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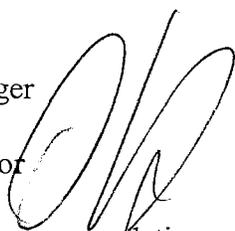


## INTERDEPARTMENTAL COMMUNICATION

Acton Board of Health - Telephone 978-264-9634 - Fax 978-264-9630

January 21, 2009

TO: Steve Ledoux, Town Manager

FROM: Doug Halley, Health Director 

SUBJECT: Sewer Action Committee Recommendation

This memo is a follow-up to previous information supplied to your office. Attached are two documents related to recommendations made by the Sewer Action Committee. The first is a copy of their minutes from December 9, 2008 and the second is a Low Pressure Sewer Concept Design Report Project submitted from Woodard and Curran.

The Sewer Action Committee at their December 9, 2008 meeting reviewed Woodard and Curran's proposal and they voted in favor, with one member abstaining, that the Board of Selectmen be requested to fund the Woodard and Curran Design Basis Study for \$29,500 in the FY2010 budget or sooner if possible.

Subsequent to that meeting the project proposal was given to Bruce Stamski the Town Engineer. After review of the report he thought it was viable for the work, as proposed by Woodard and Curran, to be done in house by the Engineering Department, thereby saving expenses. He did note that the project would have to be done in conjunction with the Engineering Department's other duties and priorities but he felt it was feasible to include it in the Department's workload. He also noted that if borings became necessary for the design the \$6,200 required to do that task would need a funding source that has not been identified.

The Sewer Action Committee in discussing this project felt it was important for the following reasons:

1. It will provide the Committee with enough information to determine if Low Pressure Sewers were an economically viable alternative for the Spencer/Tuttle/Flint area.
2. It will provide the Committee with a street by street cost which will enable them to assess the economic viability of retaining or deleting properties within the proposed service area.

3. It will quantify the capacity available to be applied to the West Acton Sewer Service Area enabling the Committee to further define that area and to quantify the construction costs for the West Acton Sewer Service Area inclusion.

The Sewer Action Committee believes that utilizing the Engineering Department as stated by Bruce Stamski is a timely opportunity. With the potential of an Economic Stimulus package to assist funding of the sewer extension anything that can make the project ready in a timely fashion is of great importance.

The Sewer Action Committee will be meeting with the Board of Selectman at their January 26<sup>th</sup> meeting and will be able to answer any questions regarding their recommendation.

## TOWN OF ACTON

### SEWER ACTION COMMITTEE

December 9, 2008

Senior Center

Members: Don Barron, Rick Gordon, Andy Munro, Kanayo Lalo, Helen Probst, Kent Sharp, Ron Beck, and Nancy Tavernier. Staff support: Doug Halley. Guests: Henry Albro, Wayne Friedrichs

#### I. Call to order

Andy Munro called the meeting to order at 7:10PM and moved immediately to a presentation by Henry Albro of F. R. Mahony & Assoc. on low pressure sewers.

#### II. Low Pressure Sewer Analysis, Henry Albro

Albro presented information on the analysis he did using low pressure sewers for the Spencer/Flint/Tuttle area and West Acton Center east of the tracks, as an apples-to-apples comparison of the Woodard & Curran cost estimate for a gravity system in the same areas. Two lift stations in West Acton and 1 at Flint/Tuttle would be eliminated to help with a total net savings of \$1.658M based on the \$11M estimate of the whole system from Woodard & Curran.

Albro explained the advantages of low pressure over gravity: lower maintenance cost, smaller pipes, shallower installation, less disruption to groundwater and utilities, lower O&M costs, allows for flexible flows, good for single family or small commercial uses, not good for high flow uses, and directional drilling can be used. System can be easily expanded for higher uses such as restaurants by adding pumps. Commercial areas in Wayland and Fitchburg, and town buildings in Westford are using low pressure systems currently as well as the town of Shirley. Westford's effluent discharges to a package plant at the nearby school.

