

## TECHNICAL COMMITTEE MEETING MINUTES

Wednesday, November 5, 2014

2<sup>nd</sup> Floor Conference Room

Plant Site, 111 Harbor View Avenue

5:30 p.m.

Daniel Capano	Chairman, Technical Committee
Gerald Bosak Jr.	Committee Member (Absent)
Edward Kelly	Committee Member
William Brink	Executive Director, WPCA
William Degnan	Plant Supervisor, WPCA
Prakash Chakravarti	Supervising Engineer, WPCA

### 1. Call to Order and Roll Call

D Capano called the meeting to order at 5:33 pm.

### 2. Approval of Oct 8, 2014 Technical Committee Meeting Minutes

E Kelly made the motion to approve the minutes of the meeting for Oct 8, 2014. Seconded by D Capano; the motion carried 2-0-0.

### 3. Presentation on Infiltration and Inflow (I/I) Evaluation proposed scope of work, schedule and cost – Tim Dupuis, CDM Smith

Mr. Tim Dupuis, P.E. of CDM Smith presented the committee with a power point presentation on their approach to conducting the I/I Evaluation and a sewer system evaluation and survey (SSES). He gave a brief outline of the methodology they would use to identify the infiltration and inflow into the sewer system. (Presentation is attached herewith). Following the presentation E Kelly made a motion recommending awarding the contract to CDM Smith for wastewater engineering services to perform an infiltration and inflow evaluation of the collection system (RFQ No 650) and approving the proposed scope of work and fee prepared by CDM Smith. The motion was seconded by D Capano, the motion carried 2-0-0

### 4. Presentation on the Sludge Dryer Inspection Report and planned maintenance and repairs to the dryer and RTO --- Pete Scorziello, Synagro

Pete Scorziello of Synagro stated that the annual inspection of the sludge dryer by Andritz, the dryer manufacturer, recommended a number of repairs to be undertaken in the near future. He outlined the issues in a slide presentation. Most of Andritz's recommendations have already been addressed. The major remaining issues were replacing sections of regenerative thermal oxidizer (RTO) and replacing the dryer inner drum spring packages and rollers. (Pete's slide presentation is attached herewith). B. Brink requested that the repair work to the RTO and dryer drum be scheduled to occur during the annual two week shut down for planned

maintenance activities. The repairs are not urgent and do not create a hazard, and Synagro will come back next month with a schedule for the RTO and drum repair. The work can be paid from the capital equipment repair allowance included in the contract.

#### **5. Odor control update**

B Brink stated that Jeff Pinnette of Wright-Pierce was on site on October 30, 2014. Jeff Pinnette, Chris Pierce and D Capano walked the site to identify any sources of fugitive odors and check the operation of the odor control scrubbers. J Pinnette recommends installing a carbon canister connected to the alternate septage discharge manhole next to the auto sampler to capture and treat odors from the current septage receiving manhole. B Brink described that staff is proceeding with plans to capture and treat the odors emanating from the sludge trailers and screenings and grit trailers when they are parked outside using a carbon canister connected to the trailers with a round flexible duct. B Degnan mentioned that the ORP and pH readings on the odor control scrubbers were erratic, possibly due to how the probes are mounted on the recirculation pump suction pipe. Wright-Pierce recommends installing VFDs on the recirculation pump motors to reduce the pumped flow and turbulence in the piping which could be affecting the probes. Dan Capano suggested moving the probes to the scrubber sump as an alternative. Another issue J Pinnette discovered was that the ventilation of the raw sewage pump station bar screen room was not ducted to the odor control scrubbers. D Capano requested that Wright Pierce investigate providing odor control for the bar screen room ventilation.

#### **6. Update on the UV system**

B Brink stated that the UV system has been recording erroneous spikes in flow measurements in the UV channels. The spikes are continuing to occur, but at a lesser rate and duration. It has been difficult to get Siemens to come to the site, but they will be coming this week to inspect/adjust/repair the water level sensors which are suspected of providing the erroneous readings. The UV system is being operated in maintenance mode and there have been no bypasses or exceedances. The roof above the UV system leaks. The roof likely requires the installation of roof drain piping.

#### **7. SWPCA Capital Improvement Plan (CIP) and FY 2015/2016 Capital Budget Request.**

B Brink explained that the debt service will increase with future revenue bond and Clean Water Fund financing of the CIP, but the annual payment to the capital reserve and pay down of the debt to the City will decrease at the same time. Thus the additional debt service will not have a significant impact on future sewer rates. He briefly explained the capital budget request and mentioned that SWPCA will be floating revenue bonds next summer to pay for the requested capital projects in FY 15/16 and FY 16/17.

E Kelly made the motion for recommending acceptance of the proposed

capital budget request to the Stamford WPCA Board of Directors. The motion was seconded by D Capano, motion carried 2-0-0

## **8. Update on Construction Projects**

P Chakravarti gave the committee an update on the following:

### **a. Soundview Avenue sewer lining.**

Precision Industrial Maintenance has completed lining about 1200 linear feet of the 36" sewer pipe. The lining is expected to be completed by the end of the week of November 10, 2014.

### **b. Replace pipe supports in Raw Sewage Pumping Station.**

Nutmeg Utilities has made a couple of submittals for approvals and is expected to start work in the next couple of weeks. All of the pipe supports are expected to be in place by the end of the year 2014.

### **c. Progressive Cavity Pumps—Replacement**

R H White is scheduled to start replacing the pumps in February 2015. The project is expected to be completed by Aug 2015.

### **d. Elevated walkway at the UV disinfection.**

The bids are being solicited. The bid opening is on Nov 6, 2014. Weather permitting the work is expected to be done in Spring of 2015.

## **9. Update on Engineering Evaluations and Designs**

B Brink provided a brief update on the following projects:

### **a. Raw Sewage Pump Station Upgrade**

Wright-Pierce is evaluating the pump station at the headworks. They have conducted two workshops. The WPCA staff went on a day trip to look at the mechanical bar screen equipment at Norwalk, Stratford, and the Mattabassett District. Wright-Pierce will do a formal presentation of its evaluation and recommendations to the Technical Committee at its December meeting.

### **b. Improvement of Flow Distribution to Final Clarifiers**

Hazen & Sawyer have conducted their workshops and presented their draft recommendations to WPCA staff. They will be presenting their recommendations to the Technical Committee at its December meeting.

### **c. Upgrade of SCADA System**

ARCADIS have done their field data collection on the existing system and will be back in February 2015 with the draft report.

### **d. RFQ upgrade of de-gritting system. Review & approval of Gannett Fleming's scope of services and fees.**

Scope of work and fee has been negotiated. Their services will be paid

based on their direct labor cost times a multiplier of 2.9 for overhead and profit, not to exceed \$50,000. E Kelly made the motion to accept the proposed scope of services and fees as above for Gannett Fleming. The motion was seconded by D Capano, motion carried 2-0-0

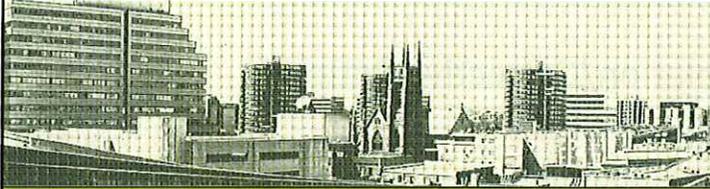
#### **10. Old Business**

There was no other old business to discuss

#### **11. New Business**

Dan Capano described that the five northern stations that were experiencing problems are now performing better, with the exception of Bennett. A program of trimming back trees, realigning various antennas, and replacing the Knapp street antenna seem to have had a positive effect on communications. However, Alvord, Cummings, Soundview 1, West Avenue and Burwood are all experiencing link issues only within the last month and Dan and WPCA staff will be investigating these. Also, we are requesting Knapp Engineering come in and download RSSI values from the receiver in order to compare to those downloaded earlier than the summer. We will ask Knapp to do a path study in the early spring of 2015.

There being no other issues to discuss Ed Kelly made a motion to adjourn the meeting, seconded by D Capano; motion carried 2-0-0. The meeting was adjourned at 8:17 pm.



