

Section 4

Detailed Study Area No. 1: “Terrible Trapezoid”

4.1 Introduction

4.1.1 Study Area

This section describes a detailed hydrologic and hydraulic study completed in the pilot area of the “Terrible Trapezoid”. The “Terrible Trapezoid” neighborhood of Concord is bounded on the north by Pleasant Street, on the east by South Main Street, on the west by South Spring Street, and on the south by Allison Street. In addition, Pleasant Street west of Spring Street, portions of the State Hospital grounds west of Spring Street, and several streets to the south of Allison Street contribute storm water to this basin. Figure 4-1 shows the study area.

4.1.2 Scope

The scope of the evaluation of this area, further explained below, was to:

- Determine appropriate design storms (rainfall events) to judge the effectiveness of the system. Evaluate a series of four design storms: the 6-month, 1-year, 5-year, and 10-year return period storms. Develop hyetographs for these storms.
- In conjunction with preparation of the GIS (Section 3), collect system features of the storm sewer system within the Terrible Trapezoid. Conduct field visits to verify key system features.
- Divide the area into subbasins and collect appropriate hydrologic and hydraulic parameters for each subbasin.
- Based on review of the system data, select a method to analyze the system, and determine how it responds to the design storms. Create a network model (Section 4.2.4) representing the drainage system to determine the expected water levels within the system caused by the design storms.
- With the design storm hyetographs as input to the network model, calculate the resulting network hydrograph response at downstream locations.
- Identify problem areas, and use the network model to evaluate potential flood mitigation improvements. Conduct any additional field investigations (i.e. television inspection) required to develop a list of recommended improvements, considering the severity of the flooding problem, cost, and construction impacts.