Members suggested the area in West Acton needs to be redefined to delete Spruce St. and the schools and add the commercial areas on the west side of the tracks on Mass. Ave, Central and Arlington St. That will be done at a future meeting.

Questions: Can homes share a pump to reduce cost? Yes but not advisable due to the need for a condo document. Can pumps be owned by town? Yes. Some towns maintain the pumps such as Marion. There are 30,000 pumps operating in the North East and only 4-5 technicians are needed to service them all. It is possible state tax credits could be used for the purchase of the pumps by homeowners. Can the low pressure pipes tie into the gravity system via a force main? Yes, it is actually good for the gravity system to have a steady flow, cleaning out the pipes along the way. How much would a package plant cost? For 100kgpd the cost would be \$2.1M. The existing plant would be a better deal. What is the history of low pressure, the oldest known system? Utah system built in 1979, still going strong. If a pump fails, it likely only needs a new core which is \$1400. The pump costs \$3900 without a bulk order discount. Can the low pressure system be built in phases? Yes, you can start at the upper end and tie in people as you go along. The streets only hold the pipes and clean out manholes, no deep digging needed. There are options for indoor pumps rather than outdoor ones.

The construction cost only estimate presented for West Acton (WAC-1 east of tracks) for 89 connections was \$1,359,921, grand total per connection \$15,280. For Spencer/Tuttle/Flint the total construction cost would be \$2,159,056 for 142 connections or \$15,204 per connection. This is a combined savings of \$1,658,695 over Woodard & Curran's gravity system estimates. These costs do NOT include design and engineering and many other costs required for municipal construction.

Environment/One (Albro's parent company) works with Woodard & Curran not in competition with them. They sell the pumps, they do not design or engineer sewer systems. The Committee was very impressed with the information presented and the full hard copies of details to document the analysis.

### III. Review of Woodard & Curran's revised proposal

Woodard and Curran presented a revised proposal to investigate a low pressure sewer option for the neighborhood and newly defined West Acton with an apples-to-apples comparison with the previous conventional sewer design and cost estimate. The estimated budget is a fixed price of \$29,500. This will include 2 days of soil borings at a cost of \$6200. Phase 1 will be just the Spencer/Flint/Tuttle area where they will look on a street by street basis to get the breakdown of cost by street. Then they will go to phase 2 in West Acton. The obvious concern is how to pay for this especially with the threat of state and local budget cuts. It was suggested that money from a WR Grace environmental account be explored. Doug will look into this.

It is possible a federal economic stimulus package will include funds for capital projects in MA. This would not cover a study but does make it more hopeful for sewer construction funding. Members concluded that we need to spend the \$30,000 to know what the cost of the project would be so that the users could judge for themselves to pursue it. A vote at town meeting for this funding would be the first test. It is felt that a betterment as high as \$60,000 would not be acceptable, people might support \$25,000. With the additional commercial properties in West Acton, there would be more business users who pay a higher betterment based on maximum potential use. This would lower the residential betterment.

It was moved, seconded, and voted that the Sewer Action Committee request the Board of Selectmen fund the Woodard & Curran design basis study for \$29,500 in the FY2010 budget or sooner if possible. Before the request goes to town meeting, we would need a lot more financial information. Vote was 7 Yes and 1 abstention (Ron Beck).

### IV. West Acton discussion

Members reviewed maps of the West Acton Center area and agreed that areas that have a history of failures, or aging systems as well as areas that have strong business interest and economic development potential should be used as criteria for the better definition of the West Acton study area. Wayne Friedrichs expressed his concern about 40B's.

### V. Status of State SRF program

Doug provided the table showing that Acton is listed as a new project and rated at 120 points for a Sewer Expansion that would access the State Revolving Funds for a project cost of \$4,650,000. This is very positive news so early in the process.

VI. Minutes of 11/16/08 were approved as written.

### VI. Meeting schedule

The next meeting will be January 6. Doug will find a room.

