



State of New Jersey

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October 2, 2019

Susan Banzon, Project Manager
City of Hackensack
65 Central Avenue
Hackensack, NJ 07601

Re: Review of Development and Evaluation of Alternatives
City of Hackensack, NJPDES Permit No. NJ0108766

Dear Ms. Banzon:

Thank you for your submission dated July 1, 2019 to the New Jersey Department of Environmental Protection (the Department or NJDEP) which contains the “Combined Sewer System Development and Evaluation of Alternatives Report” (hereafter “the report”) for the City of Hackensack (hereafter “the City”). This report was submitted in a timely manner and was prepared in response to Part IV.D.3.v of the above referenced NJPDES permit. 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.

Hackensack is part of the system that is served by the Bergen County Utilities Authority (BCUA) Little Ferry Sewage Treatment Plant (STP) (NJ0020028) along with the other combined sewer municipalities within the BCUA sewer service area namely the Borough of Fort Lee (NJ010034517) and the Village of Ridgefield Park (NJ0109118). This letter serves to provide a response to the Development and Evaluation of Alternatives report specific to the City. 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 26, 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 the June 28, 2018 “System Characterization Report” (approved by the Department on March 19, 2019); the June 2018 “Public Participation Program Report” (approved by the Department on June 26, 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 1, 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.

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:

- **Green infrastructure** (GI) technologies are described in Section 4.1.1 (Green Infrastructure). A variety of factors were considered to evaluate the implementation of green infrastructure in the City of Hackensack. The green infrastructure technologies that were initially evaluated include roadside rain gardens/bioswales and permeable pavement which can be effective for both stormwater quantity control and stormwater quality control.
- **Increased storage capacity**, as described in Section 4.1.2 (Increased Storage Capacity), includes an evaluation of various types of storage technologies, including storage tanks, deep tunnels, and increased in-line storage.
 - Section 4.1.2.1 (Satellite Storage Tank) describes two storage tank scenarios. The first involves two storage tanks to be located upstream of the Anderson Street outfall and upstream of the Court Street outfall. The second involves one regional storage tank to be located near the Court Street outfall which would require diversion of the flow from the Anderson Street subdrainage area to the regional storage tank. The regional storage tank alternative would eliminate the need for the Anderson Street outfall and utilize the Court Street outfall as the City's only outfall.
 - Section 4.1.2.2 (Storage Tunnel) introduces the possibility of storage tunnels. The tunnel would be bored about 100 feet below ground so it would not disturb any existing infrastructure or utilities. The tunnel would be connected to the Anderson Street and Court Street outfalls by drop-down shafts where further evaluation was conducted.
 - Section 4.1.2.3 (Maximizing Existing Storage in the Collection System) includes an evaluation of maximizing existing storage in the collection system. Due to the City's limited Combined Sewer System (CSS) collection system capacity and the existence of flood-prone areas, this alternative was not further considered.

- **Sewage Treatment Plant (STP) Expansion** is discussed in Section 4.1.3 (Sewage Treatment Plant (STP) Expansion) and it is stated that the BCUA is undertaking a study regarding STP expansion where preliminary investigations show that the trunk sewer and STP are near maximum capacity. CSOs potentially can be reduced by increasing the treatment capacity of the STP, thereby increasing the portion of flow that is directed to the treatment plant, but the existing trunk sewers cannot currently convey enough wet weather flows to the BCUA to achieve 85% capture or to minimize the amount of CSOs. However, if it is determined that additional wet weather flow can be conveyed to the BCUA STP via increased trunk sewer capacity, this may reduce the size of other technologies that are being evaluated.
- **Inflow and infiltration (I/I) reduction** is presented in Section 4.1.4 (Inflow and Infiltration Reduction). As stated in this section, the identification of I/I sources is labor intensive, requires specialized equipment, and significant I/I reductions can be difficult and expensive to achieve. I/I reduction for combined sewers provides limited gains since water tends to find another way into the system. However, the benefit of an I/I control program is that it can extend the life of the system, reduce the need for expansion, and lower pumping and treatment costs. A condition assessment performed in 2015 included observations of potential I/I issues.
- **Sewer separation** is described in Section 4.1.5 (Sewer Separation) where it is explained that city wide sewer separation was prescreened from further consideration; however, sewer separation in critical areas that are susceptible to flooding can be beneficial and cost effective. The City is undergoing sewer separation projects near Main Street including a project in the Anderson Street subdrainage area on Passaic Street, where the sewer system collects stormwater from small portions of State Street, Berry Street, and East Camden Street. The project includes a new stormwater outfall to the Hackensack River near the intersection of Passaic Street and River Street. There are additional project plans for a partial sewer separation project on Main Street near Atlantic Street although this project has not been completed to date. As additional sewer separation projects are completed, the City intends to incorporate the total impact into its LTCP.
- **Satellite treatment** is discussed in Section 4.1.6 (Treatment of CSO Discharge) where it is explained that both a disinfection-only alternative and a disinfection with pretreatment alternative would be evaluated. As stated in the report, disinfection is typically performed on a total suspended solids (TSS) reduced stream following screening and pretreatment since the effectiveness of the disinfection alternative relies on the TSS concentration of the sewage. The disinfection chemicals considered were sodium hypochlorite and peracetic acid (PAA). PAA would be the chosen disinfectant for this alternative since it has a stronger oxidation potential than chlorine dioxide, does not produce disinfection byproducts during disinfection, and does not require dechlorination prior to discharge.

