

# NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water, Region 9  
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September 29, 2015

Patrick Bowen, P.E.  
Town Engineer  
Town of Cheektowaga Engineering Department  
275 Alexander Avenue  
Cheektowaga, New York 14211

Dear Mr. Bowen:

**Town of Cheektowaga  
Sanitary Sewer Overflow Abatement  
Order on Consent No. R9-20050317-12**

This letter follows the June 4, 2015 meeting held between the Department, the Town, and Nussbaumer & Clarke, Inc. (N-C), and responds to the subsequent June 30, 2015 electronic transmittal of the "NYSDEC Order on Consent Integrated Plan of Sanitary Sewer Overflow (SSO) Reduction" (Integrated Plan) from N-C. The Integrated Plan includes elements that are not in accordance with revised Schedule A (the Schedule) of Order on Consent No. R9-20050317-12. The Town should not proceed with such elements in this Integrated Plan, and should focus and proceed with only those projects that are consistent with the I/I reduction strategy contained in the Schedule.

The proposed Beach-Vegola relief sewer is an example of a project that is not consistent with the I/I reduction strategy contained in the Schedule. This project was transmitted by N-C to the Department for review on May 11, 2015. While it would eliminate two SSO discharge locations, it would not reduce the flow rates or volumes discharged at the further downstream location under wet weather conditions. This project also presumes that future near term storage will be constructed at the Plant 5 location at Harlem Road. As such additional conveyance and storage facilities are not consistent with the Schedule, this project will not be approved at this time.

At the June 4, 2015 meeting, the Department questioned portions of the Town's preliminary cost estimates for SSO abatement. These cost estimates contained elements which are not in accordance with the Schedule. In response, N-C subsequently transmitted the Integrated Plan to the Department.

The Integrated Plan states that the Town continues to believe that relief sewers and storage should proceed first in the Town's SSO abatement effort, followed by (or concurrent with) I/I reduction and ordinance enforcement. That approach was previously rejected by the Department, and resulted in the current revised Order schedule. The Schedule states that other means of SSO abatement, such as relief sewers and storage, are to be pursued only after comprehensive inflow and infiltration (I/I) identification and reduction program requirements have been completed.



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Specifically, the Schedule is structured so that necessary steps such as flow monitoring, I/I analysis, and detailed investigations are completed before sewer improvements are implemented, to ensure that the solutions are properly designed and cost effective.

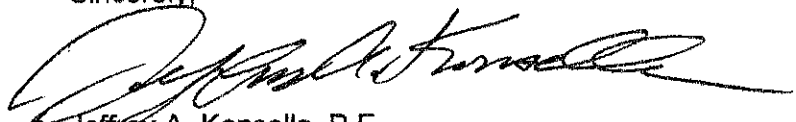
The Schedule was developed in accordance with State and Federal regulations, policy, guidance, and was based on successes demonstrated by other local communities, which is discussed in further detail in attachment A.

Completing the I/I reduction program will allow the Town to fully evaluate effectiveness of the work, and will allow the Town to concentrate its future resources on elements which can be shown to provide the greatest cost-benefit returns. Such an evaluation may result in additional focused I/I reduction efforts, and/or the design and construction of appropriately sized conveyance and storage elements which reflect I/I reductions from the successful I/I program.

The Department appreciates and shares the Town's desire to complete timely and meaningful corrections to the sanitary sewer system in order to reduce SSOs. We look forward to review of the Town's I/I Analysis Report, which is due on December 31, 2015.

A meeting between Department, Town, and NYS Environmental Facilities Corporation (EFC) representatives is also suggested as soon as possible. Topics which should be discussed include State Revolving Fund financial assistance under the 2016 EFC Intended Use Plan, as well as a potential 2015 Engineering Planning Grant project. Please contact myself, or Rob Locey of my staff at 851-7070 to schedule such a meeting.

Sincerely,



Jeffrey A. Konsella, P.E.  
Regional Water Engineer

Attachment

ecc: Jim Strickland, Regional Engineer, Region 9  
Rob Locey, Division of Water, Region 9  
Bob Smythe, Division of Water, Region 9  
Mark Klotz, Division of Water, Albany  
Joe DiMura, Division of Water, Albany  
Cheektowaga Town Supervisor Mary Holtz  
Michael Smith, Nussbaumer and Clarke, Inc.

