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October 2, 2019

Robert Laux, Executive Director
Bergen County Utilities Authority
P.O. Box 9 – 298 Mehrhof Road
Little Ferry, NJ 07643

Re: Review of Development and Evaluation of Alternatives
Bergen County Utilities Authority (BCUA), NJPDES Permit No. NJ0020028

Dear Mr. Laux:

Thank you for your submission dated July 1, 2019 to the New Jersey Department of Environmental Protection (the Department or NJDEP) which contains the “Development and Evaluation of Alternative Controls” (hereafter “the report”) for the BCUA. This report was submitted in a timely manner and was prepared in response to Part IV.D.3.v of the above referenced NJPDES permits. The report is part of the development of the Long-Term Control Plan (LTCP) submittal requirements, of which the next deliverable is due on June 1, 2020.

The BCUA Water Pollution Control Facility (WPCF) serves a total of 47 municipalities within the BCUA sewer service area including three combined sewer municipalities namely the Borough of Fort Lee (NJ010034517), the City of Hackensack (NJ0108766), and the Village of Ridgely Park (NJ00109118). This subject letter serves to provide a response to the Development and Evaluation of Alternatives report specific to BCUA. However, as a reminder, the ‘Selection and Implementation of Alternatives’ report, which is due on June 1, 2020, must be submitted as a single, coordinated LTCP in accordance with the permittees’ compliance schedule extension letter of September 29, 2015 as acknowledged in the October 9, 2015 minor modification.

The overall objective of the Development and Evaluation of Alternatives Report is to develop and evaluate a range of CSO control alternatives that meet the requirements of the Federal CSO Control Policy Section II.C.4, N.J.A.C. 7:14A-11, Appendix C, and the USEPA Combined Sewer Overflows Guidance for Long-Term Control Plan (EPA 832-B-95-002). Such evaluation shall include a range of CSO control alternatives for eliminating, reducing, or treating CSO discharge events. This subject report builds on other previously submitted LTCP reports referenced in Part IV.D.3.b of the NJPDES permit, which includes an approved hydrologic, hydraulic and water quality model and other information in the June 27, 2018 “System Characterization Report” (approved by the Department on March 5, 2019); the June 27, 2018 “BCUA CSO Group Public Participation Process Report” (approved by the Department on June 26, 2019); the June 30, 2018 “NJCSO Group Compliance Monitoring Program Report” (approved by the Department on March 1, 2019); and the June 2018 “Identification of Sensitive Areas Report” (approved by the Department on April 8, 2019).

As per Part IV.G.4.e.i – vii of the above referenced NJPDES permits, the Development and Evaluation of Alternatives for the LTCP shall include, but not be limited to, an evaluation of the following CSO control alternatives:

- i. Green infrastructure.
- ii. Increased storage capacity in the collection system.
- iii. Sewage Treatment Plant (STP) expansion and/or storage at the plant while maintaining compliance with all permit limits.
- iv. Inflow and Infiltration (I/I) reduction to meet the definition of non-excessive infiltration and non-excessive inflow as defined in N.J.A.C. 7:14A-1.2 in the entire collection system that conveys flows to the treatment works.
- v. Sewer separation.
- vi. Treatment of the CSO discharge.
- vii. CSO related bypass of the secondary treatment portion of the STP in accordance with N.J.A.C. 7:14A-11.12 Appendix C, II C.7.

BCUA owns and operates the WPCF as well as the trunk/intercepting sewer systems that transport flows to the WPCF. However, the collection and conveyance of dry and wet weather wastewater from municipal combined sewer systems into the BCUA Trunk Sewer, including the CSO discharge pipes, are owned and operated by the individual municipalities. The report prepared by BCUA includes an evaluation of the maximization of wet weather flows to the BCUA WPCF as well as for alternative controls that are applicable to the WPCF. A general overview of the information provided for the CSO control alternatives, as provided in response to Part IV.G.4.e, can be summarized below where the Department's comments follow:

- Regarding **increased storage capacity in the collection system**, the report discusses sewer system optimization in Section 4.3 (Trunk Sewer System Optimization), including increased inline storage, additional conveyance, regulator modifications, and real time controls, where these four control alternatives are not being considered by BCUA as stated on pages 48-49. Section 8.2.4 (Control Program 4 – Utilize Inline Storage in Interceptor for CSO) describes an evaluation of available storage capacity within the interceptors in order to potentially store combined sewage and then treat the flow at the WPCF as the interceptor drains down. As concluded on page 108, this alternative would only become available if additional treatment capacity is added to the plant.