Specific Comments

Comment 1

The second page of the report includes the text “This document is intended only for the use of the individual or entity for which it was prepared and may contain information that is privileged, confidential and exempt from disclosure under applicable law. Any dissemination, distribution or copying of this document is strictly prohibited.” This comment needs to be deleted since the document is now an open public record.

Comment 2

The Executive Summary states the following, “The prescreening process utilized the 2007 LTCP Cost and Performance Analysis Report (2007 Report), prepared by Malcolm Pirnie, Inc. (now Arcadis U.S., Inc.) that was required per the City’s previous NJPDES Permit No. NJ0105023.” Given that this document is referenced here and elsewhere within the report as the basis for certain decisions, please provide an electronic version of the report.

Comment 3

The Executive Summary states the following, “The CSO control alternatives were evaluated for 4, 8, 12, and 20 overflows per year as well as elimination or the capture for treatment of no less than 85% by volume of the combined sewage collected in the CSS during precipitation events for the 2004 typical year.” Similar statements are elsewhere within the report. Please provide an analysis for zero overflow events (as per the Federal CSO Control Policy) or clarify why this information was not provided.

Comment 4

Section 1.2.1 (System Characterization Report Summary) states the following, “92% of the volume calibration observations were within the targeted range.” Please provide the values of the targeted range for volume calibration for report completeness.

Comment 5

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 design of the CSO control alternatives under the LTCP.

Comment 6

A discussion of public participation and the CSO supplemental team is included in Section 2.1 (Public Participation Process). 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. Section 2.1 includes a discussion of public participation on the local level through the Hackensack Public Participation Group. The Department acknowledges that a list of meetings and agendas for the regional BCUA CSO Group, as well as a discussion of other public

outreach, is included in your Public Participation Process Report dated June 27, 2018. However, regarding the Development and Evaluation of Alternatives phase, please amend Section 2.1 of this subject report with a general overview of feedback from the public on any CSO control alternatives that were presented and are specific to the City of Hackensack.

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 CSO Supplemental Team and the Hackensack Public Participation Group be provided a copy of the LTCP in advance of the June 1, 2020 due date to the Department.

Comment 7

The NJPDES permit requires that the permittee select either the Presumption or Demonstration Approach as defined in the Federal CSO Control Policy. These approaches are discussed in Section 3 (Water Quality Objectives) as well as in Section 7.2 (Presumption and Demonstration Approaches). In addition, Table 7-3. (Achievement of Compliance with Permit Requirements) evaluates the preliminary selected alternatives against the regulatory compliance of the City’s Permit. Alternatives are evaluated throughout the report with targets of: (1) the elimination or capture for treatment of no less than 85% by volume of combined sewer in the CSS; and (2) a system-wide total of 4, 8, 12 and 20 overflows per year. As described in Section 3.3.1 (Presumption Approach), 85 percent capture and no more than an average of four discharge events per year are identified as two alternatives for the Presumption Approach. However, neither the Presumption or Demonstration Approach have been selected within the report, nor has it been acknowledged that the approach will be applicable to the entire hydraulically connected system.

