

## Badin Business Park LLC

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May 27, 2022

North Carolina Department of Environmental Quality  
Sushma Masemore  
Director, Division of Water Resources  
1617 Mail Service Center  
Raleigh, NC 27699-1617

Re: Badin Business Park LLC March 9, 2022, Technical Meeting

Dear Ms. Masemore,

Badin Business Park LLC (“BBP”) appreciates the time that the Department spent with our team on March 09, 2022 reviewing potential solutions for the fluoride discharge issues that we are experiencing at Outfall 005.

Below is a summary of the information presented by BBP and discussed by the parties:

1. BBP provided a summary of the current Outfall 005 drainage area as well as an updated understanding of the sources of fluoride in the discharge. Studies performed by BBP demonstrate the majority of the fluoride entering the system is a result of groundwater infiltrating the very old storm sewer systems. As explained by BBP, although progress has been made to reduce the amount of fluoride in the discharge, BBP has not been able to entirely eliminate the low concentrations of fluoride in the stormwater discharge.
2. BBP provided a brief background of Little Mountain Creek and spoke to water quality information collected by BBP between 2019 and 2021 which illustrates that fluoride and total cyanide concentrations in Little Mountain Creek downstream of BBP were below chronic criteria. In addition, BBP discussed the collection of flow data in Little Mountain Creek since 2019. Table 1 summarizes BBP’s Little Mountain Creek data.
3. A summary of recent activities at the site were shared, specifically the source identification and control activities BBP undertook. While these actions have made fluoride reductions across the site, they have been unsuccessful at bringing Outfall 005 into consistent compliance with the fluoride limit. BBP reviewed, in detail, information related to a soil excavation in the former Bath Mill area that was completed in October 2021; as part of this effort, approximately 2,000 tons of soil materials were excavated and disposed of offsite. Although only a small portion of these soils were shown to contain fluoride and at very low concentrations, the excavation conservatively encompassed roughly 4,000 square feet. To date, as discussed, we have not seen quantifiable benefits from this source removal activity.
4. BBP discussed a proposal for a direct discharge to Little Mountain Creek which was developed based on 7Q10 information for Little Mountain Creek shared by the

Department as a follow up to our February 2021 meeting. BBP spent considerable time and effort to investigate the potential for a direct discharge to Little Mountain Creek with the understanding that the Department would consider a mixing zone similar to that afforded an adjacent discharger only to find out that we would be required to reengage USGS to provide a new 7Q10 determination.

- a. As discussed during our meeting, USGS performed a desktop analysis for ungauged streams that compared similar stream types to Little Mountain Creek which resulted in an estimated 7Q10 value of approximately 0.04 cfs. This result was considerably lower than a prior finding by USGS. After USGS was informed of its prior determination, USGS recommended a study be undertaken to confirm the previous assessment as they could not locate the basis for the prior determination in their files due to age.
  - b. Importantly, BBP requested during the meeting and is again asking DWR to consider permitting a new direct discharge to Little Mountain Creek utilizing the previously determined 7Q10 with a condition that BBP monitor Little Mountain Creek and obtain new flow information to support a new 7Q10 determination as recommended by USGS.
  - c. While the Department indicated that a permit requiring instream monitoring would require approval by US EPA, BBP explored this avenue and Attachment 1 includes a memo summarizing recommended permitting approaches which could be utilized to ensure a new discharge to Little Mountain Creek would be protective of human health and the environment as well as provides examples where similar concepts have been approved and permitted in EPA Region 4.
  - d. In addition, BBP is already working with the USGS to establish a flow monitoring station in Little Mountain Creek in order to update the historic 7Q10 determination.
5. Finally, we discussed the Department's request for BBP to explore treatment alternatives for Outfall 005. As we mentioned during the meeting, BBP continues to explore options for compliance, but our initial assessment showed traditional treatment options (i.e., reverse osmosis, adsorption, coagulation/filtration, lime/soda ash softening) are not viable, as the flows at this Outfall are highly variable and dependent on both rainfall and groundwater elevation. Treatment of a stormwater discharge in its entirety is not realistic using traditional treatment technologies for fluoride.
- a. Attachment 2 is a technology review for the removal of fluoride from industrial wastewaters prepared for EPA in 2020 which provides further details regarding the limitations.
  - b. Prior to the conclusion of the meeting, we discussed the completion of a document similar to an Engineering Alternatives Analysis used for new or expansion permit for wastewater treatment plants to aid in assessing potential solutions for Outfall 005.
  - c. BBP also introduced current efforts to update the hydrogeologic model for the site. One of the associated tasks will look to validate a conceptualization to divert groundwater around the site thereby reducing the potential for fluoride

containing groundwater to infiltrate into the storm sewer. The work plan for this effort is being developed and will be shared with the Department upon completion.

Again, we appreciate the Department's time and cooperation on this matter. Should you have questions, please contact me at 412.389.1768 or [Robyn.Gross@alcoa.com](mailto:Robyn.Gross@alcoa.com).

Sincerely,

A handwritten signature in blue ink, appearing to read "Robyn L. Gross".

Robyn L. Gross  
Director, Asset Management Americas  
Badin Business Park LLC

cc via email:

Richard Rogers, NCDEQ

Michael Scott, NCDEQ

Joy Hicks, NCDEQ

Jason Mibroda, Alcoa Corp.

Cameron Henley, Moore & VanAllen