Meeting adjourned at 9:20PM

Respectfully submitted,  
Nancy Tavernier, Clerk

COMMITMENT & INTEGRITY  
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December 3, 2008



Doug Halley, Director of Health  
Town of Acton  
472 Main Street  
Acton, MA 01720

RE: Low Pressure Sewer Concept Design Report Project  
Acton, Massachusetts

Dear Mr. Halley:

Woodard & Curran (W&C) is pleased to present this Agreement for the Low Pressure Sewer Concept Design Report for the Spencer/Tuttle/Flint area of Acton (Area 10 in the 2004 CWMP). This report will leverage previous efforts to create the gravity sewer Design Basis Report dated May 8, 2008 and presented to the AWRAC on March 12, 2008. The intent of this report is to investigate a low pressure sewer option for the area and to present an apples-to-apples comparison with the previous report.

Attachment A is the Project Approach including the Scope of Work, schedule, and fee budget for the report. The Terms & Conditions from our existing Capacity Assessment for the Adams Street RIBs contract dated June 14, 2007 shall remain in effect for this work. We will not initiate work until we receive your written authorization to proceed.

If this Contracts meets with your understanding and expectations, please have both originals signed and then return one to our office. If you have any questions or comments please contact me at 781-251-0200.

Very truly yours,

Woodard & Curran Inc.

Joseph D. Shea, P.E.  
Vice President

JDS/jct

Attachments

cc: Helen T. Gordon, PE, Sr. VP, Woodard & Curran  
Jack Troidl, PE, Woodard & Curran



.....  
IN WITNESS THEREOF, the Parties hereto have made and executed this Agreement on this \_\_\_\_\_ day  
of \_\_\_\_\_, 2008.

CLIENT: Town of Acton, Massachusetts  
By:

ENGINEER: Woodard & Curran, Inc.  
By:

\_\_\_\_\_  
Doug Halley  
Director of Health, Acton

\_\_\_\_\_  
*Joseph D. Shea*  
Joseph D. Shea, P.E.  
Vice President

Certification of Availability of Fund for this project.  
By:

Addresses for Giving Notice:

Doug Halley, Director of Health  
Town of Acton  
472 Main Street  
Acton, MA 01720

Joseph D. Shea, P.E.  
Woodard & Curran, Inc.  
980 Washington Street, Suite 325  
Dedham, MA 02026

## ATTACHMENT A

### Project Approach Low Pressure Sewer Design Basis Report Spencer/Tuttle/Flint Town of Acton, Massachusetts



#### 1.0 Scope of Services

This scope has been created to build upon work previously completed in the May 8, 2008 Feasibility Study and Conceptual Design Memo for the Spencer/Tuttle/Flint and West Acton Center A Sewer System Expansion. This work will be similar in nature to the Sewer Design Basis Report completed for the gravity sewer system layout, but will focus primarily on low pressure sewers for Area 10 – Spencer/Tuttle/Flint. Following the recommendations from this analysis, West Acton Center will be assessed for a gravity sewer layout. This new layout will be based on the same information used in the May 8, 2008 Feasibility Study. Our approach is to first focus on defining the assumptions and identifying additional information necessary to provide an increased level of accuracy for the design and costing of this project. This effort will advance the confidence and accuracy of both the gravity cost estimates and new low pressure sewer estimates.

Following input from stakeholders we will produce a Design Basis Report meeting the Town of Acton standards that will include the conceptual low pressure sewer design and an opinion of probable design and construction costs suitable for a Town Meeting warrant article and project design. Some options are being included in this scope that can increase the resolution and confidence in cost estimating by reducing certain assumptions and replacing them with site specific data.

Woodard & Curran will perform the following tasks to determine the feasibility of sewer extensions and develop a conceptual design based on technical judgment and stakeholder input:

#### 1.1 Project Kick-Off Meeting

W&C will conduct a project kick-off meeting with the Town and appropriate stakeholders to ensure we understand the goals, expectations, and concerns with respect to the proposed sewer area. This kick-off meeting will review the project scope and milestones and discuss issues of importance to stakeholders.

