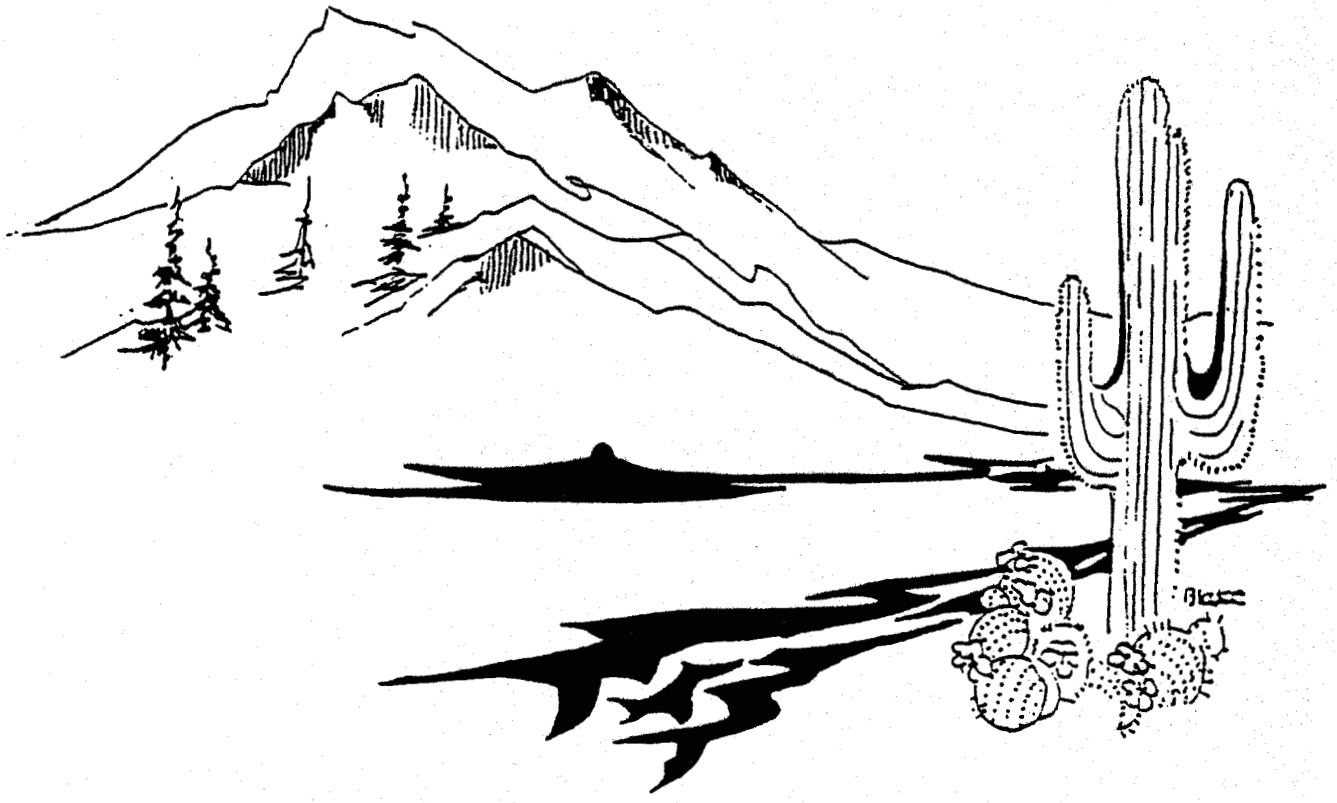
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
PHOENIX, ARIZONA

CAVE CREEK ABOVE CAREFREE HIGHWAY FLOODPLAIN DELINEATION STUDY FCD 95-28

FEMA FORMS



George V. Sabol Consulting Engineers, Inc.
Scottsdale, Arizona

in association with
McLaughlin Kmetty Engineers, Ltd.

April 1997

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
PHOENIX, ARIZONA

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ABOVE CAREFREE HIGHWAY
FLOODPLAIN DELINEATION STUDY
FCD 95-28

FEMA FORMS

George V. Sabol Consulting Engineers, Inc.
Scottsdale, Arizona

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April 1997

FEDERAL EMERGENCY MANAGEMENT AGENCY
REVISION REQUESTOR AND COMMUNITY OFFICIAL FORM

O.M.B. Burden No. 3067-0148
Expires July 31, 1997

FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.13 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

1. OVERVIEW

1. The basis for this revision request is (are): *(check all that apply)*

- ☐ Physical change
  - ☐ Existing
  - ☐ Proposed
- ☒ Improved methodology
- ☒ Improved data
- ☒ Floodway revision
- ☐ Other _____
  Explain _____

2. Flooding Source: CAVE CREEK
3. Project Name/Identifier: CAVE CREEK ABOVE CAREFREE HIGHWAY FLOOD DELINEATION STUDY, FCD No. 95-28
4. FEMA zone designations affected: ZONE AE
   (example: A, AH, AO, A1-A30, A99, AE, V, V1-30, VE, B, C, D, X)
5. The NFIP map panel(s) affected for all impacted communities is (are):