**STAMFORD WATER POLLUTION CONTROL AUTHORITY (WPCA)**

Wastewater Engineering Services to Perform an Infiltration and Inflow Evaluation

Timothy J. Dupuis, P.E., BCEE, ENV SP

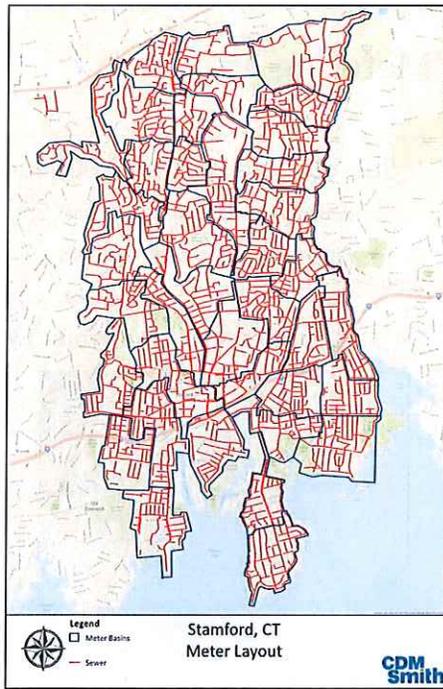
Stamford Water Pollution Control Authority  
Technical Committee

November 5, 2014



## Overview of Approach

- Balanced flow metering
- Identify a “smoking gun” ?
- I/I source identification
- GIS integration
- Incorporate lessons learned
- Comprehensive rehab
- Funding assistance



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## Notice of Violation/Corrective Actions

- >4" of rain in 24 hours in early spring
- Flows peaked at ~73MGD resulting in ~25MG SSO
  
- Comprehensive I/I evaluation via flow metering
- Develop plan for additional SSES investigations to identify sources of I/I
- Develop plan for cost-effective removal of extraneous I/I
- Semi-annual status reports
- Multiyear programmatic approach

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Smith

## Metering Approach

- Sub-divide City into 30,000 foot areas
  - 250 miles of sewer in the City
  - Approximately 44 meters
  - Balance temporary vs. long-term meters
  - Monitor rainfall and groundwater elevation

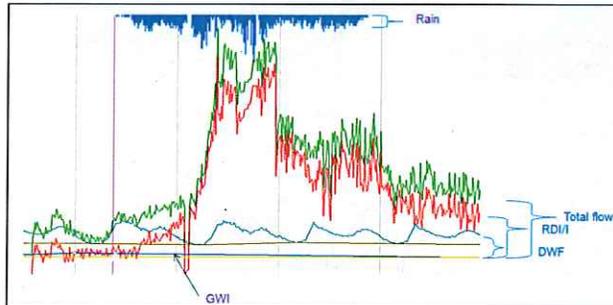


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## Metering Approach

- Quickly evaluate flows and determine highest I/I areas
  - Document the general location and extent of I/I
  - Consider range of flows and depth of water in the collection system under various conditions (i.e. storm events)
  - Perform evaluation of data collected after four weeks



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## Metering Approach

### Rule of Thumb:

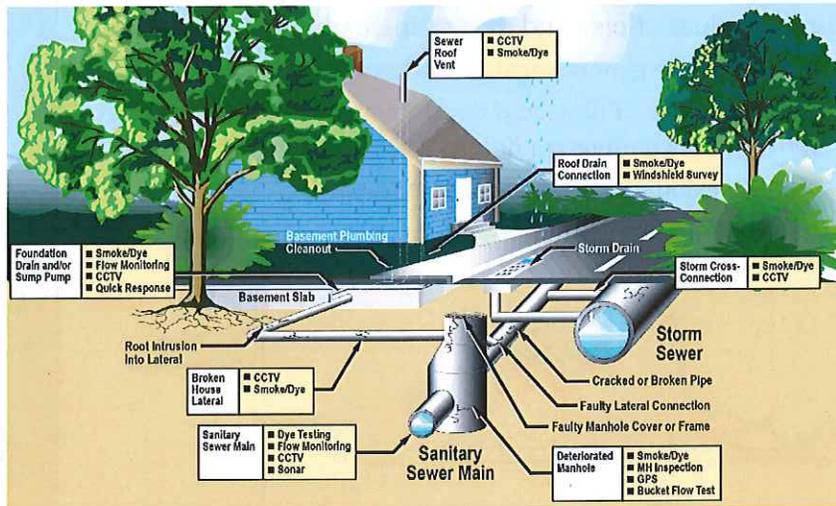
**80% of problems are found in 20% of system**

- Sub-meter Top 10 worst areas into 10,000 foot subareas
  - 20 supplemental meters installed
  - Continue metering program
- Perform SSES in the worst of the worst (50%-80%)
  - Get the most “bang for the buck”
- Develop a prioritization of sewer subareas for long-term rehabilitation efforts

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## I/I Investigation Approach

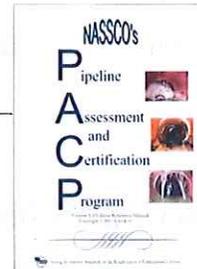


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## Infiltration Source Identification

- Manhole inspections with zoom camera
  - Pre-screen prior to CCTV
- CCTV inspection- new & historic

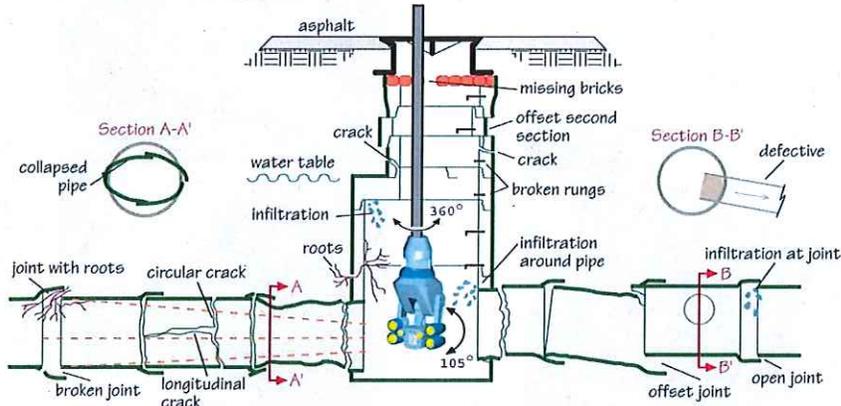


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## Cutting-Edge Investigation Technology

- Zoom Camera Inspections
  - Pre-Screening prior to CCTV inspection



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## Cutting-Edge Investigation Technology

- SL-RAT
  - Using sound waves to identify blockages
  - CDM Smith is currently using this technology in West Haven



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## Inflow Source Identification

- Above ground survey
- Smoke testing
- Dye water testing
- House-to-House inspections

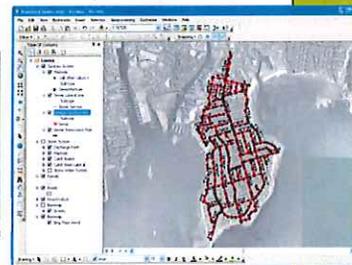


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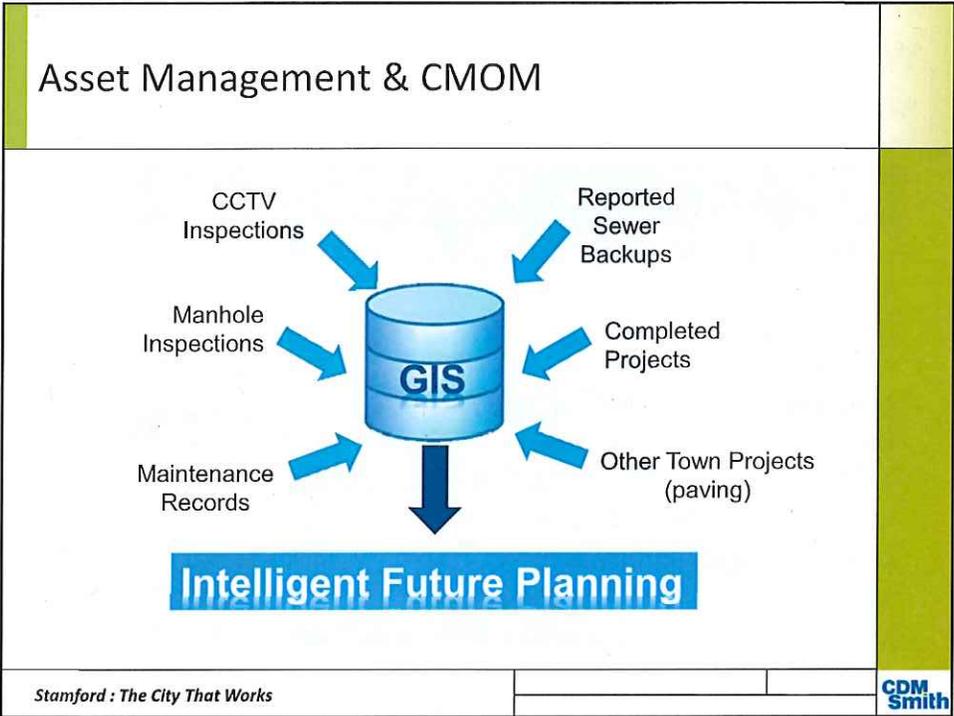
## GIS Integration and Data Management

