

AECOM Project Name: Racine I&I Exceedance Reduction
AECOM Project No.: 60680947
Change Order No.: 01**EXHIBIT C****AMENDMENT FORM**

In accordance with the Consulting Services Agreement dated March 8th, 2022 between the City of Racine, ("Racine"), and AECOM Technical Services, Inc., a California corporation, ("AECOM"), this Amendment Number 1, with an effective date of _____, 20____ modifies that Agreement 2022043 as follows:

1. Changes to the Services:**Background**

The City of Racine (City) and several other communities send wastewater to the Racine Wastewater Utility (RWU) through common interceptors for treatment. In the early 2000s, the City, RWU, and the other major contributing public entities developed and signed an Intergovernmental Agreement (IGA) to establish flow allocations for each of the parties.

The Intergovernmental Agreement (IGA) flow allocations are expressed as Average Day Flow with an associated Peak Day Flow, Peak Hour Flow, BOD, TSS, as well as other parameters. The IGA also has trigger points where if the RWU monitored or calculated flows exceed either 80, 90, 95, or 100 percent of the peak flows, various requirements are triggered. The City is the largest wastewater contributor to the RWU system and has a complicated network that is part monitored and part calculated to determine flows for compliance.

Exceedance History

In 2020, the RWU service area had high-intensity rain events in which the City's calculated peak hour flow rate exceeded 100 percent of the City's peak hour flow allocation twice and exceeded 90 percent five times, which triggered the City to be in a sewer moratorium. In 2021, the City did not have any exceedances.

The City received an email from Mike Gitter, Chief of Operations, Racine Water & Wastewater Utilities, on December 22, 2021, stating what level of reduction will enable a release from the sewer moratorium. Below is a segment from the email:

"Paul Kent offered the opinion below; essentially it is clear that the SSR (Sewer Service Recipient) party must engineer controls from the maximum historical peak hour flow, but the minimum being to the 90% of capacity level (instead of the 80% level). This opinion aids the SSR party in its capacity mitigation plan in terms of project scope and in terms of overall. With that opinion, for example, the City of Racine would need to incorporate into its peak hour flow remediation plan to design a plan to regain peak hour flow from that 5/17/20 storm maximum (134.7 MGD) to 90% of their peak hour flow limit (109.12 MGD x 90% = 98.2 MGD)."

On October 17, 2022, the City presented the "Proposed Peak Flow Mitigation Plan" to the Wastewater Commission. The Peak Flow Mitigation Plan highlighted several means that could be used to reduce the inflow into the sanitary sewer system during rain events.

On October 19, 2022, the City received a letter from Nate Tillis, Racine Wastewater Utility Director, notifying the City that they have exceeded the WWTP capacity on 9/11/2022 and 9/12/2022. On 9/11/2022 the Wastewater Utility recorded a significant rainfall event on September 11th, 2022, resulting in the Racine Peak Hour Flow (exceedance) volume of 154.659 MGD on 9/12/2022 (Historic Max).

The note documented that at the commission meeting on Oct 17, 2022, The Racine Peak Flow Mitigation Plan was approved as reasonable assurance that the plan will maintain capacity thresholds through multi-point activities occurring over a 4 to 7-year timeline. The note stated that "the newly revised threshold for the City is

the Historic Maximum Exceedance flow recorded on September 12, 2022. This modification will be the revised threshold to which Racine will present on an annual basis (October) for Commission continued consideration of its peak flow mitigation plan progression. Per the letter dated, October 19, 2022, Mayor Cory Mason confirms the agreements associated thresholds of allocation capacity, see Attachment.

I&I Reduction Program History

Phase I of this program commenced in February 2022. The initial goal of the program was to define the peak flow allocation allotment and ultimately reduce the peak flow to below 90 percent and develop cost-effective strategies to continue to reduce peak flows to avoid future exceedances. One of the first concepts evaluated was the storage that could be provided at the potential Main and Goold Project area. Through discussions and evaluations conducted during the Phase I portion of the project, it was concluded in August of 2022 that storage at the Main and Goold location was not cost-efficient for the City of Racine. The City then needed to determine alternative measures that could be utilized to remove peak flow from the system.