	Community No.	Community Name	County	State	Map No.	Panel No.	Effective Date
EX:	480301	Katy, City	Harris, Fort Bend	TX	480301	0005D	02/08/83
	480287	Harris County	Harris	TX	48201C	0220G	09/28/90
	040037	Maricopa County	Maricopa County	AZ	040037	802F	12/03/93
	040037	Maricopa County	Maricopa County	AZ	040037	805F	12/03/93
	040037	Maricopa County	Maricopa County	AZ	040037	815F	12/03/93

SEE ATTACHMENT 1

6. The area of revision encompasses the following types of flooding, structures, and associated disciplines: *(check all that apply)*

Types of Flooding	Structures	Disciplines*
☒ Riverine	☐ Channelization	☒ Water Resources
☐ Coastal	☐ Levee/Floodwall	☒ Hydrology
☐ Alluvial Fan	☐ Bridge/Culvert	☒ Hydraulics
☐ Shallow Flooding *(e.g. Zones AO and AH*	☐ Dam	☐ Sediment Transport
☐ Lakes	☐ Coastal	☐ Interior Drainage
	☐ Fill	☐ Structural
Affected by wind/wave action	☐ Pump Station	☐ Geotechnical
☐ Yes	☒ None	☒ Land Surveying
☒ No	☐ Channel Relocation	☐ Other *(describe)*
	☐ Excavation	
	☐ Other *(describe)*	
☐ Other *(describe)* _____	_____	_____

* **Attach completed "Certification by Registered Professional Engineer and/or Land Surveyor" Form for each discipline checked. (Form 2)**

2. FLOODWAY INFORMATION

7. Does the affected flooding source have a floodway designated on the effective FIRM or FBFM? ☒ Yes ☐ No
8. Does the revised floodway delineation differ from that shown on the effective FIRM or FBFM? ☒ Yes ☐ No
   If yes, give reason: This is a restudy using revised hydrology, and updated topographic maps. The floodway has been re-determined.

Attachment 1

Form 1

Community No.	Community Name	County	State	Map No.	Panel No.	Effective Date
040129	Town of Cave Creek	Maricopa County	AZ	040037	802F	12/3/93
040129	Town of Cave Creek	Maricopa County	AZ	040037	805F	12/3/93
040129	Town of Cave Creek	Maricopa County	AZ	040037	815	12/3/93

Attach copy of either a public notice distributed by the community stating the community's intent to revise the floodway or a statement by the community that it has notified all affected property owners and affected adjacent jurisdictions.

9. Does the State have jurisdiction over the floodway or its adoption by communities participating in the NFIP? ☐ Yes ☒ No

If yes, attach a copy of a letter notifying the appropriate State agency of the floodway revision and documentation of the approval of the revised floodway by the appropriate State agency.

3. PROPOSED ENCROACHMENTS

10. With floodways:

1A. Does the revision request involve fill, new construction, substantial improvement, or other development in the floodway? ☐ Yes ☒ No

1B. If yes, does the development cause the 100-year water surface elevation to increase at any location by more than 0.000 feet? ☐ Yes ☐ No

11. Without floodways:

2A. Does the revision request involve fill, new construction, substantial improvement, or other development in the 100-year floodplain? ☐ Yes ☐ No

2B. If yes, does the cumulative effect of all development that has occurred since the effective SFHA was originally identified cause the 100-year water surface elevation to increase at any location by more than one foot *(or other surcharge limit if community or state has adopted more stringent criteria)*? ☐ Yes ☐ No

If the answer to either Items 1B or 2B is yes, please provide documentation that all requirements of Section 65.12 of the NFIP regulations have been met, regarding evaluation of alternatives, notice to individual legal property owners, concurrence of CEO, and certification that no insurable structures are impacted.

4. REVISION REQUESTOR ACKNOWLEDGEMENT

12. Having read NFIP Regulations, 44 CFR Ch. I, parts 59, 60, 61, and 72, I believe that the proposed revision ☒ is ☐ is not in compliance with the requirements of the aforementioned NFIP Regulations.

5. COMMUNITY OFFICIAL ACKNOWLEDGEMENT

13. Was this revision request reviewed by the community for compliance with the community's adopted floodplain management ordinances? ☒ Yes ☐ No

14. Does this revision request have the endorsement of the community? ☒ Yes ☐ No

If no to either of the above questions, please explain: _____

Please note that community acknowledgement and/or notification is required for all requests as outlined in Section 65.4 (b) of the NFIP Regulations.

6. OPERATION AND MAINTENANCE

15. Does the physical change involve a flood control structure (e.g. levees, floodwalls, channelization, basins, dams)? ☐ Yes ☒ No

If yes, please provide the following information for each of the new flood control structures:

A. Inspection of the flood control project will be conducted periodically by _____ (entity) _____ with a maximum interval of _____ months between inspections.