- Seamless integration with GIS database
- Automated field data collection
- Enhanced data integration
  - Pipe and MH inspections
  - Asset management
- Data visualization & decision support



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### Lessons Learned:

#### General I/I Reduction

- Develop strategy before initiating each step
- Long-term flow metering can be more effective than short-term
- The selection of materials (and awareness of their lifespan) for the rehabilitation measures is very important
- Perform comprehensive rehab for most effective reduction
- Perform post-rehabilitation flow metering after each contract to confirm that the I/I reduction goal is achieved.

The bottom section of the slide contains four small photographs illustrating sewer rehabilitation work:

- A white truck with a large circular opening, likely a trencher or similar equipment.
- Two workers in safety gear (one in orange, one in blue) working with equipment in a trench.
- A close-up of a trencher's cutting head.
- An interior view of a pipe with a blue flow meter or inspection device installed.

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## We've done this Before..... and have documented results

Town	Primary Rehab Methods	Documented I/I Reduction
Windsor	Main/MHs	10%
Newington	Main/MHs	10% to 20%
West Hartford	Main/MHs	10% to 20%
West Haven	Main/MHs	15%
West Hartford	Main/MHs/Top Hats	30%
Wethersfield	Main/MHs/Laterals	35%
East Providence	Main/MHs/Laterals	30%
West Hartford	Main/MHs/Laterals	45%
Newington	Main/MHs/Wetland	40%
Windsor	Main/MHs/Private Inflow	50%
Saugus	Main/MHs/Top Hats/Private Inflow	47% to 67%

**Trenchless TECHNOLOGY.**  
CDM Smith RANKINGS  
2013 - 4<sup>th</sup>  
2012 - 3<sup>rd</sup>  
2011 - 3<sup>rd</sup>  
2010 - 3<sup>rd</sup>  
2009 - 4<sup>th</sup>

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## APPROACH – Year 1

- Task 1 – I/I Evaluation
  - Kickoff Meeting
  - Data Collection
  - Inventory of Existing Conditions
  - Continuous Flow Monitoring
  - Base Wastewater Flows
  - Data Review
  - Recommendations
  - I/I Study Report
  - Supplemental Metering Memo
- Task 2 – SSES Pilot Area
  - Sewer System Investigations
  - Recommended Rehabilitation Plan
- Task 3 – Pilot Rehab Design
  - Data Review & Recommendations
  - Bid Documents

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## APPROACH – Year 2 & Beyond

- Task 4 – Recommended SSES Program
  - Phased approach starting with the “worst” areas and moving downward
  - Select number of areas to meet your capital budgeting availability
  - Extend over a 2 – 5 year period
- Task 5 – Rehabilitation Designs
  - Phased approach to meet your capital budgeting availability
  - Extend over a 2 – 10 year period
  - Post construction monitoring to assess the effectiveness of the rehabilitation

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## SCHEDULE – Year 1

SCOPE ITEMS	2015												2016						
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Task 1 - Infiltration/Inflow (I/I) Evaluation																			
1.1 Kickoff Meeting	★																		
1.2 Data Collection and Review																			
1.3 Inventory of Existing Conditions																			
1.4 Flow Monitoring Program																			
1.5 Base Wastewater Flows																			
1.6 Data Review																			
1.7 Recommendations																			
1.8 I/I Study Report																			
1.9 Flow Monitoring Supplemental Memo																			
1.10 Project Management	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
Task 2 - SSES - Pilot Area Program																			
2.1 Sewer System Investigations																			
2.2 Recommended Rehabilitation Plan																			
Task 3 - SSES Pilot Area Rehabilitation Design																			
3.1 Data Review and Recommendations																			
3.2 Development of Bid Documents																			

★ Deliverable or milestone  
 ←→ Assumes 30 day review period from OWNER and 30 days to complete revisions

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## PROPOSED FEE – Year 1

- TASK 1 – I/I Study
  - \$520,000 Lump Sum Fee
  - 1 year of continuous flow monitoring - \$355,000 is the largest single component of the program
- TASK 2 – SSES of Pilot Area
  - \$100,000 Cost Plus Fixed Fee
  - Determine the most efficient use of technology for SSES activities
- TASK 3 – Rehabilitation of Pilot Area
  - \$50,000 Cost Plus Fixed Fee
  - Rehabilitates Stamford's worst sewershed

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Smith

**EXHIBIT A  
TO AGREEMENT BETWEEN  
OWNER AND ENGINEER  
Scope of Work**

This is an exhibit attached to and made a part of the Agreement dated \_\_\_\_\_, 201\_\_, between Stamford WPCA (OWNER) and CDM Smith, Inc. (ENGINEER) for professional services.

**1.0 ENGINEER'S SERVICES**

**Task 1 – Infiltration/Inflow (I/I) Evaluation**

**Subtask 1.1 – Kickoff Meeting**

ENGINEER will attend a kickoff meeting with OWNER to discuss the requirements for the project. ENGINEER will outline the goals and objectives of all parties, establish communication protocols, interview maintenance personnel, and initiate the data collection process.

**Subtask 1.2 – Data Collection and Review**

ENGINEER will collect and review pertinent existing reports, city wide sewer maps, previous rehabilitation contracts, O&M records, WWTP flow data, pumping station as-builts and flow data, historical rainfall data, GIS information, Interceptor CCTV data and any other relevant data provided by the OWNER.

**Subtask 1.3 – Inventory of Existing Conditions**

After a review of the existing data, ENGINEER will create an inventory of existing conditions within the collection system utilizing the City's GIS. ENGINEER will leverage existing data sets so as not to duplicate efforts. ENGINEER will hold a workshop with OWNER to update any sewer related GIS information prior to the monitoring program. An inventory of the collection system by sewershed will include the following information as available: pipe size, material, age, average depth, groundwater conditions and history of maintenance problems/overflows. This inventory will form the basis for the layout and delineation of sewersheds for the continuous flow monitoring program.

**Subtask 1.4 – Continuous Flow and Rainfall Monitoring Program**

Utilizing the inventory and GIS mapping developed from Task 1.3, ENGINEER will delineate the sewer collection system into approximately 44 sewersheds consisting of approximately 30,000 linear feet each, and develop GIS sewershed maps for each meter area. ENGINEER proposes to subcontract with Flow Assessment Services and develop a contract for a one (1) year continuous flow monitoring program. Flow monitoring will initially consist of approximately 44 wireless flow meters (All data collected will be transmitted via wireless cellular service to a secure website), three (3) Parshall Flume meters, and four (4) tipping bucket rain gauges. The flow monitoring program will include an expedited review of the first month of meter data to provide immediate results for strategic installation of 20 additional meters to remain in place for the remainder of the contract. ENGINEER will coordinate with the OWNER to facilitate proper locations and installation of meters and rain gauges. ENGINEER will manage the subcontractor during the duration of the project.

**Subtask 1.5 – Base Wastewater Flows**

ENGINEER will estimate the base wastewater flows for each sewershed utilizing water consumption data obtained from Aquarion Water Company. The data will be reviewed to determine residential, commercial and industrial uses for each sewershed. ENGINEER assumes that the OWNER will assist in obtaining this data digitally to facilitate data review.

#### Subtask 1.6 – Data Review

ENGINEER will analyze the continuous flow monitoring data and other data sources to categorize the wastewater flow into its various components (i.e. base flow, infiltration, inflow, and rainfall induced infiltration) by sewershed. These analyses will also consider seasonal and tidal fluctuations in the groundwater table and estimate infiltration and inflow rates and volumes by sewershed. Comparisons of historical WWTP data and any available prior flow monitoring data will be utilized to assist in the seasonal calculations.