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 the other percent capture values itemized in the CSO Control Policy for each hydraulically connected system must be included for report completeness. As referenced on page 13 of Section 3.3 (Range of CSO Goals Being Evaluated), it is stated that, “The percent capture calculation methodology described on Page 11 of the PVSC Evaluation of Alternatives Process Memo dated January 7, 2019 was utilized for the percent capture calculations presented herein. Please provide a copy of this memo for report completeness. Please also see **Comment 8** below regarding ‘hydraulically connected systems.’

Comment 8

Section 3.3 (Range of CSO Goals Being Evaluated) states that, “The City and the Village of Ridgefield Park share the Hackensack River as a CSO receiving water body. Therefore, the number of overflows between the City and the Village of Ridgefield Park during the 2004 typical year are considered one event if the overflows occur during the same 24-hour period.”

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 permittees to “segment a larger hydraulically connected system into a series of smaller inter-connected systems,” if it is the City’s and the BCUA CSO Group’s intention to define hydraulically connected systems that are smaller, segmented portions of the ‘entire collection system,’ this information needs to be consistent

throughout all four reports submitted by the members of the BCUA CSO Group, and a justification for the segmentation of those communities must be provided to and approved by the Department.

Comment 9

Green Infrastructure is described in Section 4.1.1 (Green Infrastructure) as well as in Section 7.3.2.1 (Siting Issues for Green Infrastructure). As stated on page 25, a target of 5% of the City's impervious area is identified as well as a second target of an additional 5% of impervious area to be managed by roadside raingardens/bioswales. Please provide a quantitative metric such as acres or gallons (i.e, gallons of flow that would not be diverted to the CSS since it is infiltrated) from GI practices in order to establish that any volumetric credit is given towards overall CSO reduction goals.

In addition, while the report includes a reference to a Rutgers study in Section 4.1.1 (Green Infrastructure) as entitled "Green Infrastructure Feasibility Study for Hackensack" (Rutgers Report), there is limited specific information regarding these potential GI projects. Since the Rutgers Report was not provided with this Development and Evaluation of Alternatives Report (DEAR) submittal, the Department cannot comment on that report specifically, however the City is advised to evaluate its potential GI projects in accordance with the January 2018 GI guidance document prepared by the Department for LTCPs, entitled, "Evaluating Green Infrastructure: A Combined Sewer Overflow Control Alternative For Long Term Control Plans" at

https://www.nj.gov/dep/dwq/pdf/CSO_Guidance_Evaluating_Green_Infrastructure_A_CS0_Control_Alternative_for_LTCPs.pdf.

Additional discussion should be also added to the DEAR report regarding possible locations for GI opportunities in the City, which should be based on the Department's GI guidance manual. Also, given that the Rutgers Study is referenced herein and may be used as a basis for some future decisions regarding GI, please provide an electronic version of the report.

Please note the Department's GI guidance manual is not intended to be the sole resource for evaluating this alternative, nor is this document intended to provide detailed design guidance for GI as this guidance can be found in the New Jersey Stormwater Best Management Practices Manual (see http://www.njstormwater.org/bmp_manual2.htm) nor is intended to be an endorsement of any proprietary software or work product. This guidance provides case studies, links, and resources to assist a CSO permittee with including GI as part of its CSO Long Term Control Plan.

Comment 10

Storage is described in Section 4.1.2 (Increased Storage Capacity) including subsections 4.1.2.1 (Satellite Storage Tanks), Section 4.1.2.2 (Storage Tunnel) and Section 4.1.2.3 (Maximize Existing Storage in the Collection System) with more detailed information in Section 7.3 (Development and Evaluation of Alternatives).

While some discussion of siting constraints is included in Section 6 (Available Land Analysis) and Section 7.3, please provide a map of potential locations as well as a description as to whether or not these locations have been explored regarding land ownership, availability etc. In addition, please describe whether any potential storage tanks would be surface or subsurface and, if subsurface, whether consideration has been given to any amenities such as parks, parking lots or combining this alternative with GI. Please also describe whether any analysis has been conducted as to whether or not tanks could be used in concert with satellite treatment.

Finally, the Department notes that Johnson Park is identified as a potential location for land in Section 6. Please advise if this property is encumbered under the Green Acres program requirements.

