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SHAWN M. LATOURETTE
Acting Commissioner

Via E-mail
June 11, 2021

Kareem Adeem, Assistant Director of Public Works
City of Newark
239 Central Avenue
Newark, NJ 07102

Re: Review of Selection and Implementation of Alternatives Report, City of Newark - Appendix L
City of Newark, NJPDES Permit No. NJ0108758

Dear Mr. Adeem:

Thank you for your submission dated September 28, 2020 entitled "Review of Selection and Implementation of Alternatives Report, City of Newark", as submitted, in a timely manner, to the New Jersey Department of Environmental Protection (the Department).

This report was submitted by the Passaic Valley Sewerage Commission (PVSC) on behalf of the City of Newark as "Appendix L" in the "Selection and Implementation of Alternatives for Long Term Control Planning for Combined Sewer Systems – Regional Report" (Regional Report), where it was prepared in accordance with Part IV.D.3.b.vi of the above referenced New Jersey Pollutant Discharge Elimination System (NJPDES) permit. The Regional Report serves to comply with the Long-Term Control Plan (LTCP) submittal requirements as due on October 1, 2020.

The Regional Report presents a "Regional Alternative" for all PVSC's combined sewer communities as well as a "Municipal Alternative" which is shown in the individual appendices for each of its eight (8) member combined sewer municipalities. This subject letter serves to provide a response to Appendix L which is specific to the City of Newark whereas a response to the Regional Report is provided under separate cover.

The overall objective of the LTCP is to identify and select 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). The Federal CSO Policy establishes a framework for the coordination, planning, selection, and implementation of CSO controls required for permittee compliance with the Clean Water Act. 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 2018 "System Characterization Report" (approved by the Department on April 12, 2019); the June 30, 2018 "NJCSO Group Compliance Monitoring Program Report" (approved by the Department on March 1, 2019); the June 2018 "Public Participation Process Report" (approved by the Department on March 29, 2019); the June 2018 "Identification of Sensitive Areas Report" (approved by the Department on April 8, 2019) and

the June 2019 Development and Evaluation of Alternatives Regional Report (DEAR) (approved by the Department on January 17, 2020).

As described in further detail in this letter, there are multiple tables and text within Appendix L which show a plant expansion value of 720 MGD. This flow volume can not currently be realized due to conveyance limitations within the current collection system; therefore, the Regional Report proposes construction of a parallel interceptor to expand conveyance capacity. There are multiple references to the Regional Alternative No. 3b which includes construction of a parallel interceptor as shown in the September 28, 2020 Regional Report as follows:

Table H-6: Alternatives Presented in the Regional DEAR and Final Alternatives for the LTCP

Alternative	Description
Municipal Alternative (No. 1b)	Alternatives that achieve 85% wet weather capture within each municipality
Regional Alternative (No. 3b)	Parallel Interceptor + WRRF Secondary Bypass to 720 MGD + Local technologies

It is the Department's understanding that the objective of Appendix L is to focus on municipality centric alternatives in order to achieve 85% wet weather capture within the municipal border. Clarify Appendix L appropriately as noted within this letter.

The below represents the Department's initial comments. The Department reserves the right to further comment on these issues. Comments are as follows.

Section A, Introduction

Comment 1: Section A, Introduction, states the following:

> "This report describes the selected alternatives from the Development and Evaluation of Alternatives Report (DEAR) for The City of Newark. PVSC NJDEP Permit Part IV.G Section 10 requires that permittee is "responsible for submitting an LTCP that addresses all nine elements in Part IV.G". The nine elements are listed below:
>
> 1. Characterization Monitoring and Modeling of the Combined Sewer System
> 2. Public Participation Process
> 3. Consideration of Sensitive Area
> 4. Evaluation of Alternatives
> 5. Cost/Performance Considerations
> 6. Operational Plan
> 7. Maximizing Treatment at the existing plant
> 8. Implementation Schedule
> 9. Compliance Monitoring Program
>
> Elements 1, 2, 3, and 9 above are addressed in the Regional SIAR [Selection and Implementation of Alternatives Report]. Each of the NJDEP approved reports for elements 1, 2, and 3 are included in the appendices of the regional report. Regional Report will also discuss the typical year selection and include the NJDEP approved Typical Hydrologic Period Report."

In order to ensure that all nine components of the LTCP within this specific appendix are addressed for compliance purposes as well as to ensure transparency for public review, supplement this section or Section D with a chart of each of the LTCP elements included in Part IV.G of the NJPDES CSO permit along with the identification of the specific section of another report. Below is a section from Appendix F of the Regional Report which can be used as a model:

Table A-1: Review of Major Requirements of the SIAR

Permit Section	Permit Requirement	SIAR Section Reference
Part IV G1	Characterization Monitoring and Modeling of the Combined Sewer System	Presented in the Regional LTCP as Appendix A
Part IV.G2	Public Participation Process	Presented in the Regional LTCP as Appendix E
Part IV G3	Consideration of Sensitive Area	Presented in the Regional LTCP as Appendix C
Part IV G4	Evaluation of Alternatives	Presented in the Regional LTCP as Appendix D and summarized in Section C of this SIAR
Part IV G5	Cost/Performance Considerations	See Section D.3 of this SIAR
Part IV G6	Operational Plan	See Section F.6 of this SIAR
Part IV G7	Maximizing Treatment at the Existing STP	See Appendix A of this SIAR
Part IV G8	Implementation Schedule	See Section F.5 of this SIAR
Part IV G9	Compliance Monitoring Program	Presented in Section K of the Regional LTCP

