

## I. INTRODUCTION

### A. Purpose of Report

The purpose of this report is to present and support the recommended MPD for the Town of Yucca Valley, and to provide Town planners with a guide for orderly development of flood control facilities. Contained within this report and its appendices is the documentation of the methods and procedures followed to develop the Master Plan, a description of the recommended Master Plan, and the supporting calculations.

### B. Background

The Town of Yucca Valley is a 38 square mile desert community incorporated in November, 1991. The Town is subject to relatively infrequent but sometime intense thunderstorms. Since many of the existing drainage courses are unimproved and have insufficient hydraulic capacity, these intense storms result in significant quantities of water and sediment conveyed from the mountains through developed areas of the Town. Refer to Figure 1. Flooding of properties and sediment deposition within properties and in Town streets is a common occurrence during the storm season.

There are a limited number of regional flood control improvements in the Town. Some improvements have been made by or under the direction of the District. Other improvements have been made by developers as a condition of approval for their projects. The District has prepared drainage studies for various areas in the Town over the years, but a comprehensive drainage and flood control Master Plan has never been prepared for the Town. This MPD is very important because of the numerous floodplains and flood hazards in the Town, and because of the flood damage, sediment deposition, erosion and related disruption to public and private facilities which are commonly experienced by Town residents after a storm.

## C. Development of the Master Plan

### 1. Phased Approach

The preparation of the Master Plan was divided into two phases. Phase I consisted of a review and evaluation of the watershed, including natural drainage courses, floodplains and existing drainage facilities; discussions with community members and leaders; and the development of a Conceptual Master Plan based on preliminary hydrologic calculations. The result of this initial effort was the preparation of a Policy Report. A key objective of Phase I was to reach a consensus among the District, Town, and resource agencies on the policies and concepts to be used in the development of the final MPD. Consensus on the policies and flood control concepts was reached, and the Policy Report was approved by the Town and the District and accepted by the Town Council.

The Phase II effort consisted of detailed hydrologic and sediment yield studies, sizing of regional, secondary and local facilities, preparation of plan and profile drawings and cost estimates, and the presentation of the final MPD.

### 2. Data Collection

Information was collected from District and Town files concerning hydrologic data and studies, drainage deficiencies and flooding problems. Current and historic aerial photographs were obtained from District files. Newspaper articles archived in the Town library were reviewed to obtain information documenting historic flood problem areas. A summary report listing the information collected was prepared. This report entitled "Summary of Data Collection" is included in Appendix A.

### 3. Facility Inventory

Drainage facility information including parcel and tract maps, as built construction drawings, and aerial photography was obtained through contact with the Town, the District, San Bernardino County (County), and Caltrans. Drainage easements and reservations, right-of-way documents,

and natural drainage course dedications to the Town, County and the District were obtained from the District and reviewed. Major utility information was also obtained and reviewed for possible interference with proposed drainage facilities. The results of the facility inventory and major utility data collection is documented on Figure 3.

#### 4. Watershed Reconnaissance

Updated topographic mapping of selected portions of the Town was provided by the District for master planning purposes. Existing topography including U. S. Geological Survey quadrangle maps were used to provide the balance of mapping needed to delineate watershed and subarea drainage boundaries.

Field reviews of all watersheds were conducted by John M. Tettemer & Associates, Ltd. (JMTA) staff. Flow paths and drainage patterns observed in the field were compared with available topographic maps. Corrections or adjustments to the maps were noted on the maps when necessary.

Watershed soil types, vegetative cover, debris yield characteristics, and areas of potentially low infiltration and high runoff rates were also noted during the field reviews.

Two watershed reconnaissance trips were also conducted with members of GPAC and District staff who have unique knowledge of drainage problems and watershed responses to desert thunderstorms. Information resulting from these trips was utilized in developing the Master Plan concept presented in the Policy Report.

Selected streets within developed areas of the town were driven to determine street flow direction. Information gathered from driving the streets along with the updated topographic maps were used to prepare a street flow map. This map depicts the direction of street drainage for most all Town streets. Refer to Figure 4.

Following an evaluation of the information gathered from the reconnaissance trips, a watershed boundary map was prepared. This map

established the external drainage boundary and internal drainage subareas within the study area. Refer to Figure 1.

A detailed photographic record of the regional and selected subregional drainage flow paths within the study area was also prepared. Flow paths were photographed both upstream and downstream at selected street crossings. This photographic record is included in Appendix B

5. Geographic Information System (GIS)

An electronic GIS comprised of several layers including USGS quadrangle map topography, hydrologic data such as hydrologic soil types, rainfall isohyets and land use data, and Town streets was developed. This geographic data is included on compact disk (CD). The CD and hard copy of the hydrologic data layers are included in Appendix B.