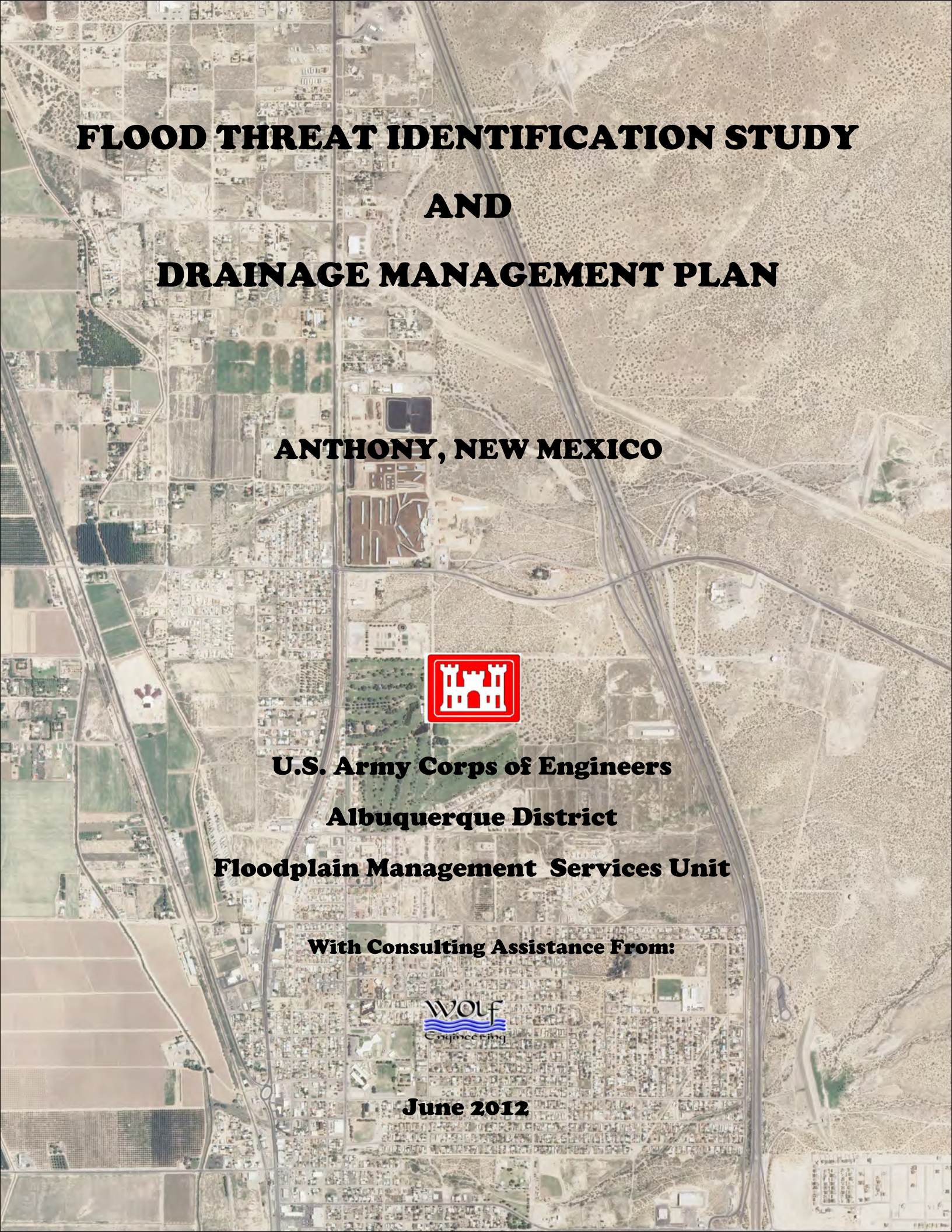

FLOOD THREAT IDENTIFICATION STUDY

AND

DRAINAGE MANAGEMENT PLAN

ANTHONY, NEW MEXICO

U.S. Army Corps of Engineers

Albuquerque District

Floodplain Management Services Unit

With Consulting Assistance From:

Wolf Engineering

June 2012

FLOOD THREAT IDENTIFICATION STUDY
AND
DRAINAGE MANAGEMENT PLAN

for

Anthony, New Mexico

Delivery Order No. 10

Contract No. W912PP09D0010

Final Report

June 2012

Prepared For:

U.S. ARMY CORPS OF ENGINEERS

ALBUQUERQUE DISTRICT

&

THE TOWN OF ANTHONY, NM

Prepared by:

A Joint Venture Partner in Southwest Water Design, LLC

Engineer's Certification:

I Douglas F. Wolf duly registered in good standing as a Professional Engineer in the State of New Mexico, do hereby certify that this report and all inherent analysis supporting the findings in this report were prepared by me, or under my full and unbiased direction. The results of this study reflect conditions present within the project reach as of March 2012.

_____

Douglas F. Wolf, P.E. NM #12341 Date _____

Ms. Susan Gant served as the Project Manager for Corps of Engineers Albuquerque District during the course of the project.

Ms. Betty Gonzales served as the primary local contact for the Town of Anthony, NM during the course of the project.

