



To: Michael J. Cunningham
From: Donald F. Geisser
Re: Midland Avenue Conveyances Phase
 One/RTF (MACP-1/RTF)
 CSO Closure Evaluation

Date: 10/22/98
 Revised 2/6/03

cc: Steve Martin, OCDDS
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The purpose of this memorandum is to summarize the results of the combined sewer overflow (CSO) Closure Evaluation completed for the Midland Avenue Regional Treatment Facility (RTF) and Conveyances. This evaluation was conducted to determine the facility modifications and cost impacts associated with closing one or more of nine CSOs tributary to the proposed Midland Avenue RTF/Conveyances, where sewer separation is not planned. The purpose of closing these CSOs is to fully eliminate future discharges from these CSO outfalls. It should be noted that 12 additional CSOs are tributary to the Midland Avenue RTF/Conveyances; however, these CSOs will be effectively eliminated under the Amended Consent Judgement (ACJ) Sewer Separation Project. Table 1 presents a list of the CSOs that are tributary to the Midland Avenue RTF that are to be closed under the ACJ Sewer Separation project and that are being considered for closure by modified Midland Avenue RTF/Conveyances under this evaluation.

CSO Closure Evaluation Plan

The scope of work for this CSO Closure Evaluation, per our September 30, 1998 letter, was to use the previously developed SWMM model to evaluate the hydraulic impacts of the sequential closure of nine CSOs, from the smallest to the largest flow contribution, and to identify modifications to the Midland Avenue RTF and upstream conveyances to accommodate each CSO closure.

Based on a detailed analysis of the capacity of the upstream combined sewer, the maximum storm event capable of reaching the CSO outfall locations is the 5-year event; this storm event was thus selected for the evaluation.

CSO Closure Hydraulic and Facility Impacts

Table 2 presents a summary of the hydraulic impacts associated with the sequential closure of nine CSOs from the smallest to the largest flow contributor, with necessary increases to the Midland Avenue RTF and upstream conveyances to accommodate each CSO closure. As shown in Table 2, closure of the five CSOs with the smallest flow contribution (CSOs 061, 077, 060, 076, and 052) requires no changes to the Original Model Requirements conveyance sizes (as used for the MACP-1/RTF 25% design) and only a minor increase in the RTF pumping rate (from 500 to 525 cubic feet per second [cfs]). However, closure of the larger CSOs (CSOs 044, 042, 039, and 043) results in significant impacts to the size of the Midland Avenue RTF/Conveyances.

In general, RTF pumping/flow rates greater than approximately 700 cfs are not considered feasible within the confines of the proposed Midland Avenue RTF site without relocation of the existing Main Interceptor Sewer (MIS) and significant increases in surrounding property encroachment. Therefore, closure of CSOs requiring RTF pumping rates greater than 700 cfs are not considered feasible and cannot be considered further without major revision to the RTF location and amount of adjacent property encroachment required.

At a project meeting with the Onondaga County Department of Drainage and Sanitation on October 1, 1998, an alternate approach to the CSO closure sequence was discussed. Due to the perceived public nuisance associated with CSO 043 (Midland Avenue East), it was agreed that this CSO should be considered for closure prior to the other "larger" CSOs. Accordingly, the revised CSO closure evaluation included the five CSOs that contribute the smallest flows (in order from smallest flow: CSO 061, CSO 077, CSO 060, CSO 076, and CSO 052), and by CSO 043. For each CSO closure in this sequence, necessary modifications to RTF pumping rates and conveyance sizes required to close each CSO were identified. Table 3 presents the results of this analysis.

As shown on Table 3, the five smallest flow CSOs can be closed with only a minor increase in RTF pumping rate (from 500 to 525 cfs) and without any change to the conveyance sizes. However, to add the closure of CSO 043 to the proposed project, significant impacts to the Midland Avenue RTF/Conveyance facilities are necessary. Therefore, the following two alternatives 1 and 2 were investigated to close CSO 043:

1. Increase the RTF pumping rate to 667 cfs and increase the size of the selected segment of the upstream conveyances; and
2. Increase the RTF pumping rate to 867 cfs, with no increase in sizes of the upstream conveyances except for a short additional conduit under the Main Interceptor Sewer (Conduit No. 5122 on Table 2).

The results of the evaluation of these alternatives to close CSO 043 are also presented on Table 3. As discussed above, RTF with pumping rates greater than 700 cfs are not considered to be feasible due to RTF site constraints. Therefore, alternative 2 was not considered further.

CSO Closure Alternatives

Upon review of the modifications required for sequential CSO closures presented in Table 3, the most logical CSO closure alternatives to be considered for review were the following:

- A. Midland Avenue RTF/Conveyances facilities required to close CSOs 061, 077, 060, 076, and 052; and
- B. Midland Avenue RTF/Conveyances facilities required to close CSOs 061, 077, 060, 076, 052, and 043.

For Alternative A, the RTF requires a 525 cfs pumping rate and three 44-foot-diameter vortex separators for high-rate treatment of this flow. No increases to the size of any of the conveyances are required under this scenario. For Alternative B, the RTF requires a 667 cfs pumping rate and four 44-foot-diameter vortex separators. In addition, approximately 2,000 linear feet of previously proposed 120-inch-diameter conveyance must be enlarged to 144-inch-diameter, and a short additional 60-inch-diameter pipe under the MIS is required.

DFG/dap