Section 4.4.3 (Storage) includes a description of point **storage** namely above-ground or underground storage facilities such as tanks and equalization basins. Section 8.2.3 (Control Program 3 – Regional Storage) further analyzes this alternative and includes siting information particularly around the BCUA facility.

- **Sewage Treatment Plant (STP) Expansion** is discussed in Section 4.4 (Sewage Treatment Plant Expansion or Storage) and Section 8.2.1 (Control Program 1 – Expansion of WPCF Capacity); where the report details the possible expansion of the plant to 149, 178, 206, and 235 MGD. The report also evaluates wet weather bypass in Sections 4.4.2 (Wet Weather Blending) and 8.2.2 (Control Program 2 – Wet Weather Blending); in which BCUA explores bypassing of 90 or 180 MGD.

- **Green Infrastructure** (GI) technologies and **sewer separation** are referenced in Section 1.3.1 (Report Goals and Objectives) where the report indicates that GI and sewer separation will be evaluated and implemented by the individual CSO municipalities.
- **Inflow and infiltration (I/I) reduction** is discussed in Section 4.2 (Infiltration and Inflow). It is stated on page 47 that “BCUA does not have the legal authority to require any form of I&I control within individual municipalities.”

Specific Comments

Comment 1

The section entitled “Issue and Revision Record” includes the following text:

“This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

This document contains confidential information and proprietary intellectual property. It should not be shown to other parties without consent from us and from the party which commissioned it.”

This comment needs to be deleted since the document is now an open public record.

Comment 2

Section B (Borough of Fort Lee), Section C (City of Hackensack) and Section D (Village of Ridgely Park) are included within the Executive Summary of the report where it is stated that these sections are copies of the Executive Summaries as included in the individual municipality reports. Please note that the Department is not commenting on these three Executive Summary sections within this letter since it has provided comments as part of its responses on the individual municipality reports. Please refer to those response letters in order to revise this report accordingly.

Comment 3

A discussion of public participation and the CSO supplemental team is included in Section 2.1 (Public Participation Process). Additionally, Section 7 (Alternatives Evaluation) includes Subsection 7.2.1.4 (Public Acceptance) and Section 8.2 (Preliminary Control Program Alternatives) includes a subsection regarding public acceptance within each control program description. As per Part IV.G.2 of the NJPDES CSO permit, public participation shall actively involve the affected public throughout each of the three steps of the LTCP process including the Development and Evaluation of Alternatives phase. The Department acknowledges that a listing of meetings and agendas for the CSO Supplemental Team, as well as a discussion of other public outreach, is included in the BCUA CSO Group Public Participation Process Report dated June 26, 2018. The involvement of a local community group, BCUA CSO Group Supplemental Team is referenced in Section 2.1 on page 31 regarding their involvement with CSO issues.

Moving forward, public participation is a required element of the ‘Selection and Implementation of Alternatives’ for the LTCP. Continued public participation must be provided to garner public input regarding CSO control alternatives where a description of such activities must be included in the LTCP. The discussion should include a description of the public participation activities that occurred during the development of these reports, the feedback opportunities provided, and how feedback was considered. It is also recommended that members of the BCUA CSO Group Supplemental Team be provided a copy of the LTCP in advance of the June 1, 2020 due date to the Department.

Comment 4

Section 3.1 (applicable Water Quality Standards) on page 42 states the following:

“Discharges from combined sewer overflows contribute pathogens, and thus the parameter of interest for CSOs is the bacterial standards.”