#### Subtask 1.7 – Recommendations

ENGINEER will perform a detailed analysis of the data from each flow meter and develop a series of alternatives for the identification and elimination of extraneous I/I in all sewersheds and prioritize these investigations on a cost-effective basis. ENGINEER will prepare recommendations by sewershed and flow component for further Sewer System Evaluation Survey (SSES) field investigations. These recommendations will identify the sewersheds that may benefit from additional investigations/study and those that require no further action. These areas will make up the basis of the SSES Program to be initiated in phases after the approval of the I/I Study. Where appropriate, ENGINEER will identify simple system repairs where the OWNER may be able to take immediate action to expedite the rehabilitation work.

#### Subtask 1.8 – I/I Study Report

ENGINEER will prepare a draft I/I Study Report that summarizes the data collection/review, field inspections, data analyses, and recommendations from the above tasks into one document for review and comment by the OWNER. A recommended plan will be presented in the I/I Study Report to be submitted to Connecticut DEEP and will include a scope and schedule for the implementation of a SSES over a multi-year period. The report will include an executive summary, a recommendation for an SSES pilot area program, a summary of the recommendations and the basis for a phased SSES Program. After receipt of comments from OWNER and DEEP, ENGINEER will modify the report and issue a final I/I Study Report.

#### Subtask 1.9 – Continuous Flow Monitoring Supplemental Technical Memorandum

As the I/I Study Report is scheduled to be completed prior to the completion of the continuous flow monitoring program, ENGINEER will issue a supplemental Flow Monitoring Technical Memorandum at the conclusion of the monitoring program. The memorandum will summarize all additional flow monitoring data including a commentary on any rainfall influenced, seasonal or tidal trends that can be made from the additional data. The data will be compared to recommendations made in prioritization of sewersheds for further investigations and these recommendations will be updated and included in the technical memorandum should the additional data change any of the rankings. A draft technical memorandum will be provided to the OWNER and DEEP for review and comment. After receipt of comments from OWNER and DEEP, ENGINEER will modify the technical memorandum and issue a final document.

#### Subtask 1.10 – Project Management and Monthly Reports

ENGINEER will provide the necessary management resources to coordinate the all of the overall project components including subconsultant management, meetings, meeting minutes, invoicing, technical reviews, quality reviews and submittals. The ENGINEER will submit a monthly progress report to the OWNER that summarizes the activities of the past month, schedule status, budget status, outstanding action items and a metering summary.

### **Task 2 – SSES - Pilot Area Program**

#### Subtask 2.1 Sewer System Investigations

ENGINEER will identify a Pilot Area (i.e. the flow meter area with the greatest amount of I/I) from the sewersheds which require additional investigations/study as identified in Task 1. The Pilot Area will contain approximately 30,000 linear feet of sewer pipe, and the investigations will form a basis for future SSES work in the remaining prioritized sewersheds. ENGINEER will develop multiple subcontracts for the investigation and identification of I/I sources in the Pilot Area and conduct some inspections with in-house field staff and equipment. The investigations in the Pilot Area will consist of the following:

**2.1.1 – Manhole Inspections**

Manhole inspections will be performed by a subcontractor on 50% manholes within the Pilot Area using video equipment capable of 360 degree inspection for the entire depth of the manhole.

**2.1.2 – Manhole Inspection and Sewer Line Rapid Assessment Tool (SL RAT)**

The remainder of the manholes (for lines 12" or smaller) in the Pilot Area will be inspected by ENGINEER in the field. These investigations will include the use of the SL RAT to determine problem areas in the adjacent sewers including blockages, sags, flow restrictions, grease deposits and collapsed pipe.

**2.1.3 – Aqua Zoom Camera Inspections**

A specialized zoom video camera will be used by a subcontractor to inspect pipelines from 50% of the manholes in the Pilot Area. These videos will be used to screen pipe segments for potential defects prior to recommending further closed-circuit television (CCTV) inspection. This approach will optimize the lines recommended for cleaning and CCTV inspection by eliminating the lines that have no defects.

**2.1.4 – Smoke Testing**

Smoke testing will be performed by a subcontractor with the intent to identify inflow sources directly connected to the sewer system. This program will also identify suspect sources which will be further investigated in subtask 2.1.5.

**2.1.5 – Dye Water Testing**

Dye water testing will be performed by a subcontractor on suspect sources identified in the Pilot Area during the smoke testing program described above.

**2.1.6 – CCTV Inspection**

For budgeting purposes we have assumed that 50% of the sewers in the Pilot Area will be CCTV inspected by a subcontractor for defects following pre-screening with the Aqua Zoom camera and SL RAT. All findings will be rated based on PACP standards for pipeline assessment.

**Subtask 2.2 – Recommended Rehabilitation Plan**

ENGINEER will use the information generated by the investigations described above to identify various sources of I/I and develop a rehabilitation plan which recommends sewer system rehabilitation actions that are cost-effective, including manhole rehabilitation, cured-in-place pipe (CIPP) lining, service lateral lining, and inflow removal. The final report will be submitted to DEEP and will include a scope and schedule for the implementation of sewer system rehabilitation in the Pilot Area. After receipt of comments from OWNER and DEEP, ENGINEER will modify the report and issue a final Pilot Area Rehabilitation Plan.

**Task 3 – SSES Pilot Area Rehabilitation Design**

**Subtask 3.1 – Data Review and Recommendations**

ENGINEER will utilize the OWNER's GIS to prepare plans for the Pilot Area for use during design and execution of the work. ENGINEER will evaluate all CCTV defect codes associated with logs provided by the CCTV inspection subcontractor and recommend rehabilitation techniques required to achieve I/I removal in mainline sewers and service laterals. In addition, ENGINEER will review all manhole inspection videos and logs and recommend appropriate manhole rehabilitation techniques.

#### Subtask 3.2 – Development of Specifications and Bid Documents

ENGINEER will develop bid documents (specifications and plans as necessary) suitable for public bidding for sewer system rehabilitation in the Pilot Area including spot replacement of sewers and service laterals, CIPP lining, service lateral lining, and manhole rehabilitation. ENGINEER will provide the OWNER with an estimate of most probable construction cost for the construction contract to be issued for bidding based on current ENR indices. Specifications will include DEEP provisions, OWNER front end documents and technical specifications based on the CSI format. For plans, the ENGINEER will provide one set of stamped documents to the OWNER and a pdf of the entire set of contract documents as the final deliverable.

#### **Task 4 – Recommended SSES Program (future)**

To be defined in later phases after completion of Task 1.

#### **Task 5 – Rehabilitation Design Services (future)**

To be defined in later phases after completion of Task 4 as necessary.

#### **Task 6 – Engineering Services During Construction (future)**

To be defined in later phases after completion of Task 5 as necessary.

#### Subconsultants

The ENGINEER anticipates the following roles for each of our proposed subconsultants.

Flow Assessment Services, LLC, (FAS) will be our primary subconsultant on this project and will provide the continuous flow and rainfall monitoring services. They will provide all labor and materials for these programs as well as providing the data to the ENGINEER for use in analyzing the system.

JKMuir, LLC, a certified women's business enterprise (WBE), will support FAS with staff to perform maintenance activities and site visits to the continuous flow meters throughout the duration of the project.

Martinez Couch & Associates, LLC, a certified minority business enterprise (MBE), will support FAS with staff to perform the data reviews, provide quality reviews and provide monthly metering report updates throughout the duration of the project.

Advanced Reprographics, Inc., a certified WBE, will provide printing and copying services as needed throughout the duration of the project.

## 2.0 OWNER'S RESPONSIBILITIES

Furnish to ENGINEER, as requested by ENGINEER for performance of Services as required by the Contract Documents, the following:

Police details if required will be paid for directly by the OWNER. ENGINEER will provide the OWNER with invoices from the Police Department as needed for performance of field investigations. ENGINEER will be responsible for coordinating the services of Police details.

Data prepared by or services of others, including without limitation explorations and tests of subsurface conditions, drawings of physical conditions in or relating to existing surface or subsurface structures, CCTV inspection videos and logs, field surveys for design purposes and property, boundary, easement, right-of-way, topographic and utility surveys or data, including relevant reference points. OWNER shall be responsible for, and ENGINEER may rely upon, the accuracy and completeness of all reports, data and other information furnished pursuant to this paragraph. ENGINEER may use such reports, data and information in performing or furnishing services under this Agreement.