#### 1.2 Establish Design Basis

As a basis for developing this scope and budget, W&C assumes the proposed sewer area is initially configured as illustrated in Figure 2 of the Feasibility Study (Attached). W&C will prepare the low pressure sewer design using the existing information previously laid out in the Feasibility Study and the Gravity Sewer Design Basis Report for the project area. The conceptual design will be based on the most feasible least cost alternative and include:

1.2.1 Evaluate and size a wastewater collection system using only low pressure sewers with individual grinder pumps or septic tank effluent pump systems as needed. A minimum of two grinder pump manufacturers will be reviewed to recommend the most cost-effective reliable pumping system as the basis of the report. A cost-benefit analysis of using a shared grinder pump for adjacent houses will be prepared. Flows from the previous efforts will be reused in the sizing of the system.



- 1.2.2 It is assumed that a direction drill construction method will be utilized for installation of the low pressure sewer on residential streets. This will result in less disruption compared to a conventional open cut installation and will reduce traffic, environmental and neighborhood impacts. The subsurface investigation outlined in Section 1.3 will be necessary to increase the accuracy of the cost estimate by reducing the risk of unknown subsurface conditions.
- 1.2.3 The low pressure sewers will be located within the roadway layout and no easements, wetlands or river crossings are anticipated.
- 1.2.4 Two connection routes will be compared that will connect the proposed low pressure sewers to the existing collection system on Massachusetts Ave. These routes will be along Prospect Street and along Massachusetts Avenue. Borings from the previous sewer project can be utilized for Prospect Street and the portion of Mass Ave east of Prospect Street.
- 1.2.5 A street by street cost comparison will be prepared to identify any means that may reduce the per SBU cost of the project.
- 1.2.6 W&C will prepare a two-dimensional plan illustrating the most feasible sewer configuration. Construction costs will be presented based on the length of pipe from GIS-level mapping and type and size of grinder pumps and accessories based on unit costs from recent construction bid tabulations and appropriate contingency. The sewer configuration will represent the least total cost (including life cycle costs) as weighed against stakeholder priorities

### 1.3 Subsurface Investigation

The subsurface investigation will commence with a half day of field inspections. This will include a windshield survey of the Spencer/Tuttle/Flint neighborhoods where exposed bedrock locations will be identified and presented on a map for use in selecting locations for borings and where trenchless installation may not be feasible.

Two options are proposed for the subsurface investigation to give the town either short term information or long term value. If the low pressure sewer borings are selected, they will be limited in use to a low pressure sewer system and will have only limited value if future gravity sewers are installed. If a gravity sewer system is ultimately selected, all new borings will be necessary at the appropriate depths and have value for both short term and long term use. If the low pressure sewer borings are selected and a low pressure sewer is selected, additional borings may be necessary but may not be required in the locations previously investigated. The full depth borings will not have to be redone regardless of the type of sewer system selected, but only a limited area will be investigated due to the additional time and costs of completing the borings. All borings are assumed to be located in the residential neighborhoods and not on Massachusetts Avenue as additional permitting would be required.

- 1.3.1 Option 1: Full Depth Borings – Borings are to be at a depth of 1.5 times the proposed sewer depth as laid out in the Gravity Sewer Design Basis Report. Borings will not be located at the typical 300-foot spacing, but will be located based on the field inspections and assumed locations of bedrock. Two days of borings (estimated to be Ten (10) borings) have been allocated for in this option.



- 1.3.2 Option 2: Lower Pressure Sewer Borings – Boring are to be up to eight (8) feet deep at locations based on the field inspections and assumed locations of bedrock. Two days of borings (estimated to be Thirty (30) borings) have been allocated for if this option is selected.

#### 1.4 West Acton Center – Gravity Sewer

- 1.4.1 This task will commence upon the completion of the previous tasks through Task 1.3. The remaining sewer capacity based on the STF low pressure sewer evaluation will be allocated to West Acton Center. A gravity sewer analysis incorporating one pump station to cross Fort Pond Brook will be prepared. The portion of WAC west of the railroad will be included in this analysis.

