

**WOODARD & CURRAN**  
Engineering • Science • Operations

12/13/06  
Extra (2)  
CORPORATE OFFICES: Maine, Massachusetts,  
New Hampshire, New York, Connecticut, Florida  
Operational offices throughout the U.S.

December 13, 2006

Mr. Doug Halley  
Department of Health  
Town of Acton  
472 Main Street  
Acton, MA 01720

Re: Sewer Extensions – Design Basis Report  
Scope of Services and Fee Budget

Dear Mr. Halley:

Thank you for the opportunity to provide a proposal for a Design Basis Report which will outline a recommended scope and budget for the design and construction of sewers in the High Priority Needs Planning Areas designated as having sewer as the preferred solution. We are excited to continue to support the Town and WRAC on these important decisions stemming for the CWRMP.

Based upon our experience with the CWRMP and the Town's priorities, we have crafted a scope of work for your review. Our Design Basis Report will provide detailed information suitable for Town Meeting appropriation and design contracting. We have attached a graphic that illustrates the components of various stages of design to assist you in evaluating our proposed scope and deliverables.

We value the relationship we have developed with you and town staff and residents. We are happy to discuss this scope and fee budget with you further and can be available for a meeting or a conference call at your convenience. As always, contact any of our staff if you have any questions.

Sincerely,  
WOODARD & CURRAN

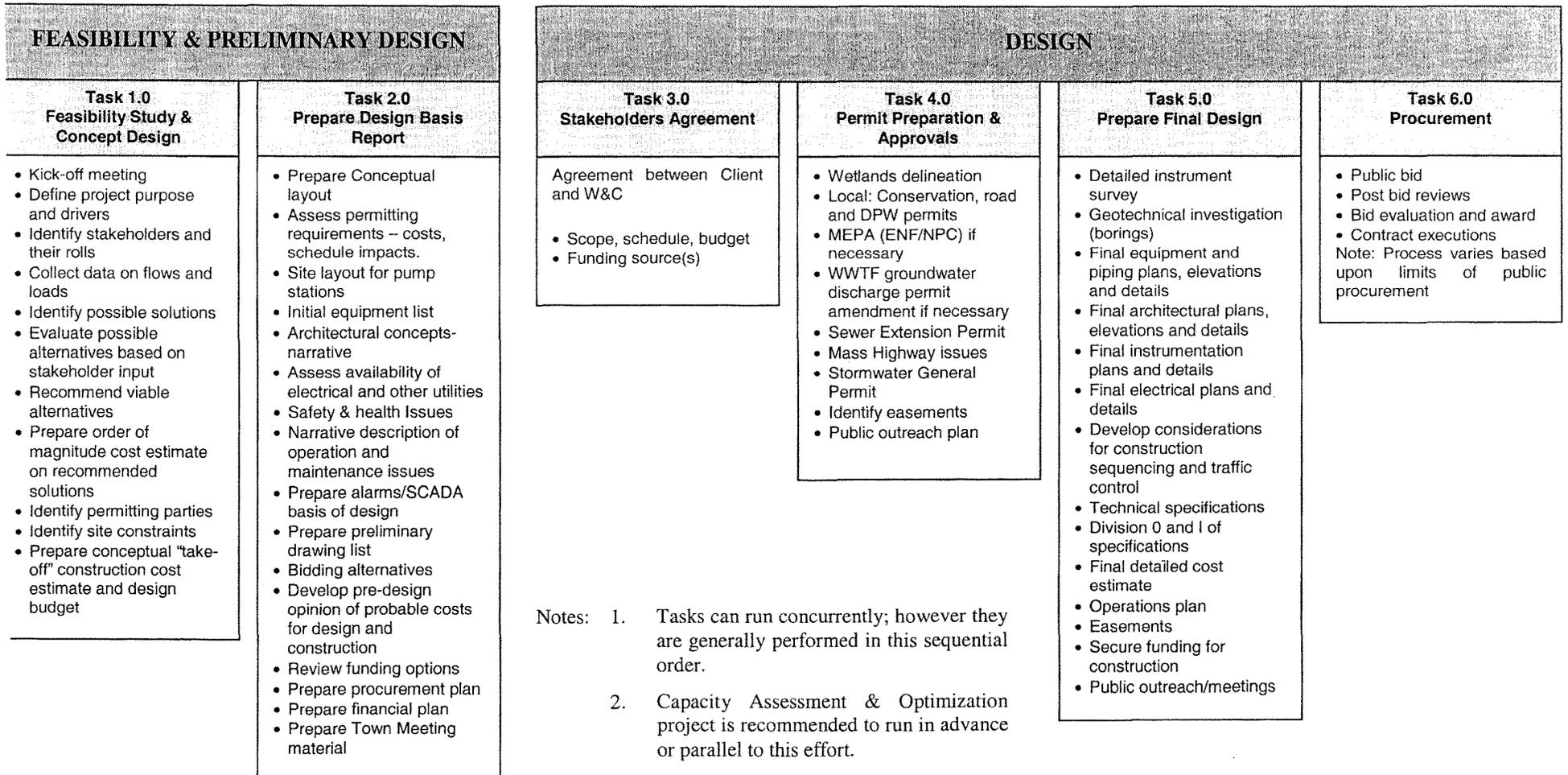
  
Robert J. Rafferty, P.E.  
Vice President

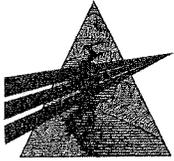
RJR/rjr  
Project Number: 212727

Enclosure(s)

cc: Brent Reagor, Assistant Health Director, Acton  
Helen Gordon, Woodard & Curran  
Joe Shea, Woodard & Curran

**ACTON MA**  
**SEWER EXTENSION – DESIGN BASIS REPORT**  
**DESIGN BASIS AND DESIGN SERVICES FLOWCHART**





## **Project Approach Design Basis – Sewer Needs Planning Areas Town of Acton, Massachusetts**

### **1.0 Scope of Services**

This scope has been created to ensure close interaction between the Town staff, Water Resources Advisory Committee (WRAC) members, regulators and other ‘stakeholders’. Because of this approach, and the necessity to coordinate with the Capacity Assessment and Optimization Study, it is difficult to forecast a complete project scope at this time; therefore, we are presenting an approach with detailed tasks and assumptions. These tasks and assumptions form the basis for the fee budget and schedule.