**3.0 TIME PERIOD FOR PERFORMANCE**

The time periods for the performance of ENGINEER's services as set forth in Article 2 of said Agreement are as follows:

ENGINEER has assumed a contract authorization date of January 31, 2015 or earlier for the purposes of estimating this schedule. Our schedule for work items included in Tasks 1 through 3 are shown below.

SCOPE ITEMS	2015												2016						
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
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1.10 Project Management		★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
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★ Deliverable or milestone  
 → Assumes 30 day review period from OWNER and 30 days to complete revisions

Task 1 – ENGINEER will conduct the services described herein between February 2015 and March, 2016. The Draft I/I Study Report (subtask 1.8) will be submitted by August 31, 2015 and the Final I/I Study Report will be submitted 30 days after receipt of written comments by the OWNER and DEEP. The Continuous Flow Monitoring Supplemental Technical Memorandum (subtask 1.9) will be submitted by April 30, 2016 and the Final Technical Memorandum will be submitted 30 days after receipt of written comments by the OWNER and DEEP.

Task 2 – ENGINEER will conduct the services described between September 2015 and November 2015.

Task 3 – ENGINEER will conduct the services described between January 2016 and March 2016.

Tasks 4 – 6 – To be determined.

**4.0 METHOD OF PAYMENT**

The method of payment for Services rendered by ENGINEER shall be as set forth below:

The OWNER agrees to pay the ENGINEER for the services described above in accordance with the

provisions outlined in the Table below.

<u>Task #</u>	<u>Amount</u>	<u>Billing Type</u>
Task 1 – I/I Study Report	\$520,000	Lump Sum
Task 2 – SSES Pilot Area	\$100,000	Cost plus Fixed Fee
Task 3 – Pilot Area Rehabilitation Design	\$50,000	Cost plus Fixed Fee
Total	\$670,000	

#### LUMP SUM TASKS

For services related to Task 1 – I/I Study Report provided above, the OWNER agrees to pay the ENGINEER a lump sum amount not to exceed \$520,000. The ENGINEER shall invoice the OWNER monthly in a proportion to the percentage of work completed to date.

#### COST PLUS FIXED FEE TASKS

For services related to Task 2 – SSES Pilot Area and Task 3 – Pilot Area Rehabilitation Design provided above, the OWNER agrees to pay the ENGINEER a Cost plus Fixed Fee (CPFF) with an upper limit of \$150,000.

The CPFF amounts estimated above shall consist of all direct and indirect costs as described below incurred in or directly attributable to the performance of the services.

#### Direct Cost

- a. Direct Labor Costs. The ENGINEER shall be compensated for the services of its personnel on the basis of direct labor costs (chargeable salaries without fringe benefits) as incurred by the ENGINEER's personnel for the time such personnel are directly utilized on the work. The salaries of any personnel assigned are subject to modification by the ENGINEER throughout the term of this Agreement as part of scheduled company-wide personnel evaluation.
- b. Travel Expenses and Subsistence. The ENGINEER shall be paid actual costs of travel expenses including automobile rental, if required, mileage charges, parking, tolls and taxi, lodging and subsistence where such expenses are directly related to the performance of the work.
- c. Other Incidental Direct Costs. The cost of other services as may be required hereunder, but which are not normally included as part of the overhead of the ENGINEER, shall be reimbursed to the ENGINEER. Such other services as required to complete this Agreement may include but are not limited to the following: computer/program and word processing charges, printing costs, reproduction costs, telephone and fax costs, laboratory and analysis charges, field equipment rental charges, mailing, shipping costs and special equipment procurement.
- d. For work done by subcontractor or consultants, at the cost to the ENGINEER plus 5% of such services.

#### Indirect Cost

- a. Overhead and Fringe Benefits. In addition to the payments as hereinbefore provided, the OWNER agrees to pay to the ENGINEER a charge for overhead and fringe benefits (expressed as a factor times direct labor cost) incurred by the ENGINEER during the life of this Agreement. The indirect cost rate factor shall be one hundred and seventy-five and sixty-four hundredths percent (175.64%) of all direct labor costs of employees of the ENGINEER.

Fixed Fee

a. The OWNER agrees to pay the ENGINEER a fixed fee of \$15,000 for these services and to make monthly payments of the fixed fee in the proportion to the services performed.

The fixed fees (FF) will be due whether or not the estimated direct and indirect costs are reached.

It is agreed that the total CPFF amounts represent estimated costs. If the costs are exceeded, this Agreement shall be amended to provide payment to the ENGINEER as follows:

1. All direct and indirect costs, as outlined above.
2. An additional fixed fee (amount to be negotiated).

5.0 SPECIAL PROVISIONS

OWNER has established the following special provisions and/or other considerations or requirements in respect of the Assignment:

None.



**COST OF PRICE SUMMARY FOR SUBAGREEMENTS UNDER U.S. EPA GRANTS**

(See accompanying instructions before completing this form)

Form Approved

OMB No. 158-RO144

**PART 1 - GENERAL**

1. GRANTEE Stamford WPCA		2. GRANT NUMBER	
3. NAME OF CONTRACTOR OR SUBCONTRACTOR CDM Smith Inc.		4. DATE OF PROPOSAL November 4, 2014	
5. ADDRESS OF CONTRACTOR OR SUBCONTRACTOR (Include Zip Code) 111 Founders Plaza Suite 1600 East Hartford, CT 06108		6. TYPE OF SERVICE TO BE FURNISHED Consulting Services Infiltration/Inflow Study Report Task 1 - Lump Sum	

**PART II - COST SUMMARY**

7. DIRECT LABOR (Specify labor categories)	ESTI- MATED HOURS	HOURLY RATE	ESTIMATED COST	TOTAL	
Officer-in-Charge/Technical Specialist	40	\$70.00	\$2,800.00		
Project Manager	180	\$60.00	\$10,800.00		
Project Engineer	240	\$50.00	\$12,000.00		
Engineer	240	\$40.00	\$9,600.00		
Drafter	40	\$30.00	\$1,200.00		
Clerical/Word Processing	40	\$25.00	\$1,000.00		
Technician	80	\$20.00	\$1,600.00		
<b>DIRECT LABOR TOTAL:</b>					<b>\$39,000</b>
8. INDIRECT COSTS (Specify Indirect cost pools)	RATE	X BASE =	ESTIMATED COST		
Direct Overhead, General & Administration	1.7564	\$39,000.00	\$68,499.60		
<b>INDIRECT COSTS TOTAL:</b>					<b>\$68,500</b>
9. OTHER DIRECT COSTS					
a. TRAVEL			ESTIMATED COST		
(1) TRANSPORTATION			\$1,500.00		
(2) PER DIEM			\$1,500.00		
<b>TRAVEL SUBTOTAL:</b>			<b>\$3,000.00</b>		
b. EQUIPMENT, MATERIALS, SUPPLIES (Specify Categories)		QTY	COST		ESTIMATED COST
Equipment & field supplies		1	\$2,000.00		\$2,000.00
Fedex		1	\$200.00		\$200.00
<b>EQUIPMENT SUBTOTAL:</b>					<b>\$2,200.00</b>
c. SUBCONTRACTS			ESTIMATED COST		
Flow Assessment Services			\$326,000.00		
Martinez Couch & Associates, LLC (MBE)			\$21,000.00		
JK Muir, LLC (WBE)			\$29,000.00		
Advanced Reprographics (WBE)			\$1,000.00		
<b>SUBCONTRACTS SUBTOTAL:</b>			<b>\$377,000.00</b>		
d. OTHER (Specify Categories)			ESTIMATED COST		
<b>OTHER SUBTOTAL:</b>					
e. OTHER DIRECT COSTS TOTAL:					
<b>10. TOTAL ESTIMATED COST</b>				<b>\$382,200</b>	
<b>11. PROFIT</b>				<b>\$489,700</b>	
<b>12. TOTAL PRICE</b>				<b>\$30,300</b>	
				<b>\$520,000</b>	



**COST OF PRICE SUMMARY FOR SUBAGREEMENTS UNDER U.S. EPA GRANTS**

(See accompanying instructions before completing this form)