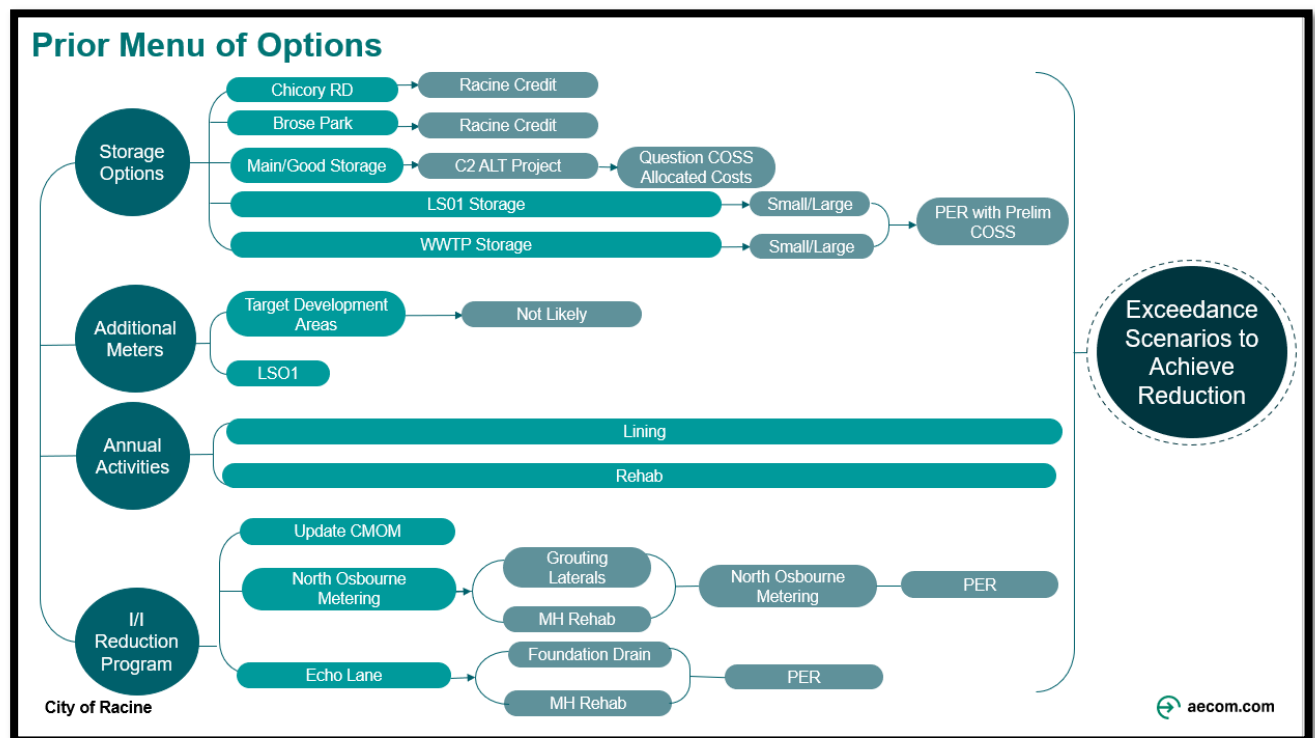


Figure 1: Peak Flow Reduction Options Explored

Phase I also consisted of evaluating I&I reduction methods and their associated values, such as foundation drain removals, lateral grouting, and manhole lid rehabilitation. During the discussions, it was determined that the I&I reduction methods would be most cost-efficient at reducing the peak flow in the system, by solving the root problem by addressing I&I removal. The proposed Peak Flow Mitigation Approach is illustrated on Figure 2. The Proposed Peak Flow Mitigation Plan that was presented and approved at the October 17, 2022, Commission meeting is shown on Figure 3.

Peak Flow Mitigation Approach

- Approve methodology to achieve peak flow reduction credit.
- Evaluate the Exceedance Reduction Activities identified to determine the level of peak flow reduction provided per the cost of activity. This will be done by:
 - Using widely accepted engineering values for peak flow reduction for the I/I reduction activities
 - Demonstrate peak flow reduction credits.