Section B, Screening of CSO Control Technologies

Comment 2: Section B.1, Green Infrastructure and Conservation states the following:

> "Green Infrastructure (GI) technologies are used to capture stormwater before it enters the sewer system. Captured stormwater is typically infiltrated into the ground or conveyed to the atmosphere via evapotranspiration. Implementing GI technologies in Newark has the potential to reduce the volume of stormwater that enters the combined sewer system, thereby reducing the overall volume and frequency of CSO events. However, the required CSO capture/reductions typically cannot attained from GI alone. Some GI technologies offer environmental, social, and economic benefits to the community, such as decreasing localized flooding, improving air quality, creating job opportunities, and providing needed green spaces for aesthetic purposes."

The LTCP should give the utmost priority to the elimination of ongoing flooding, which is a public health issue. Provide additional information on flooding within Newark and clarify whether or not any flooding is related to sewer backups, stormwater flooding or tidal inundation. In addition, explain if GI locations will specifically be targeted to address flooding.

The Department acknowledges that GI has the potential to decrease localized flooding and that GI has received support through the public participation process as noted later within the LTCP.

Section C, Evaluation of Alternatives

Comment 3: Section C.2 Development and Evaluation of Alternatives as well as Section D.3.3. contains some incorrect references to "NJSPDES" instead of NJPDES. Section D.2 also contains an incorrect reference to SPDES. Correct accordingly.

Section D, Selection of Recommended LTCP

Comment 4: Section D.3.1, Description states:

> "The Newark DEAR looked at several alternatives in order to achieve the goals of the LTCP. After submittal of the Regional Report and all the community DEARs, PVSC discussions with NJDEP and NJCSO Group meetings the presumptive approach and an 85% capture goal came into focus and an achievable cost effective approach."

The Department acknowledges that the permittee has selected the following option under the Presumption Approach as a means of compliance:

> "ii. The elimination of the capture for treatment of no less than 85% by volume of the combined sewage collected in the CSS [Combined Sewer System] during precipitation events on a system-wide annual average basis;"

Baseline values are then included in Table D-3 . Percent capture is also broken down by selected alternatives in Tables D-7 (City of Newark LTCP Alternatives) as described in comments under Section D.4.1, Storage Alternative for 85% Capture. Finally, wet weather volumes are broken down by outfall for volume and frequency under for modified gate operations and plant upgrades in Table D-9 (Newark Annual CSO Summary for Plant Operational Conditions).

Given that Newark has selected 85% capture as a means to comply under the Presumption Approach, the derivation of percent capture is central to a review of this report. For completeness, supplement this report with the specific percent capture equation utilized to derive these results. Approval of this report hinges in part on the inputs and results of this equation being clearly demonstrated and reproducible.

Comment 5: Section D.3.1, Description states the following:

> "PVSC provided updated hydraulic models for baseline and plant secondary bypass conditions for the communities to use in the SIAR analysis. Maximum pumping capacities of the PVSC main pumps and force main community pumps in the model for the 400 MGD baseline and the 720 MGD secondary bypass are summarized in Table D-1. Additionally, the PVSC model represented the operation of the Newark gates in both the baseline and secondary bypass scenarios using Real Time Control (RTC) model functions, as listed in Table D-2. The PVSC baseline and secondary bypass models are used as the base scenarios for its SIAR alternative analysis.

Table D-1 Summary of Maximum Pumping Capacities for Baseline and Secondary Bypass Conditions in the PVSC model

Communities	PVSC Baseline 400 MGD Operating Capacity Maximum Pump Capacity [MGD]	PVSC Secondary Bypass 720 MGD Operating Capacity Maximum Pump Capacity [MGD]	 Difference from Baseline [MGD]
Force main Communities			
Bayonne	17.5	32.0	14.5
South Kearny	17.5	17.5	0
Jersey City East	60.0	60.0	0
Jersey City West	45.4	45.4	0
Total	**140.4**	**154.9**	**14.5**
Main Interceptor			
Dry Pump	280	485	205
Wet Pump	40	140	100
Total	**320**	**625**	**305**

Table D-2 Summary RTC Rules for Baseline and Secondary Bypass Conditions in the PVSC model

Model Condition	Newark Gates	RTC Control Rule
PVSC 400 MGD Baseline	Clay St Gate	Close gate if plant south clarifier storage level >= 94.6ft
	Other Gates	Close gate when total plant Q (including FM)>=350MGD
PVSC 720 MGD Secondary Bypass	Clay St	Close gate if plant south clarifier storage level >= 94.6ft
	Other Gates	Close gate when total plant Q (including FM)>=715MGD

"

Comments on Table D-1 and D-2 are as follows:

a) Given that the purpose of Appendix L is to explain the effects of the municipal control alternative independently without including the benefits of the regional alternative, the flow value of 720 MGD should include a caveat within these tables as well as other sections to clarify that 720 MGD can not be realized without construction of a parallel interceptor.
b) Table D-1 shows the maximum pumping capacities of systems within Hudson County where Jersey City and Bayonne contribute flows to the Hudson County Force Main. Note that the Hudson County Force Main is limited in capacity and can not handle the simultaneous combined pumping of from each of these systems. Modify this chart to show the pumping capacity of the Hudson County Force Main. In addition, the Department notes that the pumping rates for the City of Bayonne are indicated as 17.6 MGD and 27.8 MGD within Appendix G. Revise appropriately.
c) Regarding Table D-2, the NJPDES CSO permit as issued to PVSC currently authorizes a CSO related bypass of 720 MGD. Note that the real time control (RTC) is specified in the above table as 715 MGD. Clarify that this number is correct or if it should state 720 MGD.

