



October 25, 2017

Mr. Michael Kellogg
Director, Risk Management
Connell Limited Partnership
900 Haddon Hall Drive
Apex, NC 27502

Subject: Review of Site Investigation and Remedial Action Options Reports
Former Koppers Tar Plant and Wabash Alloys Facility
9100 South 5th Avenue, Oak Creek, WI 53154
FID #: 241379050, BRRTS #: 02-41-553761, Connell VPLE BRRTS #: 06-41-560068

Dear Mr. Kellogg:

The Wisconsin Department of Natural Resources (DNR) entered into a Negotiated Agreement (Agreement) with Connell Limited Partnership (Connell) on July 14, 2017. After the Agreement was signed, it was requested that the DNR review the Site Investigation Report (SIR), dated January 13, 2014, and Remedial Action Options Report (RAOR), dated December 30, 2014, for the Former Koppers Tar Plant and Wabash Alloys Facility (Wabash) site and provide specific comments regarding the contaminants for which Connell is responsible, as stated in the Negotiated Agreement. This letter is the DNR's response to that request.

Contamination at the site has resulted from historic operations of coal tar distillation (performed by Beazer) and aluminum smelting (performed by Connell). Contaminants associated with the Beazer's coal tar distillation operation include volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs). Contaminants associated with Connell's aluminum smelting operation include polychlorinated biphenyls (PCBs) and metals (arsenic, mercury, lead and nickel). The Negotiated Agreement identifies contamination from PCBs and metals as being Connell's responsibility.

Beazer and Connell are both Responsible Parties at the site, and have jointly prepared and submitted the SIR and RAOR. Both of these reports have been prepared by Tetra Tech and Natural Resource Technology, Inc. (NRT), on behalf of Beazer and Connell. The SIR and RAOR submittals are required per Wis. Admin. §§ NR 716 and 722, as the site is subject to regulation under Wis. Stat. § 292.

In January 2014, the SIR recommended the following:

- A joint RAOR should be prepared for the former tar plant and aluminum smelting remedial activities;
- An additional round of groundwater sampling for metal analyses should be collected to document plume status. No further sampling for PCBs in groundwater is necessary as concentrations were not detected in three rounds of sampling;
- Additional quarterly groundwater sampling for VOCs and PAHs should be collected to further characterize groundwater quality and document plume status;
- The extent of impacted soil and groundwater should be delineated to the south of the City of Oak Creek (City) parcel and on the DuPont property;

- Potential preferential migration pathways along buried utilities in the City Utility Corridor (Corridor) should be further investigated.

The DNR approved the SIR on September 22, 2014, and is not requesting any site investigation activities to further define the PCB and metals contamination.

In December 2014, the RAOR presented various remedial action alternatives and recommended completion of the following remedial activities pertaining to the PCBs and metals contamination:

- Excavation of PCB-contaminated soil in six areas (three large areas of excavation and three smaller ones), to remove soil with PCB concentrations above 10 mg/kg total PCBs from the site;
- Construction of a barrier “cap” over the remaining areas of the site affected by PCBs and metals (i.e., greater than respective Residual Contaminant Levels (RCLs)).

The DNR’s comments regarding the RAOR and “pre-designing” the proposed remedial actions are presented below. Comments in Section A are presented to help define the excavation limits regarding the removal of PCBs above 10 mg/kg. Likewise, the objective of the comments in Section B is to assist with defining the capping extent of PCBs over RCLs. Comments in Section C are directed to the eastern portion of the site - east of the proposed barriers/caps shown on Figure 8 of the RAOR. The proposed actions in the eastern portion of the site are unclear and not consistent with information presented in the SIR and RAOR.

A. Excavation of PCBs above 10 mg/kg

The SIR, specifically Figure C14, indicates PCB soil contamination concentrations from 0-4 feet below ground surface (bgs). Yellow areas depict sample results greater than 10 mg/kg for total PCBs. Figure C15 illustrates PCB contamination at depths below 4 feet bgs. Figures C14 and C15 were reviewed in combination with the RAOR’s Figure 9 - PCB Soil Excavation and Disposal Map. In addition, Figures C35, C40, C41 and C42 from the SIR show details of the PCB sampling results in the planned excavation areas. The DNR’s comments regarding the planned excavations are below and relate to the site starting from near the northeast corner of the existing Wabash Alloys foundation and progress in a clockwise fashion:

1. Sample SB-541 (38 mg/kg total PCBs at 0-1 feet bgs) reflects the most northwesterly portion of the planned remedial excavation as indicated on Figure C40. Definition to the north is limited (SB-42 and SB-506), so an additional shallow boring(s) should be advanced to the north to guide the limit of the excavation.
2. Along the northeast corner of the Wabash foundation, high levels of PCBs are found in soils at 0-1 feet bgs (B-512 4B, B-512 3A, and SB-515 5B) that will be removed by excavation. Nearby B-91 beneath the slab shows PCBs less than 10 mg/kg, but an additional boring(s) to the northeast should be advanced to determine whether high level, shallow PCB contamination is present beneath the foundation corner or whether the shallow contamination has impacted a portion of the foundation material itself.
3. The sample result annotated as “Back Pit” south of SB-515 5B did not apparently include samples from shallow soils. Consequently, additional borings are needed in this area to determine the excavation limits.
4. The results from SB-516 at 1-2 feet bgs (9.5 mg/kg total PCBs) are nearly at the excavation threshold. An additional boring or two should be advanced west of SB-516 to improve the definition of the easterly limit of the excavation in this area.

5. The separate, easterly planned excavation area defined by the results from SB-521 and SB-535 on Figure C14, and also depicted on Figures C40 and C41, needs additional borings to determine the limits of the planned excavation area.
6. The separate, southeasterly planned excavation area defined by the deeper PCB results at SB-523 5A and SB-523 (generally at 4-5 feet bgs) are mostly below the interval for Figure C14. Figures C15 and C41 illustrate contamination at the 4-8 foot bgs interval. Sampling to the north and east of SB-523 appears adequate, but additional sampling northwest and southwest of SB-525 is needed to determine the limits of the excavation area.
7. The single, somewhat isolated, boring results from B-31 (Figure C14) collected from beneath the easterly Wabash foundation slab contained total PCBs at a level (9.0 mg/kg) almost at the excavation criteria. Additional borings are needed to confirm that PCBs in this area are below 10 mg/kg.
8. For the area along the southeast corner of the Wabash foundation, the yellow area on Figure C14 does not reflect the low-level PCBs sampled at SB-546 as shown on Figure C41. However, as presently mapped, the excavation is not contiguous between SB-527 and SB-530 to the west. A boring between SB-527 and SB-530, should be advanced to confirm whether the excavation separation is warranted.
9. Regarding the excavation area required by SB-531 1A as shown on Figure C42, additional borings to the northeast, through and beneath the foundation, and to the west-southwest and southeast are needed to confirm the limits of the excavation.
10. Lastly, the area of contamination sampled beneath the foundation at B-51, while apparently small, needs additional sampling to confirm the easterly limit of the remedial excavation area. Definition of contamination to the south, west and north appears adequate; however, borings to the northeast and southeast should be completed to supplement the data from SB-714 at 9.1 mg/kg total PCBs.

Section 2.5 of the RAOR (page 7) indicates "below grade concrete foundations" are assumed not to be contaminated with PCBs. For those areas listed above that may identify PCBs beneath the foundation, the assumption regarding below grade foundation material may not be accurate. For example, the PCB contamination defined by SB-531 1A (#9 in the above list), which is mostly at the 3-4 foot depth, may have impacted the nearby concrete foundation and/or footer installations.

The RAOR does not appear to include a plan for PCB excavation confirmation sampling, or provide contingencies in the event confirmation results are greater than 10 mg/kg total PCBs. The RAOR only appears to discuss post-excavation stockpile sampling to determine final disposal options. Detailed plans regarding confirmation sampling and soil management recommendations need to be provided for DNR approval.

B. Construction of a Barrier "Cap" for PCBs above RCLs

The following comments pertain to areas with individual PCB concentrations above their respective RCLs for direct contact, which the RAOR suggests should be covered/capped. Figure C35 from the SIR identifies borings with PCB concentrations above their respective RCLs (0.222 mg/kg for the Wabash property and 0.744 mg/kg for the Corridor) across the 0-4 foot bgs interval. Figure C35 was reviewed in combination with the RAOR's Figure 8 - PCB and Arsenic Soil Barrier (Alt. S-3) to discern the residual PCB contamination remaining after the excavation activities and compare the residuals to those areas proposed to be covered or capped with PCBs above RCLs. In addition to the PCB-related cover/cap remedy, Figure 8 from the RAOR highlights the proposed limits of the barrier for arsenic concentrations that exceed the Background Threshold Level (BTL). The DNR's comments regarding the planned construction of a barrier cap on the western portion of the property are presented below and relate to the site starting near the northwest corner of the cover/cap and progress in a counter-clockwise fashion:

1. SB-706 with 0.19 mg/kg PCBs, near the northwest corner of the planned cover/cap boundary, is close to the RCL threshold, as indicated in Table C2a. Consequently, additional sampling to the north-northwest of this location may be helpful to define the capping extent. Toward the northeast, soil at B-03 is below the RCLs, so sampling in this area is adequate. SB-705 is to the west, but is too distant to confirm the capping extent.
2. SB-719, which is near the northwest corner of the planned cover/cap, but not beneath it, contains PCBs at 0.14 mg/kg, which is nearing the RCL threshold. Additional sampling at or near this location may help define the capping extent.
3. B-24 exceeds the arsenic BTL and does not appear to be included under the planned cover/cap. With arsenic at 9 mg/kg, B-24 is slightly above the threshold, additional sampling would not be necessary if the planned cover/cap were extended westward.
4. Near the southwest corner of the planned cover/cap, B-26 contained a PCB detection of 0.20 mg/kg, near the RCL. Additional sampling should be conducted in this area to determine whether the cover/cap should be extended westward.
5. SB-716, with a PCB concentration of 0.21 mg/kg, is near, but outside the southern boundary of the cover/cap, and nearly equals the RCL. Additional sampling east and west of this boring is needed to determine whether the planned cap is adequate or should be extended southward.

C. PCBs above RCLs - Eastern Portion (east of barriers/caps on Figure 8 from the RAOR)

The following section pertains to PCB concentrations at or near RCLs east of the planned covers/caps (including the Corridor) as shown on Figure C37 from the SIR. PCBs above RCLs are present in the 0-2 foot bgs interval in areas that will not be capped for PCB contamination based on Figure 8 from the RAOR. Figures were provided to identify PCBs above RCLs in the 0-4 foot bgs interval, however the remedy only addresses PCBs in the 0-2 foot bgs interval. The proposed remedial action needs to include an assessment of PCBs in the direct contact zone (0-4 feet bgs).

The difference in cap/cover treatment between the western and eastern portions of the property is provided in the RAOR under the description of the soil barrier for PCBs and metals (Section 4.3.4.1, page 23). It indicates that for the western portion of the property, the cover/cap will be used for soils remaining after excavation that exceed PCB RCLs across the 0-4 foot bgs interval. For the eastern portion, the RAOR only states that "select soils with elevated PCB levels" will warrant a cover/cap (i.e., not necessarily all soil with PCBs above RCLs) across the 0-4 foot bgs interval. The RAOR appears to only be "targeting elevated impacts in the 0-2 foot bgs interval". The RAOR states that the cover/cap will not extend over the wetlands, and yet as will be discussed below, some of the RCL exceedances are outside the mapped wetland areas. Further complicating the eastern portion of the property are planned excavations in the wetland areas for both the DNAPL tar contamination (see Figure 11 from RAOR) and the PCB contamination at SB-725. Another complication is shown on Figure 10 of the RAOR – the planned "dermal cover" for PAH contamination over the non-wetland areas is across the western half of the eastern portion of the property.

The comments that follow will necessitate some additional sampling and revisions to the existing RAOR. A more comprehensive plan focused on what will or will not occur in the wetland areas for each contaminant along with respective justifications should be described and provided. For the non-wetland areas with PCB contamination above RCLs, a cap similar to that planned for the western portion of the property should be proposed.

The DNR's comments concerning PCB contamination (0-2 feet bgs only) across the area east of the barriers/caps on Figure 8 of the RAOR are presented below. Comments relate to Figure C37 for additional sampling and/or modified cover/cap placement and begin near the northeast corner of the planned cover/cap shown on Figure 8:

1. Sampling at B-64 and B-35 identified PCB concentrations of 0.120 mg/kg and 0.220 mg/kg, respectively. The B-35 result is very near the RCL, so additional sampling in the non-wetland areas is needed to define the extent of the remedial action.
2. B-08 is under the planned cap/cover (PCB and chromium contamination) and to the east is B-103 which contained a PCB detection of 0.17 mg/kg and arsenic above the BTL. Additional sampling could be conducted near B-103 for confirmation regarding the extent of PCBs and arsenic, but it is mapped in a wetland area and is planned to be excavated for DNAPL tar contamination.