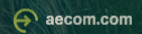


Figure 2: Proposed Peak Flow Mitigation Approach

Proposed Peak Flow Mitigation Plan

- Obtain credit for Brose Park and Chicory Road
- I/I Reduction Activities
 - Current Annual Activities
 - Foundation Drain Disconnection/Sump-pump Installations
 - Manhole Lid Replacement/Sealing
 - Lateral Grouting

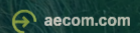


Figure 3: Proposed Peak Flow Mitigation Plan

This change order will amend the Phase I work with the services identified as we move into Phase II of the program. Phase II will include development of construction documents, a Foundation Drain Disconnection Program Development, Post-Construction Monitoring, and Field Exploration. With the results of Phase II, the third phase will include an analysis of the entire program including the results of the two study areas applied City-wide. The fourth phase of the program will only be undertaken if the existing projects and the City-wide reduction projections do not achieve an overall reduction in the peak hour flow to the below 90 percent requirement. If a fourth phase is required, it will consist of developing additional projects to facilitate the remaining reductions needed. This change order is to authorize Phase II. The remaining phases will be authorized at a later date. Note that the scope/fee shown in this document for Phase II is anticipated but can be modified as needed prior to authorization.

Project/Phase	Anticipated Start of Phase
I – Investigation	March 2022 – February 2023 – Completed
II	March 2023
III	March 2024 – If Authorized

Phase II – Construction of System Improvements

March 2023 - March 2024

Task 2.1 – I/I Program Management & IGA Coordination

AECOM shall provide I/I program management and IGA Coordination from NTP through March 2024 that may include:

- Letters to the Utility
- Monthly meetings (12)

AECOM shall provide project administration, quality assurance/quality control, and up to two periodic status meetings at City Hall consistent with AECOM standards and previous similar projects for the City of Racine.

Task 2.2 – Sump Pump Program

AECOM will assist the City with the development of a Sump Pump Program (Foundation Drain Identification and Disconnection Program) operational plan. Upon the plan is approved, it is anticipated that the City of Racine will run the program. The Sump Pump Program is expected to be an ongoing program that will continue through the next several years for the removal of private source I/I, particularly directly connected foundation drains. This program will run concurrently with the other I&I investigations and rehabilitation work to identify and remove other types of I/I sources. This task includes time to assist the City during the discussions with decision-makers, to develop a public education program, as well as time to develop the program. This task does not include the program management by AECOM. A change order will be provided for additional program support once the program has been developed.

The Program may include the following steps:

- 1. Discuss with Decisionmakers**
 - a. Local Legal Issues**
 - b. Funding Sources**
- 2. Educational Public Outreach Program**

Educating local decisionmakers and residents about the current problems created by excessive flows is a critical component in implementing a private I&I elimination program. This step could

potentially be developed and used to craft I&I elimination program educational components that address the concerns of the residents and to surface any potential roadblocks to the program implementations.

3. Prepare Program Framework

Once additional information has been gleaned from the discussions with decision makers, AECOM will develop the details of the foundation drain disconnection program.

a. Identification of Homes with Foundation Drain

Assist the City with initiation of a plan/program that focuses on the identification and removal of foundation drains. This could potentially include:

- The development of selection of homes to be identified through the foundation drain disconnection amnesty program.
- The development of an amnesty program, which could be initiated by providing an educational brochure and mailing it to preselected residents and businesses. Communication efforts, such as mailers, is assumed to be performed by the City.
- The evaluation of examples of educational brochures and the foundation drain amnesty program announcement will be developed.
- The evaluation of how AECOM would maintain a database of residences that have responded during the program.
- Discussions with the City on how to handle the hiring of a plumbing inspector to locate connected foundation drains identified through the amnesty program.

b. House Inspections

AECOM will assist the City with identifying an inspection checklist and a plan to track the status of properties with connected foundation drains. These properties could be stored in a geodatabase with attributes describing pertinent attributes for each property included.

c. Post-Program Monitoring Plan

AECOM will assist the City with the development of a post-program monitoring plan that will help the City identify when sump pumps are illegally reconnected to the sanitary system.

Task 2.3 – System Improvement Recommendations/Documentation

Task 2.3.1 – Echo Lane Area - Complete 02/2023

AECOM has provided recommendations for rehab based on the I/I found from the manhole inspections and wet weather visits in Phase I. AECOM has provided maps, specifications, and bid quantities for potential manhole projects. AECOM assumes that the rehabilitation work will be performed by a third-party firm under a separate contract with the City. The cost of the lining/grouting is not included in this contract.