Comment 6: Section D.3.2, Ability to Meet Water Quality Standards states the following:

> "…HDR Engineers developed a three dimensional (3D) Hydrodynamic Water Quality Model to evaluate existing conditions, compliance, and water quality projections under proposed LTCP alternatives…
>
> …
>
> Water quality modeling results showed that under baseline existing conditions the Lower Passaic River and Newark Bay to which Newark's CSO discharge, all stations in Newark's receiving waters attained the SE3 water quality standard 100% of the time (Table D-5). One station outside of Newark (Station 8) and in Class FW2-SE2 waters achieved water quality standards 99.4% of the time based on values at the surface.…"
>
> ….
>
> The water quality modeling showed that under existing conditions Newark's receiving waters already meet water quality standards. Furthermore, the modeling study showed that CSOs do not preclude the attainment of water quality standards in Newark's receiving waters."

The Department is in in receipt of the "Calibration and Validation of the Pathogen Water Quality Model," September 2020 as submitted by the NJ CSO Group. Because this model is pending review, it is premature to state that current water quality meets criteria through the model. Delete this statement or revise to reflect the pending status of the model.

Comment 7: Section D.3.3, Non-Monetary Factors states that public participation was a factor in selecting the LTCP alternatives. This section also states the following:

> "Throughout the LTCP process it was clear that the public desired a plan that would include green infrastructure. The use of green infrastructure provides the community with several benefits including increased green space, reduction in heat island effect and the potential for green jobs. The City of Newark has launched a local hiring initiative aimed at assisting 2,020 local residents with gaining full-time positions at family-sustaining wages. The City of Newark in collaboration with the Newark Workforce Development Board is launching a training program to increase the skills of residents to prepare them for a wider range of positions with salaries that meet the family-sustaining threshold. GI is rising as a high demand position as cities in the area continue their efforts to address the local impacts of runoff. The program will increase the GI workforce by 25% in the City of Newark over a 2-year period, building the capacity of job seekers and local contractors to meet the demands for skilled GI labor to support renewable energy infrastructure and build sustainable urban drainage systems."

Public participation is a required component of the NJPDES permit. The Department acknowledges that the City of Newark may utilize a job training program for operation and maintenance of green infrastructure as well as to advance public participation initiatives. Provide any update on this training program.

In order to satisfy Part IV.G.2 of the NJPDES CSO permit, the Department acknowledges that public participation and public outreach has taken place through the PVSC Supplemental CSO Team as well as through local initiatives such as Newark DIG (Doing Infrastructure Green). Provide a brief summary of public participation activities to date subsequent to the submission of the June 2018 Public Participation Process Report. This may also include any town council or municipality government meetings where CSO alternatives were discussed.

Public participation will continue in the next NJPDES permit and could include three primary goals: inform, educate and engage. The Department is evaluating this issue and is in the process of preparing updated NJPDES permit language to advance this issue for the next permit renewal as part of a stakeholder process. One element for future public participation could include public input on the siting of green infrastructure projects. Provide input on the viability of public input on this topic. In addition, future permit language will likely include specific requirements for advance advertisement of public meetings. Provide any suggestions as to how to better inform the public of meetings.

Comment 8: Section D.3.4, Cost Opinion states the following regarding storage tanks:

> "…Capital costs also include the cost of land acquisition near the selected outfalls. An average cost per acre was determined based on land value of surrounding commercial/vacant, public, and vacant parcels, as shown [in] Table D-6. Tank footprints were then assumed based on a 20-foot tank depth, and multiplied by the average land cost per acre to determine the land acquisition cost for each tank. The estimated land acquisition cost was then added to the capital cost of the tanks.

Table D-6. Land Acquisition Cost Per Acre and Associated Estimated Tank Footprint

Outfall	Land Cost ($/acre)	Estimated Tank Footprint (acre)	Estimated Land Acquisition Cost ($)
NE009/NE010	$ 1,424,046	2.6	$3,702,520
NE014	$ 3,814,884	1.2	$4,577,861
NE022	$ 682,077	1	$682,077

"

Figure D-4 then shows the location of the proposed CSO storage for 85% capture for NE09/010, NE014 and NE022. Provide the following information regarding the proposed storage tanks:

a) Confirm that the property locations shown in Figure D-4 can sustain the estimated tank footprints shown above.
b) Elaborate as to whether the property acquisition process, fieldwork, and design for construction has commenced.
c) Explain the draw down time and whether or not PVSC can accept those flows in the time period specified or if there are certain limitations set by PVSC.