Form Approved  
OMB No. 158-RO144

**PART 1 - GENERAL**

1. GRANTEE Stamford WPCA		2. GRANT NUMBER	
3. NAME OF CONTRACTOR OR SUBCONTRACTOR CDM Smith Inc.		4. DATE OF PROPOSAL November 4, 2014	
5. ADDRESS OF CONTRACTOR OR SUBCONTRACTOR (Include Zip Code) 111 Founders Plaza Suite 1600 East Hartford, CT 06108		6. TYPE OF SERVICE TO BE FURNISHED Consulting Services Infiltration/Inflow Study Report Tasks 2 & 3 - Cost Plus Fixed Fee	

**PART II - COST SUMMARY**

7. DIRECT LABOR (Specify labor categories)	ESTI- MATED HOURS	HOURLY RATE	ESTIMATED COST	TOTAL
Officer-in-Charge/Technical Specialist	20	\$70.00	\$1,400.00	
Project Manager	60	\$60.00	\$3,600.00	
Project Engineer	160	\$50.00	\$8,000.00	
Engineer	160	\$40.00	\$6,400.00	
Drafter	80	\$30.00	\$2,400.00	
Clerical/Word Processing	40	\$25.00	\$1,000.00	
Technician	100	\$20.00	\$2,000.00	
<b>DIRECT LABOR TOTAL:</b>				
8. INDIRECT COSTS (Specify indirect cost pools)	RATE	X BASE =	ESTIMATED COST	
Direct Overhead, General & Administration	1.7564	\$24,800.00	\$43,558.72	
<b>INDIRECT COSTS TOTAL:</b>				
9. OTHER DIRECT COSTS				
a. TRAVEL				ESTIMATED COST
(1) TRANSPORTATION				\$1,000.00
(2) PER DIEM				\$1,000.00
<b>TRAVEL SUBTOTAL:</b>				<b>\$2,000.00</b>
b. EQUIPMENT, MATERIALS, SUPPLIES (Specify Categories)	QTY	COST	ESTIMATED COST	
Equipment & field supplies	1	\$4,500.00	\$4,500.00	
Fedex	1	\$141.00	\$141.00	
<b>EQUIPMENT SUBTOTAL:</b>				<b>\$4,641.00</b>
c. SUBCONTRACTS				ESTIMATED COST
Martinez Couch & Associates LLC (MBE)				\$18,000.00
JKMuir LLC (WBE)				\$10,000.00
Advanced Reprographics (WBE)				\$1,000.00
CCTV Inspection & Smoke Testing				\$22,500.00
Zoom Inspection				\$8,500.00
<b>SUBCONTRACTS SUBTOTAL:</b>				<b>\$60,000.00</b>
d. OTHER (Specify Categories)				ESTIMATED COST
<b>OTHER SUBTOTAL:</b>				
<b>e. OTHER DIRECT COSTS TOTAL:</b>				
<b>10. TOTAL ESTIMATED COST</b>				<b>\$66,641</b>
<b>11. PROFIT</b>				<b>\$135,000</b>
<b>12. TOTAL PRICE</b>				<b>\$150,000</b>



# *Stamford, CT*



# *Dryer Facility Update*

- ◆ State of the RTO
- ◆ Dryer Drum
- ◆ Andritz Inspection Report –see separate attachment

# *State of the RTO*

## **Original Condition**



## **Current Condition**



- Constant insulation repairs in middle chamber
- Heat recovery media degrading after 5 years use
- Numerous repairs on Burner Actuation system, burners are in good condition.
- Combustion Chamber in good condition
- Valves in good condition

## *State of the RTO*

**Siloxane Buildup in  
middle of media chamber**



**New blocks installed,  
insulation refurbished**

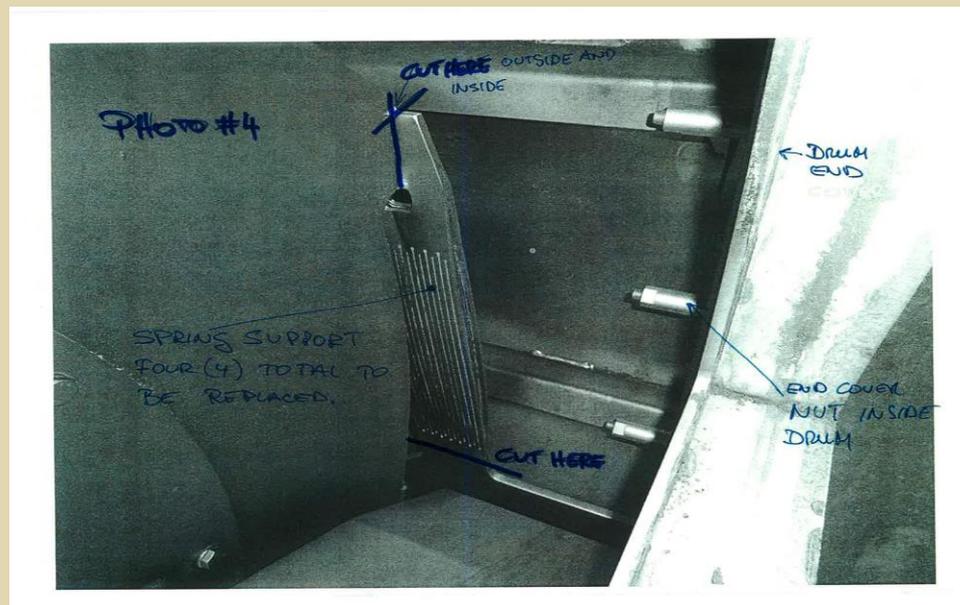


# *State of the RTO*

- ◆ *Recommendation*
- ◆ Replace three middle chambers
  - ◆ \$100,000 includes new media, new insulation, new shell, upgraded mastic on shell to minimize corrosion, labor and crane.
    - Turn Key Project
    - 1 week turn around
    - Combustion chamber and burners in good condition
  - ◆ Burner actuation system has been problematic. A new style is available and retrofitted to an Andritz Pelletizer RTO in Manatee Florida.
- ◆ Andritz inspection report recommends full media change out. A larger RTO would create other issues and not contribute to better to better air flow.

# Dryer Drum

- ◆ Andritz recommends spring pack replacement
  - ◆ 1 week turn around time
  - ◆ Trained Andritz welder needed for the work



## *Dryer Drum*



Trunions in good condition now. Will need replacement in future.