Task 2.3.2 – North Osbourne – Lateral Grouting Projects - Complete 02/2023

AECOM has provided maps, specifications, and bid quantities for grouting projects along Hickory Way, Crabapple Drive, and Ravine Circle in the North Osbourne Boulevard study area. This area is north of North Osbourne Boulevard and is connected through a single gravity main to the sanitary sewer network. AECOM has identified laterals for grouting to directly address sources of clear water into the sanitary sewer. AECOM has worked with City of Racine staff in identifying the locations of the grouting projects. The lateral grouting will be performed by a third-party firm under a separate contract with the City. Lateral grouting is not included in the cost of this contract.

AECOM will provide onsite inspection if requested, however, construction management is not included in this contract.

Task 2.3.3 – North Osbourne Vented Manhole Cover Replacement Project - Complete 02/2023

AECOM has provided maps, specifications, and bid quantities for vented manhole cover replacements along North Osbourne Blvd, St Andrews Blvd, and Fairway Drive in the North Osbourne Boulevard study area. This area including North Osbourne Boulevard and south is connected through two gravity mains to the sanitary sewer network. AECOM has worked with City of Racine staff to identify the locations of the manhole cover replacements. AECOM assumes that the manhole replacement will be performed by City staff or a third-party firm under a separate contract with the City. Construction, inspection, and construction management are not included in the cost of this contract.

Task 2.4 – Manhole Cover Inflow Evaluation

AECOM will perform a desktop analysis to evaluate the number of manholes throughout the City that contain vents and pick holes. This will be done by using the City of Racine's InfraPave database to narrow down the list of roads that have been redone since the inspection date in the Sanitary Sewer database. The results of the holes data gathering effort will be evaluated to determine the inflow coming into the City's system through the manhole lids for a single selected storm. AECOM will provide the following deliverables to City of Racine:

- Manhole Cover Maps
- Manhole Cover Vent & Pick Number Confirmations
- Comparison of pre and post exceedance reductions from improvements by using the peak flow reduction values found in the North Osbourne Study Area.

Task 2.5 – 2023 Post Improvements Flow Monitoring and Analysis – North Osbourne and Echo Lane

AECOM shall install temporary flow metering equipment at five locations (three in North Osbourne and two in Echo Lane) to monitor flow conditions post improvements from tasks 2.3 above for an agreed upon duration. The intent is to capture wet weather events post-construction of the improvements to the system. See Figures 1 and 2 in original contract. AECOM will install a temporary rain gauge at a nearby secure location and monitor the collected data. Additionally, AECOM will provide monthly feedback to the City regarding storm events captured and provide recommendations should storm events occur more or less frequently than anticipated.

AECOM shall provide an I/I analysis utilizing pre- and post-improvement data collected through flow monitoring in the North Osbourne Boulevard and Echo Lane study area. Utilizing results from the I/I analysis, AECOM will determine cost-effective improvements to apply city-wide. This task will include quantifying the following:

- Vented Manhole Reductions
- Grouting Reductions

Task 2.6 Technical Memorandum

AECOM will develop a Technical Memorandum to document all the work performed in Phase II. The report the results of each task, a summary of identified system deficiencies and sources of I/I, theoretical reduction of quantified I/I, and prioritized rehabilitation efforts.

Fee

Task	Amount
2.1 – I/I Program Management & IGA Coordination	\$ 57,600.00
2.2 - Sump Pump Program	\$ 63,100.00
2.3 – System Improvements Recommendations/Documentation	\$ -
2.4- Manhole Cover Inflow Evaluation	\$ 15,000.00
2.5 – 2023 Post Improvements Flow Monitoring – North Osborne and Echo Lane (5 flow monitors, 1 rain gauge, 6 months with removal, AECOM staff, 1 mtg. with City)	\$ 90,400.00
2.6 – Technical Memorandum	\$ 26,300.00
Total	\$252,400

2. Change to Deliverables:

NA

3. Change in Project Schedule (attach schedule if appropriate):

NA

4. Change in CONSULTANT's Compensation:

The Services set forth in this Amendment will be compensated on the following basis:

[X] Time and Materials with a Not- to-Exceed amount of (\$252,400). The Hourly Labor Rate Schedule is set forth in **EXHIBIT B** (if applicable). Reimbursable expenses are included in the overall Not to Exceed cap.