Comment 9: Section D.3.5, Selection of Recommended Alternatives states the following:

> "The municipal long term alternatives for The City of Newark is summarized in Table D-7. The selected alternative is comprised of two parts. The first part is the baseline alternative under a presumptive approach to achieve 85% percent capture. This part includes three CSO storage tanks at outfalls NR009/010, NE014 and NE022 and operational modifications to regulators with automated controls as described in Section 2.2.1 of the Newark DEAR. A subsequent alternative is also evaluated with implementation of secondary bypass at the PVSC plant in addition on top of the 85% capture alternative described above. The second part of the long term alternative considered additional measures including Green infrastructure applies on up to 5% impervious areas, modification of the regulators along the South Side Interceptor and Water conservation."

"Modeling analysis using the most updated PVSC collection system InfoWorks 9.0 were conducted to evaluate the 85% alternative. The model estimated a total typical year 2004 Newark CSO reduction of 572 MG from the baseline condition of 1319 MG when the 85% alternative with modified PVSC regulator operation is assumed, achieving 87.0% CSO capture as shown Table D-7. The Newark CSO reduction is 1086 MG with PVSC upgrade to secondary bypass and associated regulator operation assumed, reaching 95.9% of the Newark CSO capture rate."

Table D-7. Ctiy of Newark LTCP Alternatives

Selected Alternatives	% Reduction / %Capture(1)	Volume Captured	CSO Event Reduction	Cost Million $
Newark Alt 1b to achieve 85% Capture				
1. 17 MG Storage at NE0009/010 2. 7.8 MG Storage at NE014 3. 3.78 MG Storage at NE022 4. Modified PVSC Regulator Operation Assumed	43.4%Reduction /87.0% Capture	572MG	0-46	358.3
1. 17 MG Storage at NE0009/010 2. 7.8 MG Storage at NE014 3. 3.78 MG Storage at NE022 4. PVSC Secondary bypass and modified PVSC Regulator Operation Assumed	82.3%Reduction /95.9% Capture	1086MG	0-46	358.3
Addition LTCP Measures for additional CSO Reduction				
Green infrastructure (up to 5% impervious area managed)	4.6% Reduction /0.7% Capture	61 MG	0-4	90.3
Regulator modification on south-side regulator (Peddie St NE-025)	0.36% Reduction /0.08% Capture	4.8MG	0-4	0.4
Water Conservation	2.7%Reduction /0.02% Capture	36 MG	Reduction in approximately 2 events	1.5

Notes:

(1) CSO percent capture is calculated with the assumption that wet-weather period starts after the initial 0.1" rainfall and it includes the trailing 12hrs beginning 0.1" prior to the end of rainfall.

A percent capture of 95.9% cannot be attained, with just the PVSC upgrade to secondary bypass, associated regulator modifications and/or storage as shown on Table D-7. Rather, based on the September 28, 2020 Regional Report, it is the Department's understanding that a percent capture value of 95.9% can only be attained with the construction of the parallel interceptor under Regional Alt3b (Parallel Interceptor + WRRF Secondary Bypass to 720 MGD + Local technologies) and with storage as shown in Table H-6 of the Regional Report as included in the previous comment. Given that the purpose of Appendix L is to explain the effects of the municipal control alternative independently without including the benefits of the regional alternative, inclusion of the percent capture value of 95.9% should be reevaluated or this value should be clarified within Section D.3.5. The flow value of 720 MGD should include a caveat within these tables as

well as other sections to clarify that 720 MGD can not be realized without construction of a parallel interceptor and/or storage.

Comment 10: Section D.4.1, Storage Alternative for 85% Capture states the following:

> "CSO control through storage technology is to construct off-line storage tanks near the CSO outfalls. Instead of being discharged to receiving waters, CSOs during wet weather are diverted to the facility for storage until the storm event passes. The stored overflows are subsequently pumped back to the collection system during dry weather and conveyed to the PVSC plant for treatment. Only excess CSOs that exceed the storage facility capacity will be discharged..."

Storage is a key component of both parts of the selected alternatives. Climate change can have an impact on sea level rise for storage as a chosen CSO technology. As a result, be sure to consider resiliency requirements in the design of any infrastructure (e.g., storage). 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.

Address how the selected CSO control alternatives address climate change and sea level rise.

Comment 11: Section D.4.1, Storage Alternative for 85% Capture states the following:

> "The modified regulator gate operation for baseline condition assumes delayed gate closings till plant flow reaches 375MGD, 25MGD higher than the original control point of 350MGD, except for Clay Street, where operation is assumed to remain the same. The increase of the control flows shortens the time of CSO discharge and therefore increases the amount of the flow reaching the collection system. The modification of the gate operations do not add additional cost, but need to be monitored to ensure the interceptor system will not be stressed.
>
> In the Secondary Bypass condition, the plant is assumed to be upgraded from a total of 400MGD capacity to 720 MGD. The Newark gates are assumed to operate at a threshold flow of 715MGD corresponding to the increase of the plant capacity to 720MGD based on the secondary bypass condition model.
>
> Table D-9 tabulates the Newark CSO volume and frequency for the two plant operation conditions in comparison to baseline condition…With regulator gate operation control flow modified from 350MGD in baseline to 375MGD, total Newark CSOs reduced from 1319 MG to 1245MG. This is a CSO reduction of 74MG (6%), increasing Newark CSO capture from 77.0% to 78.3%. The model also predicted that when the plant is expanded to secondary bypass, with the operation of the Newark gate closings only when total plant flow reaches 715MGD, Newark CSO is reduced by 758MG (57%) to 561MG. The Newark CSO capture increases to 90.2%, exceeded the 85% goal without additional measures.
>
> It should be noted that in this scenario, flows from other contributing municipalities to the plant are assumed to remain the same level as in baseline condition. When the plant expansion is accompanied by flow increases from other hydraulically connected municipalities, Newark CSO reduction could reduce correspondingly. A sensitivity analysis was in fact conducted, using inflows from other