*Questions?*

**SWPCA Capital Improvement Plan**

DESCRIPTION	ESTIMATED COST	FY15	FY16	FY17	FY18	FY19	ESTIMATED TIME	DETAIL
<b>Treatment Plant</b>								
CONCRETE REPAIRS AT PLANT SITE	\$ 150,000	\$ 150,000					6 MONTHS	REPLACE CONCRETE THAT IS DETORATING AT VARIOUS AREAS AT THE PLANT.
REPLACE THICKENED SLUDGE TRANSFER PUMPS	\$ 167,000	\$ 167,000					1 YEAR	THE EXISTING SLUDGE PUMPS ARE 40 YEARS OLD AND AT END OF THEIR SERVICE LIFE AND PROCURING PARTS IS VERY DIFFICULT AND EXPENSIVE.
REPLACE PIPE SUPPORTS IN RAW SEWAGE PUMP STATION	\$ 110,000	\$ 110,000					3 MONTHS	PIPE SUPPORTS ARE SEVERELY CORRODED AND NEED TO BE REPLACED
MISC WPCF EQUIPMENT REPLACEMENTS	\$ 750,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000		REPLACE PUMPS AND MIXERS AS NEEDED
# 1 PRIMARY CLARIFIER REHAB	\$ 250,000		\$ 250,000				15 MONTHS	# 1 PRIMARY CLARIFIER IS 40 YEARS OLD AND SEVERLY CORRODED
# 3 SEC CLARIFIER SCUM ARM RETRO-FIT & LAUNDER COVERS	\$ 300,000	\$ 150,000	\$ 150,000				15 MONTHS	SCUM ARM HAS FAILED AND NEEDS TO BE REPLACED. ALGAE GROWTH ON THE WIERS AND LAUNDER TROUGHS CAUSE CLOGGING OF SCREENS AT THE UV DISINFECTION CHANNEL. LAUNDER COVERS WILL PREVENT ALGAE GROWTH ON WEIRS AND LAUNDER.
SLUICE GATES AND VALVES AT THE PLANT	\$ 175,000	\$ 50,000	\$ 125,000				12 MONTHS	REPLACE EXISTING SLUICE GATES AND VALVES THAT ARE SEVERELY CORRODED
UPGRADE SLUDGE DEGRITTING SYSTEM	\$ 765,000	\$ 65,000	\$ 700,000				15 MONTHS	THE EXISTING SLUDGE DEGRITTING SYSTEM DOES NOT PEFFORM WELL AND REQUIRES WORK. SYSTEM INCLUDES PROMARY SLUDGE PUMPS, HYDROCYCLONES AND GRIT CLASSIFIERS
<b>UPGRADE PLANT HEADWORKS</b>								
a Design phase engineering services	\$ 600,000	\$ 300,000	\$ 300,000				18 MONTHS	
b Construction costs	\$ 7,200,000			\$ 3,600,000	\$ 3,600,000		30 MONTHS	
c Legal/administrative/financing	\$ 350,000			\$ 175,000	\$ 175,000			
<b>AERATION BLOWERS</b>								
a Design phase engineering services	\$ 450,000	\$ 225,000	\$ 225,000				18 MONTHS	
c Construction costs	\$ 3,000,000			\$ 1,500,000	\$ 1,500,000		30 MONTHS	
d Legal/administrative/financing	\$ 270,000			\$ 135,000	\$ 135,000			
<b>SECONDARY CLARIFIER FLOW DISTRIBUTION</b>								
a Design phase engineering services	\$ 200,000	\$ 200,000					6 MONTHS	PROVIDE FLOW DISATRIIBUTION BOX AND PIPING TO IMPROVE FLOW DISTRIBUTION TO SECONDARY CLARIFIERS
c Construction costs	\$ 2,500,000		\$ 1,500,000	\$ 1,000,000			18 MONTHS	
<b>SCADA SYSTEM UPGRADE</b>								
a Design phase engineering services	\$ 160,000	\$ 160,000					6 MONTHS	REPLACE SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) SYSTEM THAT IS NOW OBSOLETE
b Programming, software and hardware installation	\$ 910,000		\$ 570,000	\$ 340,000			15 MONTHS	
<b>REPLACE UV SYSTEM</b>								
a Design and Pre Select equipment	\$ 300,000			\$ 300,000			16 MONTHS	REPLACE UV EQUIPMENT WHICH WILL 15 YEARS OLD AND AT END OF USEFUL LIFE BY 2019
b Construction costs	\$ 4,000,000				\$ 2,000,000	\$ 2,000,000	18 MONTHS	
<b>SUBTOTAL TREATMENT PLANT</b>	<b>\$ 22,607,000</b>	<b>\$ 1,727,000</b>	<b>\$ 3,970,000</b>	<b>\$ 7,200,000</b>	<b>\$ 7,560,000</b>	<b>\$ 2,150,000</b>		
<b>Pump Stations</b>								
EMERGENCY POWER GENERATORS	\$ 250,000	\$ 100,000	\$ 150,000				6 MONTHS	INSTALL PERMANENT GENERATORS AT BURWOOD ROAD(80KW) & CLAY HILL. (50KW) PUMP STATIONS AND PURCHASE 1 PORTABLE GENERATOR
ALVORD LANE PUMP STATION UPGRADE	\$ 750,000		\$ 750,000				10 MONTHS	UPGRADE ELECTRICAL SWITCHGEAR TO MEET CURENT BUILDING CODE, REPLACE WINDOWS, DOORS AND WET WELL COVER SLAB
GREENWICH AVE PUMP STATION UPGRADE					\$ 500,000		10 MONTHS	REPLACE EMERGENCY POWER GENERATOR
MISC PUMP STATION EQUIP REPLACEMENTS	\$ 500,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000		REPLACE PUMPS AND EQUIPMENT AS NEEDED
<b>SUBTOTAL PUMP STATIONS</b>	<b>\$ 2,000,000</b>	<b>\$ 200,000</b>	<b>\$ 1,000,000</b>	<b>\$ 100,000</b>	<b>\$ 600,000</b>	<b>\$ 100,000</b>		
VEHICAL REPLACEMENTS	\$ 175,000		\$ 100,000		\$ 75,000		6 MONTHS	REPLACE TELEHANDLER (LULL) AND VEHICLES THAT HAVE EXCEEDED THEIR USEFUL LIFE
<b>Sewer Rehabilitation</b>								
CCTV EQUIPMENT FOR SEWER TRUNK LINES	\$ 300,000		\$ 300,000				1-2 YEARS	INSPECTION OF LARGE SEWER PIPES HAVE TO BE CONDUCTED AS MANDATED BY THE EPA FOR THE CMOM PROGRAM TO ASSESS THE CONDITION OF THE SEWER PIPE
RECONSTRUCT SEWER AT GLENBROOK AND CRESENT	\$ 35,000	\$ 35,000					8 MONTHS	CORRECT IMPROPER CONSTRUCTION OF SEWER PIPE CAUSING DEBRIS BUILDUP IN SEWER LINE
REHAB BEDFORD STREET SEWER	\$ 30,000	\$ 30,000					8 MONTHS	OLD TILE PIPE IS CRACKED AND NEEDS TO BE RELINED
RECONSTRUCT SEWER AT SNOW CRYSTAL	\$ 70,000	\$ 70,000					8 MONTHS	SEWER LINE WAS CONSTRUCTED WITH REVERSE PITCH NEEDS TO BE REBUILT
MANHOLE COVERS	\$ 300,000	\$ 100,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	ON GOING	MANHOLE FRAME AND COVERS GET HIT BY PLOWS AND HAVE TO BE REPLACE REGULARLY DURING WINTER SNOW PLOWING AND LEAF PICKUP.
SEWER LINING, JOINT SEALING AND POINT REPAIRS	\$ 3,600,000	\$ 1,600,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	8 MONTHS	OLD SIX INCH TILE SEWER HAS TO BE REPLACED WITH AN EIGHT INCH PIPE.
<b>New Sewer Extension</b>								
WEDGEMERE ROAD SEWERS(\$ 3,500,000)	\$ 3,500,000		\$ 3,500,000				SEPT-2014	PROJECT IS IN DESIGN---60% COMPLETE
PERNA LANE AREA SEWERS (\$ 5,000,000)	\$ 5,000,000			\$ 3,000,000	\$ 2,000,000		SEPT-2016	CONSULTANT HAS BEEN HIRED. NO WORK HAS STARTED.
WEST VIEW LANE	\$ 2,500,000				\$ 100,000	\$ 2,400,000	SEPT-2016	PETITION FOR NEW SEWERS HAS BEEN FILED
MCGREGOR AREA SEWERS	\$ 3,150,000				\$ 150,000	\$ 3,000,000		