## **Attachment A – Technical and Regulatory Considerations**

### **Excessive Inflow and Infiltration**

The Department's April 24, 2009 "Guidelines for SSO Abatement Analysis" provides criteria for Department staff when evaluating an SSO abatement plan. A required element of any plan is "...to remove all inflow and infiltration to the maximum extent practicable. 'Excessive' inflow and infiltration (I/I) as defined in 40CFR 35.2005(b)(16) must be eliminated." These guidelines are intended to achieve a consistent approach to SSO abatement statewide.

Excessive I/I is defined in federal regulations as "The quantities of infiltration/inflow which can be economically eliminated from a sewer system as determined in a cost-effectiveness analysis that compares the costs for correcting the infiltration/inflow conditions to the total costs for transportation and treatment of the infiltration/inflow." If a cost-effectiveness analysis has not been completed (which is the case), a maximum flow of 275 gallon per capita per day (gpcd) is used as a threshold for excessive I/I. The Town's sewer flows exceed the 275 gpcd threshold by a substantial amount on a frequent basis (as many as 60 times per year). At times, the Town's sewer flows reach at least 1000 gpcd. Such high flows clearly demonstrate that the Town's sewers have excessive I/I.

The Town's excessive I/I problems are also highlighted by comparing the ratio of peak hourly flow to daily average flow (i.e. peaking factor). To allow for normal increases in sewer flow during wet weather, New York State design standards specify a peaking factor of between 2 and 4 (depending on the population of the tributary area). Cheektowaga has reported peaking factors of 10 and 33 in two areas tributary to the proposed Beach/Vegola relief sewer. These extremely high peaking factors indicate direct connections with major sources of I/I such as cross connections with storm sewers, roof downspouts, and sump pump discharges. These peaking factors are most likely typical of sewer conditions elsewhere within the Town.

The cost effectiveness of removing excessive I/I must consider both capital costs and the ongoing costs of treatment. I/I elimination efforts reduce both the volume and the associated treatment costs of the wastewater conveyed during a wet weather event. In contrast, the storage facilities described in the Integrated Plan would increase the associated treatment costs by temporarily storing some of the wet weather flows and then releasing it to the collection system for treatment after the storm events have ended. The Integrated Plan estimates that the proposed storage facilities will result in the capture and treatment of an additional 100 to 150 million gallons of wastewater per year.

I/I elimination efforts have been proven effective at significantly reducing wet weather flow volumes so that such temporary storage facilities may not be necessary. As such, the substantial funding and resources necessary to properly design and construct conveyance and storage facilities would be better directed at efforts toward eliminating the I/I which causes these large volumes of flow.

### **Effectiveness of I/I Reduction in SSO Abatement Programs**

The SSO abatement program required in the Schedule starts with an overall assessment of the current wet and dry weather conditions in the sewer system - including average flows, peak flows, and I/I volumes. The various sewer subsystems in the Town can then be prioritized based on I/I severity. The abatement program is then implemented in phases starting with the highest priority subsystem. Each phase consists of a detailed investigation to identify sewer defects in the subsystem followed by implementation of corrective actions. Post construction monitoring is conducted after certain phases of the program to evaluate the effectiveness of the corrective actions.

A number of local communities are successfully implementing this approach. The Town of West Seneca is currently in Phase 4 of their program. West Seneca's post construction monitoring of the Phase 1 subsystems indicate I/I reductions of 25%, 48%, and 52% in the three sewer subsystems where sewers were repaired. The City of Tonawanda is in Phase 5 of their program, and they report an I/I reduction of about 50% in the completed areas.

The Town of Amherst implemented I/I elimination measures in the Kings Highway subsystem, which previously contained that Town's largest SSO (as much as 22 million gallons per year). The Town of Amherst was able to eliminate SSO discharges at this location. This success is particularly noteworthy since the King's Highway subsystem is adjacent to the northern part of the Town of Cheektowaga, and is similar in terms of sewer age, type of construction, and runoff characteristics.

I/I elimination programs in the Town of Cheektowaga can be expected to provide similar significant I/I reductions. If the Town were able to achieve a 50% reduction in I/I volumes Town-wide, it would virtually eliminate Cheektowaga's SSOs. In contrast, the storage concept in the Integrated Plan predicts a reduction in SSO volume at outfalls 001 and 004 by between about 60 to 75%. This reduction equates to between 34 and 42% of the system-wide SSO volume (note that the Integrated Plan somewhat overestimates this reduction as it does not account for the time it takes to empty the storage tanks between storm events – it assumes that the entire storage volume will be available for every storm event).