While the Department agrees that pathogens are intended to serve as an indicator parameter for CSOs, please note that the CSO Control Policy requires controls adequate to meet the water quality based requirements of the Clean Water Act. While this comment does not necessitate a response at this time, the Department hereby notes this information for the Administrative Record.

Comment 5

In Section 3.3.1 (Presumption Approach) the following is stated as one of the three requirements of the Presumption Approach:

“Elimination or removal of no less than the mass of the pollutants, identified as causing water quality impairment.”

Please note that this quote is a truncated version of what is contained in the Federal CSO Control Policy. Please revise accordingly.

Comment 6

Section 3.3.2 (Demonstration Approach), the following is stated on page 44:

“Preliminary data does indicate that some regional water bodies are currently meeting existing water quality standards, while others are not.”

It is premature to include these conclusions regarding compliance with water quality standards. Please revise.

Comment 7

The NJPDES permit requires that the permittee select either the Presumption or Demonstration Approach as defined in the Federal CSO Control Policy as well as in the NJPDES permit. These alternatives are discussed in Section 3.3 (Range of CSO Goals Being Evaluated). However, neither the Presumption nor the Demonstration Approach have been selected within the report. Specifically, in Section 3.3.2 (Demonstration Approach) the report states on page 44-45 that:

“...the members of the BCUA CSO Group are requesting that the decision, as to which approach will be taken, be delayed until submission of the final LTCP.”

While this comment does not necessitate a response at this time, a final selection is required to be made in the ‘Selection and Implementation of Alternatives’ report as part of the LTCP submission due on June 1, 2020. Note that if the Presumption Approach is selected, the percent capture equation utilized to calculate any baseline and other percent capture values for the hydraulically connected system must be included for report completeness. However, a specific approach has not been selected within the report, nor has it been acknowledged that the approach will be applicable to the entire hydraulically connected system. A final, coordinated selection is required to be made in the ‘Selection and Implementation of Alternatives’ report as part of the LTCP submission due from the BCUA CSO Group on June 1, 2020. Please also see **Comment 8** regarding establishing hydraulically connected systems.

Comment 8

Hydraulically connected communities are referenced in Section 7.1.7 (Performance). The Department acknowledges that ‘hydraulically connected system’ is defined within the Notes and Definitions in Part IV of the NJPDES permit as “The entire collection system that conveys flows to one Sewage Treatment Plant (STP)...” While the definition of hydraulically connected system allows the permittee to “segment a larger hydraulically connected system into a series of smaller inter-connected systems,” please be advised that if it is the BCUA CSO Group’s intention to define hydraulically connected systems that are smaller, segmented portions of the “entire collection system”, a justification for the segmentation must be provided to and approved by the Department.

Comment 9

In accordance with the Federal CSO Control Policy, the assessment of system-wide CSO control alternatives is required to be based on an “average” or “typical” rainfall year. As stated within the May 2018 report entitled “Typical Hydrological Year Report”, 2004 was selected as the typical hydrological year. While a long-term precipitation data set (i.e. greater than 30 years) was considered as part of this analysis, a more recent period was used in the ultimate selection of 2004 in order to consider local climate change. While use of the year 2004 does consider climate change, please be sure to consider resiliency requirements in the design of any infrastructure (e.g., storage and satellite treatment). Specifically, in accordance with the provisions of Executive Order 11988, the USEPA and the New Jersey Water Bank require that funded infrastructure be located outside of floodplains or elevated above the 500-year flood elevation. Where such avoidance is not possible, the following hierarchy of protective measures has been established:

1. Elevation of critical infrastructure above the 500-year floodplain;
2. Flood-proofing of structures and critical infrastructure;
3. Flood-proofing of system components.

While this comment does not necessitate a response at this time, these protective measures should be a consideration in the LTCP.