Our approach is to first focus on defining the boundaries of the “preferred” sewer areas ranked as High Priority as described in the CWRMP-Phase 2 Report, Table 2-8. We will use the CWRMP data and work in conjunction with Town staff and the WRAC to refine the areas for conceptual design of sewers and estimate costs. Proposed sewer areas are generally described as

1. Spencer/Tuttle/Flint – Area 10
2. West Acton Center A & B – Area 12
3. Indian Village – Area 13

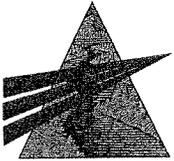
Sewer configurations and costs are dependent on topography, downstream capacity, and stakeholder priorities; and conceptual designs can change if priorities are not clearly established at the beginning of the process. Once consensus on the boundaries is reached, we will produce a Conceptual Design. Following input from stakeholders we will deliver a Design Basis Report compliant with the Town of Acton standards that will include the conceptual sewer design and an opinion of probable costs suitable for a Town Meeting warrant article and project design.

### **1.1. Feasibility Study and Conceptual Design**

Our approach is based on proactively reaching consensus with the Town and WRAC on critical aspects of the evaluation before proceeding with any detailed evaluation, codifying the consensus in writing, then proceeding with the detailed tasks. In our experience this process ultimately results in the elimination of costs and schedule slippage associated with re-work and makes all stakeholders a timely part of the process. Consensus regarding service area boundaries and decision making criteria will make the conceptual design effort more effective.

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:

1.1.1 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 areas. This kick-off meeting will review the project scope and milestones and discuss issues of importance to stakeholders.



1.1.2 Establish Design Basis - As a basis for developing this scope and budget, W&C assumes the proposed sewer areas are initially configured as illustrated in Figure 3-4 in the CWRMP-Phase 2 Report (attached). We will use the 1965 Sewage Study Committee Drawings (10-foot contours with 5-foot intermediate contours), current MassGIS and Town GIS maps, and the Capacity Assessment and Optimization Study as the basis for sewer configurations. It will be critical that the basis of the evaluation is the zoning in place today. The conceptual design will be based on the most feasible least cost alternative.