## **Cost Effectiveness Evaluation and Project Timing**

Evaluating the cost-effectiveness of the various alternatives and planning a long term SSO abatement program requires a significant amount of information and engineering analysis. Detailed information is required on the amount of I/I entering the sewer system, which sewer subsystems are affected and to what degree, the effectiveness of the various abatement alternatives, and cost comparisons of the alternatives. This information is currently not available for the Town of Cheektowaga sewer system.

The Schedule is structured to have the necessary information collected at various stages of the program. To ensure timely SSO abatement, the Schedule also requires the Town to implement a multiphase I/I elimination program. I/I elimination is also appropriate at this stage of the program (despite the lack of a cost effectiveness evaluation) because the sewer system is known to experience excessive I/I, and because the Town has not implemented significant I/I reduction measures to date. It is generally accepted that there will be many opportunities for cost effective repairs in sewer systems where those conditions exist.

It is not apparent what information the Town used in developing its Integrated Plan or in the \$55 million figure contained in the December 2014 preliminary cost estimate for SSO abatement. Without the necessary planning and design information, it is possible that the proposed facilities in the Integrated Plan will not be cost-effective. Further, some of the proposed facilities may turn out to be improperly sized or may prove to be unnecessary because the sizing doesn't account for future reductions in system flows from successful I/I reduction efforts.

The Schedule allows for the consideration and implementation of additional conveyance and storage elements, but at the completion of all phases of the I/I reduction effort. Schedule item 2.g requires a report which summarizes the first 5 years of the I/I identification and corrective action program. This section states: "The intent of the report is to facilitate further optimization of the remaining phases of SSES and CAP work based upon work that has been completed. A secondary objective is to prioritize those areas for additional SSO abatement measures if necessary at the end of the 10 year program. Such additional abatement measures may include another round of corrective measures, or may include additional wastewater conveyance, storage, and treatment measures."

The Integrated Plan states that the immediate construction of additional conveyance and storage "will be the most environmentally beneficial approach" to SSO abatement. Another approach, one in accordance with the revised schedule, is to commit more Town resources and accelerate the I/I reduction efforts.

The schedule allows the Town up to 10 years to conduct all phases of a comprehensive I/I program, so that at least 10% of the system is addressed per phase. However, after the groundwork I/I analysis is completed, the Town's Sanitary Sewer

Evaluation Survey (SSES) and Corrective Action Plans (CAP) can be developed to address larger portions of the sewer system in each phase. For instance, the Town could target 20% of the collection system in each phase and complete the most critical and beneficial corrections to the collection system in about half the time - within 5-6 years. The Town can also make similar significant efforts to address private side I/I to expedite the overall program and increase near term effectiveness.

### **I/I Contributions from "Private Side" Sources**

The Integrated plan states that "The purpose of this report is to again represent an integrated plan that includes on-line storage, increased collection system capacity, collections system inspection and remediation, sewer use enforcement actions, use of improved remedial technologies, improved public involvement, improved storm water management, and innovative program(s) to encourage private side involvement and actions".

Despite this stated objective, the Integrated Plan does not include any discussion of sewer use enforcement actions, improved public involvement, improved storm water management, or innovative programs to encourage private side involvement and actions. The Schedule specifically requires "private side" I/I reduction efforts through enforcement of sewer use laws, and public education and outreach effort to inform residents and other sewer users about I/I reduction efforts to abate SSOs.

During the June 4, 2015 meeting with the Department, the Town indicated that it had tasked Nussbaumer & Clarke to develop informational material for the public, but that such material had not yet been used or distributed. The Town also reported that potential changes to the existing Sewer Use Ordinance are under consideration by the Town attorney, but that process is also ongoing. These elements are an essential part of a comprehensive I/I reduction program, as it is generally believed that as much as half of all collection system I/I comes from private side contributions.

The Town has not enforced existing local law that requires all downspouts and sump pumps discharging to the sanitary sewer to be disconnected. Such enforcement is a relatively simple and low-cost corrective action as the only costs for the Town would be for inspections and the cost of legal enforcement if necessary. Sewer use ordinances which include "time of sale" requirements for inspections and permanent disconnections have been successfully used for many years in several other local communities as part of their SSO abatement plans. The Town should consult other local municipalities on such programs and also utilize this requirement.