Comment 10

Section 8.1.1 (BCUA Transport Capacity) includes information regarding the theoretical determination of trunk sewer capacity using Manning’s equation as well as resultant modeling. This analysis was conducted to derive the capacities of the BCUA owned and operated BCUA Main Trunk Sewer; Overpeck Valley Trunk and Relief Sewers; as well as the capacities of the Ridgfield Park Branch Intercepting Sewer; and the Fort Lee Branch Intercepting Sewer. As summarized on page 4:

“Based on a hydraulic capacity assessment of the existing conveyance system to BCUA LF [Little Ferry] WPCF, as much as 210 MGD can flow through the plant under hydraulic control. If hydraulic control is not necessary, as in a major storm event, as much as 325 MGD can be accepted by the plant, however existing influent trunk capacity is limited to 210 MGD.”

Please clarify what is intended by the phrase “if hydraulic control is not necessary.”

In addition, the following is stated in Section 4.3.2 (Additional Conveyance):

“The BCUA finished construction of the Overpeck Creek Relief Sewer in 2010 to increase conveyance capacity in the Overpeck Creek drainage area. The InfoWorksICM model indicates that the existing BCUA Main and Overpeck Trunk/Relief Sewers servicing the combined sewer municipalities have adequate capacity for wet weather flows and that the total available transport capacity exceeds the current design flow for the WPCF by approximately 100 MGD, and the current NJPDES permitted average daily flow by over 110 MGD. Accordingly, additional conveyance capacity is not being considered as an alternative control by the BCUA.”

Please elaborate on the current peak and average flows through the conveyance system to better describe if there is adequate conveyance capacity to convey additional CSO flow to BCUA.

Comment 11

Regarding the reports for the City of Hackensack, and the Village of Ridgefield Park, there is limited discussion about the required evaluation of the alternatives concerning STP Expansion and CSO-related bypass. These reports cite limitations to the existing trunk sewers, in that they cannot convey additional wet weather flows to the BCUA to further reduce CSOs. Proper coordination between the three combined sewer municipalities and BCUA is essential in order to properly evaluate STP expansion alternatives including CSO-related bypass. This information must be clearly understood by all members of the BCUA CSO group in order for all of the CSO control alternatives to be accurately evaluated in terms of need and sizing.

As such, specific information regarding the capacity that will be able to be conveyed to BCUA from all three municipalities, both during and after the wet weather events, is needed. This information must be clearly understood by all members of the BCUA CSO group in order for all of the CSO control alternatives to be accurately evaluated in terms of need and sizing of the other alternatives. Accordingly, documentation regarding coordination of this information from BCUA to the other members of the BCUA CSO Group that share the interceptor(s) is needed.

With respect to this issue, the following is stated on page 47 in Section 4.1 (Development and Screening of General CSO Controls):

“It was noted to the permit[t]ee that the alternative controls selected by one municipality could impact the hydraulics in another CSO municipality.”

For example, please identify the current average and peak conveyance capacity of the interceptor as well as if there is adequate conveyance capacity to divert any additional CSO flow to BCUA. In addition, please identify the current wet weather conveyance capacity of the interceptor and provide a summary of what will be needed to increase the conveyance capacity to divert additional CSO flow to BCUA as related to the possible increased flow values discussed in **Comment 13**.

Comment 12

As a follow-up to **Comment 11** regarding the issue of conveyance capacity, page 2 of the Executive Summary states:

“In summary, the performance of the BCUA interceptors is complex and depends on many interrelated factors such as level control on wet well, what the critical points in the system are defined to be, and the distribution of flow entering the interceptor. The theoretical flows as determined through Manning’s Equation indicate that the Main Trunk Sewer have a capacity of approximately 120 MGD, and that the joint Overpeck Valley Trunk and Relief Sewers have a combined capacity of approximately 143 MGD. Together these sewers should theoretically be able to transport approximately 265 MGD to the WPCF. Notwithstanding the theoretical calculation, the InfoWorksICM model step rainfall analysis indicates that the maximum flow capacity transfer through the Overpeck Valley Trunk Sewers is controlled by the upstream components of these sewers. Accordingly, the flows introduced downstream must be such that they do not negatively impact the upstream hydraulic grades to an extent that surcharging and potential backups are created upstream. Overall the modeling conducted indicates that approximately 210 MGD can be transported to the WPCF safely without hydraulically impacting upstream sewer systems as indicated in the previous table. When flows to the WPCF exceed 210 MGD it is likely that upstream in the system surcharging conditions exist.”