Therefore, the total authorized Compensation, inclusive of this Amendment is \$474,950.

5. Project Impact:

6. Other Changes (including terms and conditions):

7. All other terms and conditions of the Agreement remain unchanged.
8. Each Party represents that the person executing this Amendment has the necessary legal authority to do so on behalf of the respective Party.

AECOM Technical Services, Inc.



Signature

Ross A. Hillsman, P.E.

Printed Name

AVP, Civil Manager

Printed Title

Address
1555 Rivercenter Drive, Suite 214
Milwaukee, WI 53212

CITY OF RACINE:

Signature

Printed Name

Printed Title

Address

[End of Agreement]

Michael L. Gitter, P.E.
Water Utility Director
Nathaniel Tillis
Wastewater Utility Director



Kenneth M. Scolaro, C.P.A.
Administrative Manager
Chad W. Regalia, P.E.
Chief Engineer

October 19, 2022

Mayor Cory Mason
City of Racine
730 Washington Ave.
Racine, WI 53403

Dear Mayor Mason:

This letter is being sent to you in accordance with the Racine Area Intergovernmental Sanitary Sewer Service, Revenue-Sharing, Cooperation and Settlement Agreement (Agreement) dated April 25, 2002. Section 5.5 of the Agreement covers thresholds of allocated capacity and what they may mean to your community. This section requires that the Wastewater Commission notify Parties when they exceed 80%, 90% and 95% of its allocated and purchased capacity. Sewer Service Recipient (SSR) capacity is that as established in the July 31, 2018 Revision #8 to Agreement Exhibit E. (treatment); and the December 17, 2019 Revision #9 to the Agreement Exhibit F1(a) (conveyance). Please consider this letter as having the purpose to notify you of having reached a critical threshold of the Agreement.

The Wastewater Utility recorded significant rainfall on September 11th (6.75").

- Racine peak day flow (treatment) exceedances:

Peak Day	Capacity Allocation MGD	9/12/2022 Flow MGD
Racine Total	90.590	80.624 (89%)

- Racine peak hour flow (treatment) exceedances:

Peak Hour	Capacity Allocation MGD	9/11/2022 Flow MGD	9/12/2022 Flow MGD
Racine Total	109.120	142.758 (131%)	154.659 (142%) Historic Max

- Racine point-of-entry peak hour flow (conveyance) exceedances:

Point-of-Entry	Capacity Allocation MGD	9/11/2022 Flow MGD	9/12/2022 Flow MGD
Racine Total	118.387	142.758 (121%)	154.659 (131%) Historic Max
Echo Lane	2.20	2.950 134%	2.744 125%

The Agreement has provisions whereby:

- No new customer connections are permitted at the 95% exceedance level.
- No sewer extensions are permitted at the 90% exceedance level.

Such moratoriums continue until the Party can demonstrate to the Commission that modifications have been made to provide "reasonable assurance" that the Party's mitigation plan will maintain capacity thresholds, or sufficient allocated conveyance capacity is procured to accomplish the same result, so full use of the extension will not result in capacity exceedance.

At this time, as a minimum, you need to provide a written response to the Commission indicating that you acknowledge receipt of this information. Racine has been subject to sewer moratorium since peak hour flow capacity exceedances that occurred on May 17, 2020. It is noted that at the October 17, 2022 Commission meeting, the Racine mitigation plan was approved as reasonable assurance that the plan will maintain capacity thresholds through multi-point activities occurring over a 4-7-year timeline. What has changed is Racine has established a new Agreement Exhibit F1(a) Peak Hour Historical Maximum Exceedance for flow recorded on September 12, 2022. This will be the revised threshold to which Racine will present on an annual basis (October) for Commission continued consideration of its peak flow mitigation plan progression.

Please let me know if there are questions.

Sincerely,



Nate Tillis
Wastewater Utility Director

c: J. Rooney
P. Vornolt
M. Gitter

NT/jb