Comment 11

There is limited discussion within the report regarding the required evaluation of the alternatives concerning STP Expansion and CSO-related bypass. Section 4.1.3 states the following, “Increasing the portion of flows that is directed to the treatment plant cannot entirely achieve CSO abatement controls because the existing trunk sewers cannot convey enough wet weather flows to the BCUA to achieve 85% capture or to minimize the amount of CSOs.” The Department acknowledges that the City does not own/operate the BCUA treatment plant; however, coordination between the three combined sewer municipalities and BCUA is essential in order to properly determine what would be needed to increase flow to the STP, as well as the 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 additional flow that will be able to be conveyed to BCUA from each of the three municipalities, both during and after the wet weather events, is needed. For example, please identify the current average and peak conveyance capacity of the interceptor(s) as well as if there is adequate conveyance capacity to divert any additional CSO flow to BCUA. In addition to identifying the current wet weather conveyance capacity of the interceptors, please provide a summary of what will be needed to increase the conveyance capacity to divert additional CSO flow from the City to BCUA. Accordingly, documentation regarding coordination of this information among the members of the BCUA CSO Group is needed.

Comment 12

The following is stated on page 19, “Complete sewer separation meets water quality goals by significantly reducing the quantities of fecal coliform and other bacteria that enter receiving waters; complete sewer separation is considered the only technology that can achieve zero combined sewer overflows.” Please be advised that increases of stormwater discharges will require the City to meet the applicable water quality, water quantity, and groundwater recharge requirements in the Stormwater Management Rules at N.J.A.C. 7:8. While this comment does not necessitate a response at this time, this should be a consideration in the design of the CSO control alternatives under the LTCF.

Comment 13

The following is stated on page 20:

“The second treatment alternative evaluated was a combination of PAA disinfection with upstream pretreatment. Using information provided in the TGM [Technical Guidance Manual] 2018, the SanSep treatment unit was chosen for evaluation in Hackensack. SanSep has a simple design with no moving parts. The technology is effective at removing TSS at a variety of loading rates. The pretreatment alternative being evaluated in Hackensack would include two groups of SanSep units, one at each outfall, upstream of PAA disinfection.”

Based on the above, pretreatment technology was evaluated for each outfall. However, it appears that the results are being displayed for disinfection only at Anderson Street whereas the results for pretreatment and disinfection are being displayed for Court Street. As stated on page 31:

“The disinfection only alternative was sized to treat 100% of the overflow volume that occurred during the 2004 typical year. The disinfection unit at Anderson Street can treat CSOs up to a flow rate of 133 MGD. The disinfection unit at Court Street can treat CSOs up to 89 MGD. 133 and 89 MGD were the maximum flow rates that occurred at the Anderson and Court Street outfalls, respectively, during the 2004 typical year.

The alternative with pretreatment and disinfection was sized to pretreat and disinfect 100% of the overflow volume at the Court Street outfall. The treatment unit placed near the Court Street outfall was sized to pretreat 96.5% and disinfect 100% of the overflow volume during the 2004 typical year. This alternative is capable of attaining current water quality standards but does not meet the 85% capture or 4 overflow goals.”

Please include details and results for pretreatment with disinfection for Court Street as was provided for the Anderson Street outfall. The Federal CSO Control Policy requires treatment that includes primary clarification (or its equivalent), solids/floatables and disinfection.

Comment 14

In Section 7.3.4.5 (Treatment of CSO Discharge), the following is stated regarding satellite treatment:

“However, the number of CSO discharges will not change and therefore disinfected CSOs would continue to occur in the Hackensack River.”

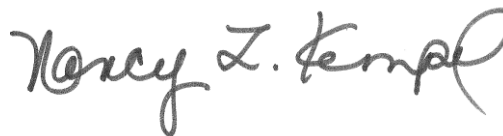
If CSO flow is pretreated and disinfected, it is no longer considered an overflow or a CSO event as per the criteria specified in the Federal CSO Control Policy. Please revise this statement as well as other similar statements within the report. In addition, regarding Table 7-2 (Performance Results Summary), please include a footnote to state that any flows that are subjected to pretreatment and disinfection are no longer considered overflows or events.

Comment 15

While cost analyses are provided within the report, particularly in Appendix A (Detailed Total Capital, O&M, and Present Worth Costs), 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.

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 NonPoint Pollution Control

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