#### 1.5 Gravity Sewer Design Basis Report Revision Memo

The subsurface investigation improves upon the available information that was used to prepare the previous Spencer/Tuttle/Flint sewer studies. A Technical Memorandum will be prepared that updates the previous Design Basis Report Cost Estimate which will include the changes in assumptions with the revised cost estimate. This cost estimate will be prepared such that the gravity and low pressure sewer projects can be compared without making additional assumptions. W&C will deliver six (6) paper copies and one electronic copy of the Revision Memo.

#### 1.6 Design Basis Report

##### 1.6.1 Draft Design Basis Report (STF only)

W&C will deliver six (6) paper copies of a Design Basis letter report to the stakeholder group with the recommended solution. The report will present the final conceptual configuration in two-dimensional plan format; the design basis for the low pressure sewer system including considerations for the grinder pumps, air release valves, and other necessary accessories; a clear identification of the limit of work on the homeowner's property including what necessary work items they will be responsible for, the financial and implementation plan; and the draft scope and probable costs for design and construction costs.

##### 1.6.2 Draft Design Basis Report (STF and WAC)

W&C will deliver six (6) paper copies of a Design Basis letter report to the stakeholder group with the recommended solution. The report will present the final conceptual configuration in two-dimensional plan format; changes in the design basis for the low pressure sewer system, if any, the design basis for the gravity sewer system including considerations for a pumping station, river crossing, and railroad crossing, the financial and implementation plan; and the draft scope and probable costs for design and construction costs

##### 1.6.3 Final Design Basis Report

W&C will deliver six (6) paper copies and one electronic copy of the final design basis letter report to the town for distribution. The report will include comments received from stakeholders on the draft design scope and budget. The report will present the scope and pre-design probable costs for final design and construction costs suitable for Town Meeting appropriation and design contracting. The report will include an apples-to-apples comparison to the gravity sewer Basis of Design.

#### 1.7 Project Execution



During the completion of the above listed tasks, W&C will also perform the following ongoing tasks:

- 1.7.1 Project Review Meetings – W&C will meet with the Town and stakeholders three times after the Kick-off Meeting to present the project deliverables and to gather comments for consideration.
- 1.7.2 Project Reports – W&C will develop a project status report on a regular basis and share it with the Town staff via e-mail. These reports will describe the progress made during the previous period and tasks anticipated for the coming period. They will also describe any issues identified in completing the tasks on schedule and identify suggested solutions to those issues. A budget update will also be included monthly to give the team the information necessary to assess our compliance with the schedule and budget for the project.

## **2.0 Fee Budget**

The estimated fee budget to complete this scope of work is a fixed price of \$29,500, which reflects our familiarity of the area resulting from the CWRMP and the Feasibility Study and Gravity Sewer Design Basis Report for this project area. \$6,200 of this budget is allocated to conducting 2 days of soil borings with a subcontractor (applicable to Option 1 or Option 2). Monthly invoices will be submitted to the Town. The final invoice will be paid upon the Town's receipt of the final deliverable.

## **3.0 Assumptions, Considerations and Limitations**

This project's final deliverable will not include an assessment of downstream infrastructure capacity beyond the assessment completed as part of the CWRMP. The budget assumes timely scheduling and completion of the meetings as detailed in Section 4.0.

The existing contour maps are based on 10-foot contours, which are suitable for planning but not for final design. Our services do not include an evaluation of septic system component elevations or building inspections to determine the location or elevation of building piping. The final design may differ in pipeline elevation, and possibly routes, from this Design Basis Report. Appropriate contingency will be applied to the opinion of probable costs to account for this uncertainty.

## **4.0 Schedule**

We anticipate that the windshield survey and borings can be completed in approximately three (3) weeks from the kick-off meeting. Allowing time to schedule multiple meetings yields an expected overall project schedule of eight (8) to ten (10) weeks to deliver a draft report.