This information is followed by the below table:

Summary of Trunk Sewer Capacities

Trunk Sewer Description	Max Flow (MGD)
Main Trunk Sewer	128
Overpeck Valley Trunk Sewer	62
Overpeck Valley Relief Sewer	17
Total Flow to WPCF	207

While the values referenced in the narrative are close to those contained in the chart, they do not match. Please verify and correct these values.

Comment 13

There is discussion regarding STP expansion and bypass within the report in Sections 4.4 (Sewage Treatment Plant Expansion or Storage), 8.2.1 (Control Program 1 – Expansion of WPCF Capacity), and 8.2.2 (Control Program 2 – Wet Weather Blending). The report evaluates a potential expansion to the estimated wet weather treatment capacity from 120 MGD to between 149 and 235 MGD as well as the wet weather bypass of 90 or 180 MGD. However, it is unclear how these changes would affect the frequency or volume of combined sewer overflows. In the event that the BCUA WPCF is expanded with or without a CSO related bypass, please describe the resultant effect on CSO volumes and events for the combined sewer municipalities for all of the increases in STP flows referenced in this section.

Comment 14

Point storage (tanks and equalization basins) are discussed in Section 4.4.3 and more detailed discussion is provided in Sections 8.2.3 (Control Program 3 -Regional Storage), and 8.2.4 (Control Program 4 – Utilize Inline Storage in Interceptor for CSO). While siting information has been included through a description of each control alternative near the BCUA facility, please supplement with additional discussion regarding the suggested placement location of these tanks given the volumes needed for the estimated tank sizes referenced in Table 8-12 (BCUA WPCF Treatment Rate vs. Storage Volume) where tank sizes range from 0.5 MG to 40 MG. In addition, please explain why the Required Storage Volume (MG) decreases as the Treatment Rate (5-min)(MGD) increases.

Comment 15

While cost analyses are provided within the report, particularly in Section 5 (Costing) and Section 8 (Development and Evaluation of Alternatives), please note that the Department is not commenting on any cost analysis at this time and will defer its comments until the coordinated LTCP submission. This includes any conclusions regarding the selection of any preliminary CSO control alternatives, present value calculations, and the cost range of any CSO control alternatives, as these cost estimates will be revised based on the revisions to the sizing of the alternatives chosen in the Selection and Implementation of Alternatives Report due June 1, 2020.

Comment 16

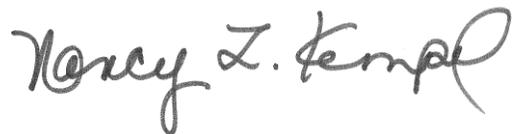
Section 8.2 includes a discussion of four control program alternatives with individual subsections for each including Sizing, Institutional issue, Implementability, Public Acceptance, and Costs. In addition, in Section 8.3 (Preliminary Selection of Alternative) it is stated that:

“BCUA does not own any CSO outfalls, but has agreed to work cooperatively with the municipal permittees, who will be responsible for bearing the costs for any expansion of transport and treatment facilities to accommodate additional combined flow conveyed to and treated by the BCUA. ... Therefore, the selection of alternatives acceptable to the BCUA lies with the municipal permittees.”

Generally, the alternatives evaluated in this report show a singular approach through the implementation of one alternative as opposed to a mix of various alternatives. Please expand on whether or not a mixed approach on a regional scale has been considered to address reductions in CSO volume and frequency of events.

Please incorporate these changes to the report and submit a revised version to the Department no later than 60 days from the date of this letter. Thank you for your continued cooperation.

Sincerely,



Nancy L. Kempel
CSO Team Leader
Bureau of Non-Point Pollution Control

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