municipalities that represents regional Alt3b CSO control from Bayonne and Alt1b CSO control measures from Alt1b from other force main (Jersey City and North Bergen) and combined areas (Paterson, East Newark, Kearny and Harrison). The increase of the total Newark CSOs is only 1.5MG, from 561.4MG to 562.9MG, although the increase of flows from the main interceptor is about 726MG and from force main is about 836 MG."

Table D-9 is as follows:

Table D-9. Newark Annual CSO Summary for Plant Operational Conditions

Outfall	1) Baseline		2) Baseline with Modified Newark Gate Operations		3) Plant Upgrade to Secondary Bypass with Associated Newark Gate Operations	
	Volume (MG)	Frequency	Volume (MG)	Frequency	Volume (MG)	Frequency
NE002	93.7	42	82.4	36	5.1	12
NE003	0.0	0	0.0	0	0.0	0
NE004	1.4	16	1.3	13	0.1	1
NE005	26.4	41	21.7	35	0.1	1
NE008	99.1	44	88.5	40	33.9	34
NE009	173.9	39	180.9	39	119.1	39
NE010	173.9	39	180.9	39	119.1	39
NE014	195.7	45	172.5	45	51.3	41
NE015	91.1	42	77.2	36	0.9	5
NE016	57.4	39	51.4	33	14.1	21
NE017	116.7	39	104.0	33	35.1	26
NE018	78.7	45	69.8	44	16.6	37
NE022	46.6	47	46.8	46	44.2	47
NE023	27.9	31	28.9	31	20.8	31
NE025	73.9	17	74.8	18	60.3	16
NE027	17.5	17	17.8	17	11.8	17
NE030	11.8	19	11.8	19	10.6	18
NE026	33.2	19	34.4	19	18.3	17
Total Newark CSO Volume	**1319.0**		**1244.9**		**561.4**	

While Modifications to Newark Gate Operations is part of the Municipal Alternative, and therefore belongs within Appendix L, Plant Upgrade to Secondary Bypass as shown in Table D-9 implies that parallel interceptor is included which is part of the Regional Alternative. Therefore, Table D-9 belongs in the Regional Report rather than Appendix L. Clarify accordingly.

In addition, while these excerpted sections show the significant reductions in CSO discharges that expansion of PVSC for a CSO related bypass and the associated regulator modifications will have, confirm that flow from other contributing municipalities will remain the same as the baseline. Provide additional detail on the sensitivity analysis conducted to illustrate a more realistic effect of the CSO related bypass on Newark's CSO discharge reductions.

Comment 12: Section D.4.1, Storage Alternative for 85% Capture states the following:

"In the baseline condition the total PVSC plant capacity is at 400 MGD. The 10 Newark automated gates shown in Figure D-5 are set to close when the total plant flow reaches and exceeds 350 MGD, except for the gate at Clay Street (NE-009/010) which is set to close when the water level at the plant

south clarifier reaches and exceeds 94.6ft (PVSC datum). When the regulator gates are closed, flows to the regulators are backed up to release CSOs to the outfalls that passes the weirs. In the InfoWorks model, the operation of the gates are simulated through using a real time control (RTC) module that allows rules to be set to simulate operations of a structure, a sluice gate in this case."

Clarify which entity is responsible for controlling the 10 regulators and how this issue will be coordinated.

Comment 13: Section D.4.1, Storage Alternative for 85% Capture states the following:

"Furthermore, the CSO storage proposed in Alt1b alternative are applied to the two plant operation conditions to evaluate the additional CSO capture. Table D-10 shows the CSO volume and frequency comparison of all Newark outfalls under the 1) baseline, 2) Storage alternative on baseline with modified gate operation, and 3) Storage alternative on plant secondary bypass upgrade. Total Newark CSO volume is reduced from 1319MG in baseline condition to 747MG (by 43%) when the proposed storages are applied to baseline with modified gate operation, and to 234MG (by 82%) when they are applied to updated [upgraded] plant to secondary bypass…"

Table D-10 is as follows:

Table D-10. Newark Annual CSO Summary for Storage Alternatives

Outfall	1) Baseline		2) Baseline with Storage for 85% Capture		3) Secondary Bypass with Storage	
	Volume (MG)	Frequency	Volume (MG)	Frequency	Volume (MG)	Frequency
NE002	93.7	42	81.9	35	5.3	12
NE003	0.0	0	0.0	0	0.0	0
NE004	1.4	16	1.3	14	0.1	1
NE005	26.4	41	21.7	35	0.1	1
NE008	99.1	44	88.3	40	34.0	34
NE009	173.9	39	32.2	7	1.4	3
NE010	173.9	39	32.2	7	1.4	3
NE014	195.7	45	18.0	8	0.0	0
NE015	91.1	42	76.9	36	1.0	5
NE016	57.4	39	51.4	33	14.4	21
NE017	116.7	39	103.9	33	35.5	26
NE018	78.7	45	69.5	43	16.8	37
NE022	46.6	47	2.5	1	1.5	1
NE023	27.9	31	28.7	31	20.9	31
NE025	73.9	17	74.5	18	60.4	16
NE027	17.5	17	17.7	17	11.9	17
NE030	11.8	19	11.8	19	10.6	18
NE026	33.2	19	34.1	19	18.4	17
Total Newark CSO Volume	**1319.0**		**746.6**		**233.5**	

Table D-10 appears to belong in the Regional Report rather than Appendix L.

While Storage is part of the Municipal Alternative, and therefore belongs within Appendix L, Secondary Bypass as shown in Table D-10 implies that parallel interceptor is included which is part of the Regional Alternative. Clarify accordingly.

Comment 14: Section D.4.1 also states the following regarding tank sizing:

"…Because the sizing of the tanks are based on CSO capture from the baseline condition, the tanks could be further downsized to reduce the cost if they are to be used with plant upgrade, which alone, already provides additional CSO reduction. At outfall NE022, when the storage targeted to 4 OF/yr is applied to baseline, CSO is reduced from 47MG to 2.5MG (by 95%) in volume and 47 OF/yr to 1 OF/yr in discharge frequency. For secondary upgrade bypass, CSO at NE022 is reduced to 1.5MG (by 97%) and 1OF/yr."

Given that the objective of the LTCP is to select alternatives, confirm that the tank sizes as shown in Table D-7 of 17 MG, 7.8 MG and 3.78 MG for NE009/NE010, NE014 and NE022, respectively, and that these tank sizes will not be reduced.

Comment 15: Section D.4.1, Storage Alternative for 85% Capture includes the following figures to display the effects on the CSOs of the various alternatives:

- Figure D-6. CSO Volume Reductions at Newark Outfalls for Plant Operation Conditions
- Figure D-7. CSO Frequency Reductions at Newark Outfalls for Plant Operation Conditions
- Figure D-8. CSO Volume Reduction at Newark Outfalls for Storage Alternatives
- Figure D-9. CSO Frequency Reduction at Newark Outfalls for Storage Alternatives

Similarly, Section D.4.2, Green Infrastructure (5% Impervious Area Managed) includes the following figures to display the effects on the CSOs of the various alternatives:

- Figure D-11. CSO Volume Reduction at Newark Outfalls for Alt1b + GI Alternatives
- Figure D-12. CSO Frequency Reduction at Newark Outfalls for Alt1b + GI Alternatives
- Figure D-13. CSO Volume Reduction at Newark Outfalls for GI Alternatives on Various Plant Operations

These figures should be labeled to indicate if these alternatives assume the inclusion of the parallel interceptor from the Regional Report. In addition, verify that the values for NE004 are correct for Figure D-13.

Comment 16: Section D.4.3, Green infrastructure (Tree pits) states the following:

"Tree pits are another form of Green Infrastructure that is often lower cost and easier to implement. The Newark Department of Public Works (DPW) conducted a survey of tree stumps in the city in order to plan for the replacement of dead trees. This provides an opportunity for the city to use green infrastructure to help manage CSO and storm water. By replacing dead trees with a tree box stormwater runoff can be retained and infiltrated rather than running off to a CSO or stormwater outfall. DPW surveyed a total of 734 tree stumps, 411 were in areas served by CSOs.

…

The utility of a tree box is the ability to be installed in dense urban areas as well as residential and suburban areas; regardless of land use tree boxes are designed to capture and treat small drainage areas. Tree boxes generally capture and treat stormwater runoff from small frequently-occurring storms but are not designed to capture runoff from large storms or extended periods of rainfall. Each tree box is designed to treat approximately 0.25 to 0.5 acre for this estimate a managed area per tree box of 0.33 acres was assumed. Estimated cost of individual tree boxes to manage 0.33 acres was assumed to be $12,000. Maintenance consists of annual removal/replacement of mulch, litter and pruning of trees.

This can typically be conducted by DPW when trained by the manufacturers of the system. Performance efficiency is correlated with maintenance…

…Approximately 137 acres can be managed at a cost of approximately 7 million dollars."

The Department acknowledges that the use of tree pits are an innovative way to incorporate GI measures. Provide a status update on this project.

Comment 17: Section D.4.4, Regulator Modification on South-Side Regulator states the following:

"CSO reductions can also be achieved by modification of regulators, adding additional capacities to the existing regulator structures so that the amount of flows that are passed through the regulators and conveyed to the treatment plant are increased. Regulator modification alternatives are evaluated for the three regulators that contribute flow to the South Side Interceptors (Figure D-1), namely Peddie Street (NE-025), Queens District (NE-026), and Waverly District (NE-027). The three regulators do not discharge CSO to the Passaic River, but to the Newark Airport peripheral ditch. Their annual CSO discharge total is 125MG on the 2004 typical year condition, 74MG (59%) of which is from the Peddie Street (NE-025) regulator.