Note: The chromium data values on Figure C4 in the SIR do not appear consistent with values in Table C3a. For example, B-103 is mapped with a value of 33.4 mg/kg, which is consistent with the table. However, B-08 is mapped with a value of 350,000 mg/kg, yet the table only shows 350 mg/kg. The problem may be with respect to the reported units (i.e. decimal points). For this review, the mapped values were used. Data values on the figure and in the table need to be confirmed and re-submitted.

3. Regarding the easterly extent of the planned PCB-related cover/cap (i.e., rail spur junction near SB-602 and SB-603), both to the north (SB-601) and to the south (SB-604, -615, -616, and -735) samples exceed an RCL for PCBs. These samples are from both wetland and non-wetland areas. The planned cover/cap should be expanded to address these exceedances.
4. For SB-724, already planned to be beneath an arsenic cover/cap, the PCB levels were at 0.15 mg/kg. Consequently, additional sampling may be warranted to determine whether the PCB cap/cover should extend eastward. Furthermore, the extension of the arsenic cover to B-32 does not appear warranted with the existing data (arsenic at 4.4 mg/kg), and PCBs at this location are below RCLs.
5. For B-12, which is located in the wetland area just upgradient from the clay cut-off wall, PCBs and mercury are above RCLs and warrant further sampling. However, this wetland area is planned to be excavated for DNAPL tar contamination.
6. For the non-wetland area south of B-12, no DNAPL tar excavation is planned, and the ravine borings at B-52 and B-53 contain elevated PCBs of 0.43 mg/kg and 0.73 mg/kg, respectively. The RCL for the Corridor is higher (0.744 mg/kg) for a low occupancy exposure. On page 39 of the SIR, the source of the elevated PCBs is unknown. Review of historical aerial photos reveal slumping and unstable slopes in this area (hence, the need for the clay cut-off wall), and the origin of the elevated PCB contamination could be associated with the historical drainage swales in the area of B-12. Additional sampling both on the Connell property (non-wetland area) and further south on the Corridor property ravine slope should be conducted to the south-southwest and south-southeast to determine the need for and extent of a remedy to address the elevated PCBs and mercury contamination in this area. Additional non-wetland area sampling southeast of B-12 would also determine the extent of any RCL exceedances for PCBs near B-115, which contained 0.17 mg/kg.
7. For the eastern area of PCB contamination defined by SB-608, SB-611, and SB-612 as shown on Figure C37, additional sampling should be conducted to the north, southwest and southeast in non-wetland areas to define the limit of a remedial action. Note that for this area, no PCB cap is proposed for the non-wetland areas; only the PAH cover is planned.
8. Lastly, for the most easterly area affected by PCB contamination at SB-727 and SB-728, several issues remain. No cover/cap of any type is planned even though the contamination was confirmed in non-wetland areas and the RCLs were exceeded in the 0-2 foot bgs interval. Additional sampling in

Mr. Michael Kellogg
RE: Review of Site Investigation and Remedial Action Options Reports
Former Koppers Tar Plant and Wabash Alloys Facility, Oak Creek, WI (BRRTS #: 02-41-553761)
October 25, 2017

Page 6 of 6

all four directions plus between the two subject borings needs to be conducted to define the limit of a remedial action in this area.

Future Submittals

After additional sampling has been completed, as discussed above, the DNR requests that you incorporate the sampling results and above comments into your proposed remedial actions and submit the following for DNR review:

1. A revised RAOR that reflects changes for the area east of the presently planned barriers/caps shown on Figure 8.
2. A Remedial Action Design Report for the entire property.

These submittals should further detail your proposed remedial actions and comply with Wis. Admin. §§ NR 722 and 724.

The DNR appreciates the efforts you are taking to investigate and to restore the environment at the subject site. If you have any questions regarding this letter, please contact me at 414.263.8639.

Sincerely,



Eric Amadi - Hydrogeologist
Remediation & Redevelopment Program
SER - Milwaukee Service Center

cc: Julie Zimdars - NRT (electronic)
Mark Thimke - Foley & Ladner, LLP, Attorneys At Law (electronic)
Larry Haskin - City of Oak Creek (electronic)
SER Case File FID #: 241379050; BRRTS #: 02-41-553761 / 06-41-560068