**SWPCA Capital Improvement Plan**

<b>DESCRIPTION</b>	<b>ESTIMATED COST</b>	<b>FY15</b>	<b>FY16</b>	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>	<b>ESTIMATED TIME</b>	<b>DETAIL</b>
CMOM (including I/I Evaluation and SSES)	\$ 3,000,000	\$ 1,000,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	ONGOING	COMPLY WITH CTDEEP NOV TO PERFORM AN I/I EVALAUTION AND SEWER SYSTEM EVALAUTION SURVEY (SSES) TO COST EFFECTIVELY REMOVE I/I. COMPLETE INSPECTION OF SEWER INTERCEPORS AS PART OF CMOM PROGRAM
<b>SUBTOTAL COLLECTION SYSTEM</b>	<b>\$ 21,660,000</b>	<b>\$ 2,835,000</b>	<b>\$ 4,950,000</b>	<b>\$ 4,050,000</b>	<b>\$ 3,375,000</b>	<b>\$ 6,450,000</b>		
	\$ -							
<b>TOTAL</b>	<b>\$ 46,267,000</b>	<b>\$ 4,762,000</b>	<b>\$ 9,920,000</b>	<b>\$ 11,350,000</b>	<b>\$ 11,535,000</b>	<b>\$ 8,700,000</b>		
	\$ -							
NEW SEWERS	\$ 14,150,000	\$ -	\$ 3,500,000	\$ 3,000,000	\$ 2,250,000	\$ 5,400,000		
	\$ -							
<b>Funding Source</b>								
FUNDED BY STATE CLEAN WATER FUND (UPGRADE PLANT HEADWORKS AND AERATION BLOWERS)	\$ 11,870,000	\$ 525,000	\$ 525,000	\$ 5,410,000	\$ 5,410,000	\$ -		
FUNDED BY STATE CLEAN WATER FUND GRANT @20%	\$ 2,374,000	\$ 105,000	\$ 105,000	\$ 1,082,000	\$ 1,082,000	\$ -		
FUNDED BY STATE CLEAN WATER FUND LOAN @80%	\$ 9,496,000	\$ 420,000	\$ 420,000	\$ 4,328,000	\$ 4,328,000	\$ -		
PARTIALLY FUNDED BY STATE CWF (I/I Eval and SSES)	\$ 2,500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000		
FUNDED BY STATE CLEAN WATER FUND GRANT @55%	\$ 1,375,000	\$ 275,000	\$ 275,000	\$ 275,000	\$ 275,000	\$ 275,000		
<b>CLEAN WATER FUND BOND ISSUANCE (AT HEADWORKS AND AERATION BLOWER UPGRADE COMPLETION)</b>	<b>\$ 9,496,000</b>					<b>\$ 9,496,000</b>		
FUNDED BY REVENUE BONDS	\$ 33,022,000	\$ 3,962,000	\$ 9,120,000	\$ 5,665,000	\$ 5,850,000	\$ 8,425,000		
<b>FUNDED BY 2013 REVENUE BOND</b>	<b>\$ 4,109,000</b>	<b>\$ 3,962,000</b>	<b>\$ 147,000</b>					
<b>FUTURE REVENUE BOND ISSUANCE</b>	<b>\$ 28,913,000</b>		<b>\$ 14,638,000</b>		<b>\$ 14,275,000</b>			



**GANNETT FLEMING ENGINEERS, P.C.**  
100 Crossways Park West  
Suite 300  
Woodbury, NY 11797

Office: (516) 364-4140  
Fax: (516) 921-1565  
www.gannettfleming.com

November 5, 2014

Mr. Prakash Chakravarti, PE  
Supervising Engineer  
Stamford Water Pollution Control Authority  
111 Harbor View Avenue  
Stamford, CT 06902-5913

Re: Engineering Cost Estimate – Revised 11/05/14  
Sludge Degritting System Improvements (Task – 4)

Dear Mr. Chakravarti:

Gannett Fleming is pleased to submit our revised cost estimate to conduct an Engineering Study for the Sludge Degritting System Improvements.

Attached is the following:

- Scope of Work
- Cost Estimate (Task 1 – Engineering Study)
- Wage Rate Schedule

We look forward to working with the Town of Stamford on this important project.

Very truly yours,

GANNETT FLEMING ENGINEERS, P.C.

A handwritten signature in black ink, appearing to read 'Stephen Hadjiyane'.

STEPHEN HADJIYANE, P.E.  
Vice President

cc: F. Papamichael  
L. Augustin

## **Task 4: Sludge Degritting System Improvements**

### **Scope of Work**

#### **Task 1 – Engineering Study**

- Kick-off meeting and Site Visit to collect existing data and verify field and operating conditions
- Process Evaluation
  - Primary clarifier influent and effluent TSS loadings
  - Primary clarifier under flow/sludge concentrations
  - Degritting sludge disposal quantity.
- Approximately thirty-six (36) months of data will be analyzed to develop loading/sludge removal rates. This will consider average and storm flow conditions. Assumes data is available and the city will supply data in excel format.
- Evaluate primary sludge and degritting system operations. Review hydraulics on gravity line to thickeners.
- Review use of grinders on primary sludge pumps
- Attend a workshop to review our preliminary findings and recommendations.
- Prepare a Technical Memorandum summarizing our findings and recommendations. Preliminary cost estimates will be presented for each alternative. Three (3) copies will be provided. (Up to 3 alternatives are anticipated).

#### **Task 2 – Engineering Design**

- Kick-off meeting with the City and prepare and distribute minutes.
- Prepare preliminary layouts drawings.
- Identify equipment for the proposed improvements
- Coordinate design of structural, electrical, instrumentation and mechanical.
- Prepare and submit a draft operation plan indicating how the plant will operate during construction.
- Prepare preliminary drawings (50%) and outline technical specifications.
- Prepare a preliminary project Opinion of Probable Construction Costs based on approved and completed preliminary design.
- Attend one workshop with the City and prepare and distribute minutes.
- Submit up to five sets preliminary design documents, including design computations, and Opinion of Profitable Costs to the City for review and approval.

### **Task 3 -- Final Design Phase**

- Prepare 90% construction drawings and specifications.
- Prepare Bid construction drawings and specifications
- Prepare Opinion of Probable Construction Costs.
- Perform operability and constructability review.
- Perform Quality Control review.
- Attend two progress workshop meetings with the City and prepare and distribute minutes.
- Furnish up to five sets of the final drawings and specifications to the City for review and approval.
- Assist the City in submitting drawings and specifications to CTDEP.
- Assist the City in obtaining building permits.
- Provide technical criteria, written descriptions and design data for the City's use in filing applications for permits with or obtaining approvals of such governmental authorities as have jurisdiction to approve the design of the Project, and assist the City in consultations with appropriate authorities.
- Prepare for review and approval by the City, its Legal Counsel and other advisors, construction contract agreement forms, general conditions and supplementary conditions, and bid forms, invitations to bid and instructions to bidders, and assist in preparation of other related documents.

### **Task 4 – Bidding Phase**

- Assist the City in advertising for bids.
- Furnish a complete set of reproducible drawings and camera ready specifications for City to reproduce necessary number of sets for Bidders.
- Attend pre-bid conference and prepare and distribute minutes.
- Prepare and issue addenda.
- Attend bid opening.
- Tabulate bids.
- Assist the City in bid evaluation.
- Assist the City in CONTRACTOR/supplier evaluation.
- Consult with the City concerning substitutions. Attend one meeting if required.

**SUMMARY OF ESTIMATED STAFF EFFORT (HOURS) AND COSTS**

**Engineering Study (Task 1)- Sludge Degritting System Improvements**

**Stamford WPCF**

Task Description	Home Office Personnel Classification										Total Hours	Estimated Fee
	Project Director	Project Manager	Sr. Process Engineer	Project Engineer	Operations Specialist	Project Engineer - Mechanical	Technical Designer	CADD Technician	Admin Assistant			
I.A. Project Meetings (2) - Kick-off/Data collection - One workshop	12	24	16	8	8				6		74	10,000
I.B. Process Evaluation - Primary influent/effluent loadings - Primary under flow/sludge concentrations - Develop sludge loading curves - Develop degritting system sizing	8	16	32	60							116	18,000
I.C. Evaluate Primary Sludge/Degritting System Operations - Review hydraulic - Evaluate use of Grinders on Primary Sludge Pumps	4	20	8	32	8	16	32	20			140	16,000
I.D. Technical Memorandum	4	30	8		4				16		62	6,000
<b>Subtotal - Labor</b>	<b>28</b>	<b>90</b>	<b>64</b>	<b>100</b>	<b>20</b>	<b>16</b>	<b>32</b>	<b>20</b>	<b>22</b>		<b>392</b>	
<b>Reimbursable Expenses</b>												<b>500</b>
<b>Subcontractors/Vendors</b>												<b>0</b>
<b>Total</b>												<b>\$50,500</b>

1. Reimbursable Cost Include: Travel, subsistence, tolls, reproduction, mailing, etc.

**STAMFORD WATER POLLUTION CONTROL AUTHORITY**

**STAMFORD, CT**

**WAGE RATE SCHEDULE**

<b>Title</b>	<b>Hourly Base Pay Rate</b>
<b>Vice President</b>	<b>\$94-\$104</b>
<b>Senior Project Manager</b>	<b>\$65-\$80</b>
<b>Project Manager</b>	<b>\$60-\$70</b>
<b>Senior Project Engineer</b>	<b>\$65-\$80</b>
<b>Project Engineer</b>	<b>\$50-\$65</b>
<b>Technical Designer</b>	<b>\$48-\$60</b>
<b>Operations Specialist</b>	<b>\$45-\$60</b>
<b>CADD Technician</b>	<b>\$32-\$40</b>
<b>Project Assistant</b>	<b>\$28-\$40</b>

**Note: Billing Rates will be Time and Expense basis, Not to Exceed without prior authorization, based on actual labor rates times a 2.9 multiplier.**