



City of Las Cruces
Federal Emergency Management Agency
Cooperating Technical Community
Mapping Activity Statement

Agreement #002- Hydrologic and Hydraulic Analyses and Floodplain Mapping

In accordance with the Cooperating Technical Community (CTC) Memorandum of Agreement dated May 17, 2000 between the City of Las Cruces and the Federal Emergency Management Agency (FEMA), Agreement #002 is as follows:

1. **Objective and Scope:** The objective of this Mapping Activity is to develop detailed hydrologic and hydraulic analyses and floodplain and floodway mapping in City of Las Cruces. Hydrologic analyses will be completed for approximately 20.8 square miles of drainage area and hydraulic analysis and floodplain mapping for approximately 8.3 linear miles of flooding, including the following flooding sources: Edjewood Arroyo, Alameda Arroyo, Sandhill Arroyo, Las Cruces Arroyo, Flow Path 15 (north valley) and flow path 5 (Mulberry Ave.).

2. **Period of Performance:**

{For Locally Funded Agreements} This Mapping Activity will begin on November 1, 2000 and end no later than November 1, 2001. This Mapping Activity may be terminated at the option of FEMA or City of Las Cruces in accordance with the provisions of the May 17, 2000 CTC Memorandum of Agreement.

{For FEMA Funded Agreements} The period of performance will be in accordance with Agreement Article II.

3. **Funding/Cost-Sharing:**

FEMA:	\$
City of Las Cruces:	\$ _____
Total	\$

4. **Standards:** The following standards and documents are relevant to this Mapping Activity:

- Detailed hydrologic and hydraulic analyses and floodplain mapping will follow the standards set forth in FEMA 37, *Guidelines and Specifications for Study Contractors* (January 1995) and Title 44 of the Code of Federal Regulations (CFR), Part 65. FEMA 37 is available at FEMA's web site at http://www.fema.gov/mit/tsd/EN_reg.htm.
- Computer models used for hydrologic and/or hydraulic analyses will meet the requirements of 44 CFR 65.6(a)(6) and be on FEMA's *Numerical Models Accepted by FEMA for NFIP Usage* (http://www.fema.gov/mit/tsd/EN_modl.htm).
- Topographic mapping used to delineate floodplain and floodway boundaries will be of adequate scale and topographic definition to provide reasonable accuracy. Planimetric features will be compatible with the base map (with respect to horizontal accuracy) to be

used by FEMA for Digital FIRM production. Topographic mapping taken from aerial photogrammetry or surveys will comply with the requirements of Appendix 4 of FEMA 37. The selection of the topographic mapping source to be used will be coordinated with the FEMA Project Officer prior to analysis and mapping.

- Any levee or dike systems to be shown on the community's FIRM as providing protection from the 1% annual chance flood will comply with the requirements of 44 CFR 65.10. Chapter 7 of FEMA 37 provides guidelines for evaluating levee systems.
 - Flood elevations and floodplain and floodway boundaries will reasonably tie in to non-revised information in accordance with 44 CFR 65.6(a)(6).
 - The floodway will be established in accordance with 44 CFR 65.7, as well as any applicable state requirements.
 - Digital mapping will comply with the requirements of Chapter 9 and Appendix 7 of FEMA 37.
 - Digital Elevation Models (DEMs) and field survey data will meet vertical accuracy requirements contained in Appendix 4 of FEMA 37.
5. **Products:** City of Las Cruces will make available items outlined in Chapter 11 of FEMA 37 in the Technical Support Data Notebook (TSDN) format. These include:
- Digital 1% and 0.2 % annual chance floodplain and floodway boundaries;
 - Digital profiles of the 10%, 2%, 1%, and 0.2% annual chance water surface elevations representing existing conditions;
 - Flood Insurance Study (FIS) report;
 - Floodway data tables;
 - Digital copies of all hydrologic and hydraulic modeling (input and output files); and
 - All back-up data used in the analyses or mapping.

6. **Schedule and Milestones:**

Milestone 1 (Scoping Phase): Upon completion, products for the first milestone will be provided to the FEMA Project Officer. These include:

- Annotated copies of effective FIRMs depicting limits of proposed study.
- Documentation of the proposed source of topographic data, including: scale; contour interval; source/methodology; date of survey/data collection; vertical and horizontal datums; and comparison of planimetric features with the Digital FIRM base map planned for use by FEMA.
- A written summary of the initial data research; proposed analysis methodologies; and a work plan.
- Copies of topographic maps depicting proposed cross section locations.