All ground photographs included in this report were taken in September, 2011 and are included for the purpose of documenting field conditions at the time of the study.

Unless otherwise noted, aerial photography, topographic data, and digital terrain data included in this report are from the 2010 Dona Ana County LiDAR mapping Project.

Executive Summary

This report presents the results of an engineering analysis that determined existing flood threats to the Town of Anthony, New Mexico resulting mainly from severe monsoonal rainfall events. Analyses completed for the report quantify the amount and timing of potential flood flows (hydrograph determination), determines potential flood depths and flow velocities resulting from these flows, and provides recommendations to address existing flood problems and to minimize future flooding.

There are two large flood control dams located on the two major arroyos that run through town. Lauson Dam and Anthony Dam are located just east of Interstate 10. These facilities, completed in 1996 and 1973, respectively, appear well maintained and are able to control floods up to and including the 1% chance (100-year) event according to current study results. While these facilities protect the town against major floods originating east of town in the Franklin Mountains, there is still a flood threat to the town from local rainfall occurring below and between the dams.

Peak discharge information, as well as total flood volume is available for twenty five locations below the dams and within the greater Anthony area. This information is available for five storm events: the 50% chance (2-year) in any given year through the 0.2% chance (500-year) in any given year events. These results are summarized in tables and charts throughout the report. During the very infrequent storm events such as the 1% chance storm, large quantities of flood water will flow through and/or accumulate within the western third of town (generally along 4th Street, Anthony Drive, and NM Highway 478).

Detailed computer simulations (HEC-RAS) have been developed that predict flood depths and flow velocities for the five flood events under study. These simulations provide information for the Anthony Arroyo, Lauson Arroyo, and three shorter reaches located between the two arroyos. The results of these analyses indicate that during the infrequent storm events, there will be flooding (with depths averaging between 2 and 3 feet for areas adjacent to the two large arroyos in the western third of town).

Additionally, flood water ponding is expected along the east side of Anthony Drive (NM 460) between Landers Street and Madero Street and between Anthony Drive and NM 478. In fact, some of the highest flood depths are likely to occur in these areas.

The map on page *v* of this summary shows the study area and highlights the areas that are most susceptible to flood damages from infrequent, heavy rainfall events occurring on the town.

The flooding in Anthony is expected to occur for two primary reasons:

1) The two major arroyos have been severely encroached upon by development, thus reducing their ability to move flood water safely and efficiently to a suitable discharge point.

2) There are very limited storm water drainage improvements that have been constructed within the town to address storm water run-off.

Recommendations to address the current flooding problems include;

- ✓ **Records research and Right-of-Way surveys (to clearly establish where drainage/flood flows can be conveyed and/or stored).**
- ✓ **Maintenance (cleaning/debris and vegetation removal) of existing drainage ways.**
- ✓ **Re-shaping (grading / possibly added revetment at key locations of the existing drainage ways.**
- ✓ **Up-grading (structurally) key road crossings to accommodate additional flows.**
- ✓ **Identifying new short-term storage areas for flood flows.**

Additionally, it is recommended that the town continue to work with the Dona Ana County Flood Commission to regulate future development. All new infrastructure (buildings, houses, roadways, utilities, etc.) within the town limits should be designed and constructed so that;

1) ***The facility(s) is adequately protected (elevated using compacted fill and/or integrated erosion prevention measures, such as rock/riprap) against flood damage from the 1% chance (100-year) flood event.***

2) ***The facility(s) does not worsen flooding conditions downstream or on adjacent properties. (Typically, this means that small storm water detention/retention ponds are constructed on-site and/or direct connections of on-site storm water collection features are integrated to safely convey storm water to existing drainage ways.)***

The information in this report is intended to provide the Town of Anthony with an overall assessment of current flood threats and some preliminary recommendations to help address these threats. By providing a broad range of potential flooding resulting from differing storm magnitudes, it is possible to investigate flood mitigation alternatives that provide the best return on the capital outlay required to construct the alternative. Planning and economic analysis studies using the information in this report would help determine which projects and what "level of protection" associated with a specific project provides the best return. Once this information is determined, detailed engineering design studies addressing site specific drainage issues will be required to prepare for the construction of the flood damage reduction alternative(s).


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Feet
LAUSON DAM
LAUSON ARROYO SYSTEM
POSSIBLE FLOODING FROM OVERFLOW OF LAUSON ARROYO
ANTHONY DRIVE
OHARA ROAD
ANTHONY LATERAL
INTERSTATE 10
POSSIBLE FLOODING IN LOW LYING AREAS FROM INTERIOR DRAINAGE (INTERMEDIATE AREAS)
POSSIBLE FLOODING IN LOW LYING AREAS FROM INTERIOR DRAINAGE (INTERMEDIATE AREAS)
ANTHONY DAM
RAILROAD
4TH ST.
EAST SIDE DRAIN
ANTHONY, NM
POSSIBLE FLOODING FROM OVERFLOW OF ANTHONY ARROYO
NM
TX
ANTHONY ARROYO
INTERSTATE 10