessary to evaluate direct contact. Further, WDNR reviewed the investigation work plan used to generate the data set used in the 2009 HHERA, and did not comment on the 0- to 6-inch sample depth interval, which was selected as it is the depth interval most likely to be contacted by potential human and ecological receptors. Given the fact that future housing developments in the floodplain are prohibited per Douglas County’s Floodplain Zoning Ordinance, and the presence of wetlands throughout the floodplain also limits the potential for future development, Beazer questions what the basis is to assume a 4-foot exposure depth in the Crawford Creek floodplain.

Beazer and the EPA's Great Lakes National Program Office (GLNPO) have signed a project agreement under the GLLA to complete a focused feasibility study (FFS) within 20 months of the agreement's effective date (May 21, 2018). Because the DNR is not able to approve the use of a risk assessment under Wis. Admin. Code § NR 722.11 (2), the DNR is unable to support the inclusion of Beazer's HHERA as a line of evidence under a weight-of-evidence approach for the FFS prepared under the GLLA project.

Beazer Response:

Based on the information provided in the responses above, Beazer continues to believe that use of the 2009 HHERA as a line of evidence for determining media/areas/volumes potentially requiring remediation is appropriate and justifiable under WDNR’s NR 700 regulations.

In the interest of moving forward and considering the tight timeline associated with completing the FFS, the DNR will provide remediation goals and objectives the DNR believes will comply

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with the Wis. Admin. Code § NR 722.09 (2) environmental standards. The DNR will also calculate residual contaminant levels that meet the requirements of Wis. Admin. Code ch. NR 720 utilizing site-specific input available under Wis. Admin. Code ch. NR 720. These will be provided under separate cover for consideration by the project team in the near future.

Beazer Response:

Beazer and WDNR have already extensively discussed RAOs for this project, including project meetings on November 19-20, 2015, May 12, 2016, and November 29, 2016. The agreed-upon RAOs were subsequently identified in the GLLA Project Agreement for inclusion in the GLLA FFS.

Beazer continues to stand behind the 2009 HHERA, and believes it is a useful tool as a line of evidence for determining media/areas/volumes potentially requiring remediation as part of the GLLA FFS.

Sincerely,



Jane Patarcity
Senior Environmental Manager

Cc: Judy Fassbender, WDNR
Steve Galarneau, WDNR
Joe Graham, WDNR
John Sager, WDNR
Scott Cieniawski, USEPA
Diana Mally, USEPA
David Bessingpas, Arcadis
Paul Anderson, Arcadis
Danielle Pfeiffer, Arcadis
Stu Messur, Anchor QEA
David Klatt, Jacobs

Attachment A
Comparison of 2009 HHERA and NR 720.12 Exposure Assumptions

Receptor	Parameter (units)	Floodplain Soil		
		2009 HHERA Assumptions		NR 720.12 Non-Industrial Land Use
		AMEC Scenarios	WDNR Scenarios	
Recreational Visitor (12-18 year old teen) - AMEC (7-18 year old teen) - WDNR	Exposure time (hr/d) Exposure Frequency (d/y) Exposure Duration (y) Body Weight (kg) Averaging Time - Lifetime (days) Averaging Time - Chronic Noncancer (days) Contact Rate (mg/d) or (mL/d) Fraction from Site (unitless) Surface Area Exposed (cm ² /d) Soil-to-Skin Adherence Factor (mg/cm ²)	2 12 6 56 25550 2190 50 0.08 2433 0.14	2 365 11 48 25550 4015 100 0.08 2433 0.14	24 350 6 (child), 24 (adult) 15 (child), 70 (adult) 25550 2190 (child), 25550 (adult) 200 (child), 100 (adult) 1 2800 (child), 5700 (adult) 0.2 (child), 0.07 (adult)
Recreational Visitor (adult)	Exposure time (hr/d) Exposure Frequency (d/y) Exposure Duration (y) Body Weight (kg) Averaging Time - Lifetime (days) Averaging Time - Chronic Noncancer (days) Contact Rate (mg/d) or (mL/d) Fraction from Site (unitless) Surface Area Exposed (cm ² /d) Soil-to-Skin Adherence Factor (mg/cm ²)	2 12 24 71.8 25550 8760 50 0.08 2518 0.14	2 120 24 71.8 25550 8760 50 0.08 2518 0.14	24 350 6 (child), 24 (adult) 15 (child), 70 (adult) 25550 2190 (child), 25550 (adult) 200 (child), 100 (adult) 1 2800 (child), 5700 (adult) 0.2 (child), 0.07 (adult)
Hunter (12-18 year old teen) (7-18 year old teen) - WDNR	Exposure time (hr/d) Exposure Frequency (d/y) Exposure Duration (y) Body Weight (kg) Averaging Time - Lifetime (days) Averaging Time - Chronic Noncancer (days) Contact Rate (mg/d) or (mL/d) Fraction from Site (unitless) Surface Area Exposed (cm ² /d) Soil-to-Skin Adherence Factor (mg/cm ²)	4 28 6 56 25550 2190 50 0.17 2433 0.14	4 28 11 48 25550 4015 100 0.17 2433 0.14	24 350 6 (child), 24 (adult) 15 (child), 70 (adult) 25550 2190 (child), 25550 (adult) 200 (child), 100 (adult) 1 2800 (child), 5700 (adult) 0.2 (child), 0.07 (adult)
Hunter (adult)	Exposure time (hr/d) Exposure Frequency (d/y) Exposure Duration (y) Body Weight (kg) Averaging Time - Lifetime (days) Averaging Time - Chronic Noncancer (days) Contact Rate (mg/d) or (mL/d) Fraction from Site (unitless) Surface Area Exposed (cm ² /d) Soil-to-Skin Adherence Factor (mg/cm ²)	4 28 24 71.8 25550 8760 50 0.17 2518 0.14	4 28 24 71.8 25550 8760 50 0.17 2518 0.14	24 350 6 (child), 24 (adult) 15 (child), 70 (adult) 25550 2190 (child), 25550 (adult) 200 (child), 100 (adult) 1 2800 (child), 5700 (adult) 0.2 (child), 0.07 (adult)
Trapper - WNDR Only (adult)	Exposure time (hr/d) Exposure Frequency (d/y) Exposure Duration (y) Body Weight (kg) Averaging Time - Lifetime (days) Averaging Time - Chronic Noncancer (days) Contact Rate (mg/d) or (mL/d) Fraction from Site (unitless) Surface Area Exposed (cm ² /d) Soil-to-Skin Adherence Factor (mg/cm ²)	NE NE NE NE NE NE NE NE NE NE	2 150 24 71.8 25550 8760 50 0.08 2518 0.14	24 350 6 (child), 24 (adult) 15 (child), 70 (adult) 25550 2190 (child), 25550 (adult) 200 (child), 100 (adult) 1 2800 (child), 5700 (adult) 0.2 (child), 0.07 (adult)

NA - Not applicable
NE - Not evaluated