The modeling analysis on increasing the capacities of these regulators are evaluated in two sets. The first is as a supplement to Alternative 1b (Alt1b) where storages at NE009/010, NE014 and NE022 are used to reduce CSOs and the second set as an addition to the regional Alternative 3b scenario (Alt3b), where sewer system conveyance capacity are being increased by adding a secondary interceptor that runs parallel to the existing main interceptor in the Newark section, with relief structures in Newark to divert additional flow to the parallel interceptor. In both the Alternative 1b and Alternative 3b scenarios, the plant capacity is assumed to be upgraded to 720 MGD (secondary bypass). In the Alt3b scenario, controlled flows from other combined municipalities (Paterson, Kearny, Harrison, and East Newark) and the Force Main municipalities (Bayonne, North Bergen and Jersey City) are represented as time-series inflows.

In both analyses, the plant capacity is assumed to be upgraded to receive additional wet weather flows from the communities, and making the maximization of the flows from Southside interceptor also possible. The plant upgrade alone reduces Newark CSO volume from 1319MG in baseline to 561MG, a reduction of 758MG (51.4%). On top of it, Alt1b storage scenarios increases the CSO reduction to 1088MG by 82.9% (231MG CSOs); and Alt3b reduces annual CSO volume in Newark further to 237MG without modification of South Side regulators, a reduction of 1082MG (82.0%)."

The incorporation of regulator modifications for the Alt 1b scenario demonstrates a significant reduction in CSOs and this alternative should be pursued in the short term. Modification of the Peddie Street regulator is described in Section F.2 as a selected alternative for both plant scenarios. However, this project is targeted for Year 16 as shown in Table F-3. Proposed Newark CSO LTCP Implementation Schedule. Revisit this schedule to take place in the short term given the low cost nature of this alternative as well as the significant reduction in CSOs.

In addition, Alternative 3b (Alt3b) is a selected alternative from the Regional Report. As noted in previous comments, inclusion of the Alt3b scenario (which incorporates the use of a parallel interceptor from the Regional Report) is beyond the objective of Appendix L since this should be a municipality centric report. Clarify accordingly.

Section E, Financial Capability

Comment 18: Section E.1, Introduction includes the following excerpt:

> "The Financial Capability assessment is a two-step process including *Affordability* which evaluates the impact of the CSO control program on the residential ratepayers and *Financial Capability* which examines a permittee's ability to finance the program. Affordability is measured in terms of the Residential Indicator (RI) which is the percentage of median household income spent on wastewater services. Total wastewater services exceeding 2.0% of the median household income are considered to impose a high burden by USEPA. The financial capability analysis uses metrics similar to the municipal bond rating agencies. The second step of the analysis assesses the City of Newark ability to finance the required CSO controls. The financial capability analysis uses metrics similar to the municipal bond rating agencies."

To supplement this section the Department requests to see in table format in an Excel spreadsheet showing calculations, a year-by-year listing of (1) existing O&M costs and debt service; (2) CSO control program additional O&M costs, capital outlay and loan amounts, additional debt service and other additional costs; (3) current and projected wastewater treatment and CSO costs including residential share, number of households, cost per household; and (4) median household income and resulting residential indicator. A review of the financial capability analysis can not be conducted until this information has been provided.

Comment 19: Section E.2, Baseline Conditions (Without CSO Controls) states the following:

> "The regional alternative would result in lowered overall costs for the control of CSOs within the PVSC service area. Under this approach both the costs of the regional facilities such as a relief interceptor and the resultant savings would be allocated amongst the PVSC municipalities with combined sewer systems. As the basis of this allocation remains under discussion as of the writing of this SIAR, the FCA focuses on implementation of the Municipal Control Alternative. Should the permittees come to agreement on the cost allocation for the Regional Control Plan, the FCA will be revisited to reassess the affordability and schedule for implementation of the LTCP."

Once all technical comments have been resolved, it is the Department's intent to issue draft NJPDES permits with the selected projects and the final NJPDES permit based on the selected approaches included in the LTCPs as certified by the individual permittees. The NJPDES CSO permit at Part IV.D.3.b.vi requires submission of an approvable LTCP. Those municipalities that have selected the Regional Plan must resolve any implementation issues relating to a cost-sharing plan in order to ensure that the plan is viable and to ensure the development of an appropriate NJPDES permit. In sum, any issues relating to implementation must be resolved prior to approval of the LTCP. While this comment does not necessitate a response at this time, the Department hereby notes this information for the Administrative Record.

Comment 20: Section E.3.4, Potential Impacts of the COVID-19 Pandemic in Affordability states:

> "Given the current and likely continuing uncertainties as to the New Jersey and national economic conditions, Newark will be reticent to commit to long term capital expenditures for CSO controls without the incorporation of adaptive management provisions, including provisions to revise and reschedule the long term CSO controls proposed in this SIAR based on emergent economic conditions beyond the permittees' control. As detailed in Section F of Newark's SIAR, these provisions could include scheduling the implementation of specific CSO control measures to occur during the five year NJPDES permit cycles. A revised affordability assessment should be performed during review of the next NJPDES permit to identify controls that are financially feasible during that next permit period."