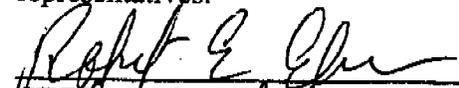
Milestone 2 (Hydrology Phase): Upon completion, products for the second milestone will be provided to the FEMA Project Officer. This includes draft hydrologic analyses in accordance with the TSDN format.

10. Quality Assurance/Quality Control (QA/QC) Procedures: The QA/QC procedures outlined in Chapter 10 of the *Guidelines and Specifications for Study Contractors* should be followed during the development of the hydrologic and hydraulic analyses and floodplain mapping. Analyses and mapping should be independently reviewed for compliance with the standards defined in Section 4 of this Mapping Activity Statement. This independent review will be conducted by Mr. David B. Church of the City of Las Cruces.

11. Reporting: Reporting requirements will be in accordance with Agreement Articles V & VI.

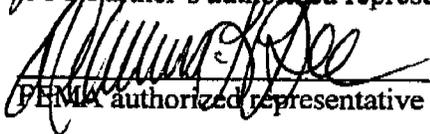
12. Points of Contact: The FEMA Project Officer is Mr. James Orwatt and the CTC's Project Manager is Mr. Robert E. Ebler, or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities.

Each party has caused this Mapping Activity Statement to be executed by its duly authorized representatives.



CTC Partner's authorized representative

8/22/00
date



FEMA authorized representative

8/29/00
date

State representative*

date

* In States where statutory and/or regulatory requirements require the State's review and/or approval of new flood hazard data, the State will be a signatory to a community's Mapping Activity Statement.

PROPOSED SCHEDULE FOR FEMA CTC PROGRAM AGREEMENT #002

City of Las Cruces

By Robert Ebler

August 22, 2000

Year	2000														2001			
Week	10/1	10/8	10/15	10/22	10/29	11/5	11/12	11/19	11/26	12/3	12/10	12/17	12/24	12/31	1/7	1/14	1/21	1/28
Edjwood Arroyo	M1	M1	M1	M1	M1	M1	M2	M2	M2	M2	M3	M3	M3	M3	M3	M4	M4	
Las Cruces Arroyo	M1	M1	M1	M1	M1	M1												M2
Flow Path #5	M1	M1	M1	M1	M1	M1												
Flow Path #15	M1	M1	M1	M1	M1	M1												
Alemeda Arroyo	M1	M1	M1	M1	M1	M1												
*Sandhill Arroyo Lower			M1	M1	M2	M2	M2	M2	M3	M3	M3	M3	M3	M3	M4	M4	M4	M4
*Sandhill Arroyo Upper							M1	M1	M2	M2	M2	M2	M3	M3	M3	M3	M3	M3
Year	2001																	
Week	2/4	2/11	2/18	2/25	3/4	3/11	3/18	3/25	4/1	4/8	4/15	4/22	4/29	5/6	5/13	5/20	5/27	6/3
Edjwood Arroyo																		
Las Cruces Arroyo	M2	M3	M3	M3	M3	M3	M3	M4	M4	M4								
Flow Path #5											M2	M2	M3	M3	M3	M4	M4	
Flow Path #15																		M2
Alemeda Arroyo																		
*Sandhill Arroyo Lower																		
*Sandhill Arroyo Upper	M4	M4	M4	M4														
Year	2001																	
Week	6/10	6/17	6/24	7/1	7/8	7/15	7/22	7/29	8/5	8/12	8/19	8/26	9/2	9/9	9/16	9/23	9/30	
Edjwood Arroyo																		
Las Cruces Arroyo																		
Flow Path #5																		
Flow Path #15	M2	M3	M3	M3	M4	M4												
Alemeda Arroyo							M2	M2	M3	M3	M3	M3	M3	M3	M4	M4	M4	
*Sandhill Arroyo Lower																		
*Sandhill Arroyo Upper																		

M1 Work to be performed for milestone 1

M2 Work to be performed for milestone 2

M3 Work to be performed for milestone 3

M4 Work to be performed for milestone 4

* Estimated schedule for contractors. Schedule for contractors shall be submitted once contractors have submitted a schedule.