1.1.3 Data and Information Gathering – W&C will collect and evaluate the following data if available:

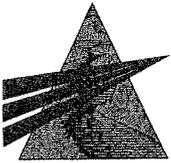
- Studies and plans of the wastewater system – we assume materials, construction techniques, and pump station and related equipment will be similar to the existing system;
- Water use records (one year) provided by the Health Department in spreadsheet format;
- GIS mapping: parcels and land use, zoning, and land ownership;
- MassGIS data layers;
- Utility plans available from the Town, Acton Water District and local gas and electric utilities;
- Information on town-owned parcels and/or easements;
- Pending or approved development proposals on file in the Planning Department (not constructed); and
- Information on stream crossing structures.

1.1.4 Alternatives Evaluation – W&C will conduct a quantitative analysis of the alternatives based on cost effectiveness, and a qualitative analysis based implementability, environmental issues, and operation and maintenance requirements based on kick-off meeting input from the stakeholders. W&C will review and update estimated flows for the proposed sewer areas and use the flows and data to:

- Evaluate and size a wastewater system using a gravity sewer system with conventional pumping systems supplemented by low pressure sewer system with individual grinder pumps or septic tank effluent pump systems as needed.
- Assist the Health Department to determine the feasibility of obtaining easements for the sewer main route.

1.1.5 First Submittal – W&C will prepare two-dimensional plans illustrating up to two feasible sewer configurations for each area including pump station locations and other important design features such as railroad and wetland crossing and deep excavations. W&C will present and discuss a technical memorandum describing the design methodologies, assumptions, critical design criteria, potential permitting parties, and major components such as pump stations, as well as construction sequencing. Construction costs will be presented based on conventional planning level “per foot” costs

1.1.6 Second Submittal – W&C will prepare two-dimensional plans illustrating the most feasible sewer configuration for each area and update and revise the technical memorandum based on input from stakeholders. Construction costs will be presented based on the length of pipe from GIS-level mapping and type and size of pump stations based on unit costs from recent



construction bid tabulations. The sewer configuration will represent the least total cost (including life cycle costs) as weighed against stakeholder priorities.

## **1.2 Design Basis Report**

1.2.1 Draft Design Basis Report – W&C will present 12 copies of a Design Basis letter report to the stakeholder group with the recommended solution for each area. The report will present the final conceptual configuration in two-dimensional plan format; the design basis for pump stations including utility, architectural and mechanical considerations; the financial and implementation plan; and the draft scope and probable costs for design and construction costs.

1.2.2 Final Design Basis Report – W&C will deliver 12 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.

## **1.3 Project Execution**

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

1.3.1. Project Review Meetings – W&C will meet with the Town and stakeholders 3 times after the Kick-off Meeting to present the project deliverables and to gather comments for consideration.

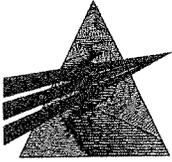
1.3.2. Weekly Project Reports – W&C will develop a project status report on a weekly basis and share it with the Town's team via email. These reports will describe the progress made during the previous week and tasks anticipated for the coming week. They will also describe any issues identified in completing 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 \$52,500, which reflects a coordinated effort for all three areas and benefits from the economy inherent in our existing relationship with the town and our familiarity of the area resulting from the CWRMP. Monthly invoices will be submitted to the Town. The final invoice will be paid upon the Town's approval of the final deliverable.

In this estimate, common costs such as the kick-off and progress meetings, technical memorandums and reports, and project site visits would be shared between all three areas. If the design basis evaluation is conducted separately for each area, without the benefit of coordination, common scope items would be duplicated for each area, significantly increasing costs and extending the overall schedule.

The expected costs for each major area of the study, if coordinated and conducted separately, are estimated to be:



- |                                      |          |
|--------------------------------------|----------|
| 1. Spencer/Tuttle/Flint – Area 10    | \$18,900 |
| 2. West Acton Center A & B – Area 12 | \$23,600 |
| 3. Indian Village – Area 13          | \$28,800 |

Furthermore, W&C may have to adjust or redesign portions of the proposed system to accommodate projected flows as other areas are evaluated. In this case, we recommend starting with the most upstream area (Indian Village) to minimize costly redesign issues, but budgets for subsequent areas would need to be re-evaluated once the previous area's final deliverable is submitted.

### **3.0 Schedule**

This project's final deliverable should follow the Capacity Assessment and Optimization Study to properly develop recommendations based on available capacity. We anticipate that consensus will be reached on the boundaries of the proposed sewer areas by the second meeting in approximately four (4) to five (5) weeks from the kick-off meeting. Allowing time to schedule multiple meetings yields an expected overall project schedule of ten (10) to twelve (12) weeks to deliver a draft report.