The Department agrees that financial capability and economic conditions are critical components of the LTCP review. As a separate process, the Department is currently conducting rulemaking for New Jersey's

Environmental Justice Law (N.J.S.A. 13:1D-157) as signed by Governor Murphy on September 18, 2020, as indicated on the Department's website: https://www.nj.gov/dep/ej/

The Department agrees that an Adaptive Management approach could serve as a compliance "check in" as the projects proceed and an Adaptive Management requirement could be a component of a future NJPDES permit action. The Department agrees that Adaptive Management could also allow flexibility from the perspective of treatment technology advancements and compliance provided the resultant percent capture requirement is attained. However, while flexibility can be a component of each five year permit cycle, the permittee is obligated to set forth a path for compliance with the Federal CSO Control Policy through measures set forth in the LTCP. Note that any changes to projects set forth in the NJPDES permit as part of the LTCP will require a NJPDES permit modification or renewal. While this comment does not necessitate a response at this time, the Department hereby notes this information for the Administrative Record.

Section F, Recommended Long-Term Control Plan

Comment 21: Section F.2, Recommended LTCP states the following:

"For the two plant capacity scenarios, the recommended combination of CSO controls are:
- NO PLANT UPGRADE
  - o *Modified Gate Operation*
  - o *Three Storage tanks*
  - o *GI up to 5% impervious area managed*
  - o *Water Conservation*

- PLANT UPGRADE
  - o *Option 1: Three Storage tanks, Peddie St. Regulator Modification, GI, Water Conservation*
  - o *Option 2: Peddie St. Regulator Modification, GI, Water "*

The selected CSO alternatives, including green infrastructure, will require an Operational Plan as stated in Part IV.G.6 of the NJPDES CSO permit as follows:

"a. Upon Departmental approval of the final LTCP and throughout implementation of the approved LTCP as appropriate, the permittee shall modify the O&M Program and Manual in accordance with D.3.a and G.10, to address the final LTCP CSO control facilities and operating strategies, including but not limited to, maintaining Green Infrastructure, staffing and budgeting, I/I, and emergency plans."

In accordance with N.J.A.C. 7:14A-6.12 of the NJPDES Rules, the permittee must maintain and operate the treatment works and facilities installed by the permittee to achieve compliance with the terms and conditions of the discharge permit. The rules provide that proper operation and maintenance includes, but is not limited to, effective performance; adequate funding; effective management; adequate staffing and training; regularly scheduled inspections and maintenance; and adequate laboratory/process controls. While you have provided information regarding the O&M Program and Manual and updates that will be performed in the future for CSO controls, expand upon this section as to how the Operational Plan for the LTCP, including the Emergency Plan and Asset Management Plan, will address effective performance; adequate funding; effective management; adequate staffing and training; regularly scheduled inspections and maintenance; and adequate laboratory/process controls. In addition, acknowledge that an operations and maintenance plan will be prepared for the operation and maintenance of green infrastructure.

Comment 22: Section F.2, Recommended LTCP includes the following table:

Table F-1. Newark Recommended CSO LTCP Summary

Alternative	Plant Capacity	Alternative Description	CSO Percent Capture (%)	Cost for Newark (LCC in $M)
Municipal	Total 400 MGD	Modified Gate Operation	78.3%	$0.0
		Modified Gate Operation + Storage (28.5 MG at Three Outfalls)	87.0%	$358.3
		Modified Gate Operation + Storage + GI	87.7%	$448.6
		Modified Gate Operation + Storage + GI + Conservation	87.7%	$450.1
Regional	Total 720 MGD With secondary bypass	Plant Secondary Bypass + Storage	95.9%	$358.3
		Plant Secondary Bypass + Storage + Peddie St Regulator Modification	96.0%	$358.7
		Plant Secondary Bypass + Storage + Peddie St Regulator Modification +GI	96.3%	$449.0
		Plant Secondary Bypass + Storage + Peddie St Regulator Modification +GI + Conservation	96.3%	$450.5
		Regional Alt3b (Plant Secondary Bypass + Controlled Flow at Other Municipalities + Parallel Interceptor + Peddie St Regulator Modification Included)	95.9%	$0.4
		Regional Alt3b +GI	96.2%	$90.7
		Regional Alt3b +GI + Conservation	96.2%	$92.2

Notes:

1. The regional alternatives were evaluated with inflows from other municipalities, the capacities of FM and total plant were not modeled explicitly.

2. Newark's share of the cost for the regional alternative 3b was not included in the cost estimation as the cost sharing allocation is yet to be determined. It should be noted that under a regional alternative Newark would see cost saving as compared to a municipal only alternative

3. Water conservation has an estimated CSO reduction of 2.7% or capture of 0.02%. Percent capture adding conservation showed no change during round-off.

Table D-10 shows a plant expansion value of 720 MGD as a part of Alt3b. As noted previously, this flow volume can not currently be realized due to conveyance limitations within the current collection system. It is the Department's understanding that the objective of Appendix L is to focus on municipality centric

alternatives in order to achieve 85% wet weather capture within the municipality border. Revise appropriately.

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

Sincerely,

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