B. Based on the results of scheduled periodic inspections, appropriate maintenance of the flood control facilities will be conducted by _____ (entity) to ensure the integrity and degree of flood protection of the structure.

C. A formal plan of operation, including documentation of the flood warning system, specific actions and assignments of responsibility by individual name or title, and provisions for testing the plan at intervals not less than one year, ☐ has ☐ has not been prepared for the flood control structure.

D. The community is willing to assume responsibility for ☐ performing ☐ overseeing compliance with the maintenance and operation plans of the _____
(Name)
flood control structure. If not performed promptly by an owner other than the community, the community will provide the necessary services without cost to the Federal government.

Attach operation and maintenance plans

7. REQUESTED RESPONSE FROM FEMA

16. After examining the pertinent NFIP regulations and reviewing the document entitled "Appeals, Revisions, and Amendments to Flood Insurance Maps: A Guide for Community Officials," dated January 1990, this request is for a:

____a. CLOMR A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision *(LOMR or PMR)*, or proposed hydrology changes *(see 44 CFR Ch. I, Parts 60, 65, and 72).*

____b. LOMR A letter from FEMA officially revising the current NFIP map to show changes to floodplains, floodways, or flood elevations. LOMRs typically depict decreased flood hazards. *(See 44 CFR Ch. 1, Parts 60 and 65.)*

__X__c. PMR A reprinted NFIP map incorporating changes to floodplains, floodways, or flood elevations. Because of the time and cost involved to change, reprint, and redistribute an NFIP map, a PMR is usually processed when a revision reflects increased flood hazards or large-scope changes. *(See 44 CFR Ch. 1, Parts 60 and 65.)*

____d. Other: Describe _____

8. FORMS INCLUDED

17. Form 2 entitled "Certification by Registered Professional Engineer And/Or Land Surveyor" must be submitted.

The following forms should be included with this request if (check the included forms):

• Hydrologic analysis for flooding source differs from that used to develop FIRM	☒ Hydrologic Analysis Form (Form 3)
• Hydraulic analysis for riverine flooding differs from that used to develop FIRM	☒ Riverine Hydraulic Analysis Form (Form 4)
• The request is based on updated topographic information or a revised floodplain or floodway delineation is requested	☒ Riverine/Coastal Mapping Form (Form 5)
• The request involves any type of channel modification	☐ Channelization Form (Form 6)
• The request involves new bridge or culvert or revised analysis of an existing bridge or culvert	☐ Bridge/Culvert Form (Form 7)
• The request involves a new revised levee/floodwall system	☐ Levee/Floodwall System Analysis Form (Form 8)
• The request involves analysis of coastal flooding	☐ Coastal Analysis Form (Form 9)
• The request involves coastal structures credited as providing protection from the 100-year flood	☐ Coastal Structures (Form 10)
• The request involves an existing, proposed, or modified dam	☐ Dam Form (Form 11)
• The request involves structures credited as providing protection from the 100-year flood on an alluvial fan	☐ Alluvial Fan Flooding Form (Form 12)

9. INITIAL REVIEW FEE

18. The minimum initial review fee for the appropriate request category has been included. ☐ Yes ☒ No

Initial fee amount: _____

Check or money order only. Make check or money order payable to: **National Flood Insurance Program**. If paying by Visa or Mastercard please refer to the credit card information form which follows this form.

or

19. This request is for a project that is for public benefit and is intended to reduce the flood hazard to existing development in identified flood hazard areas as opposed to planned floodplain development. ☐ Yes ☐ No

or

20. This request is to correct an error or to include the effects of natural changes within the areas of special flood hazards. ☒ Yes ☐ No

Note: I understand that my signature indicates that all information submitted in support of this request is correct.

Stanley L. Smith

Signature of Revision Requestor

STANLEY L. SMITH JR., P.E

INTERIM CHIEF ENGINEER & GENERAL MANAGER

Printed Name and Title of Revision Requestor

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Company Name

(602) 506-1501 4-10-97

Telephone No. Date

Note: Signature indicates that the community understands, from the revision requestor, the impacts of the revision on flooding conditions in the community.

Signature of Community Official

Dennis Zwagerman, Development Services Director

Printed Name and Title of Community Official

TOWN OF CAVE CREEK

Community Name

4/10/97

Date

Does this request impact any other communities? ☐ Yes ☒ No

If yes, attach letters from all affected jurisdictions acknowledging revision request and approving changes to floodway, if applicable.

Note: Although a photograph of physical changes is not required, it may be helpful for FEMA's review.

FEDERAL EMERGENCY MANAGEMENT AGENCY **CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR FORM**	*O.M.B. Burden No. 3067-0148* *Expires July 31, 1997*	*FEMA USE ONLY*

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average . 23 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067- 0148), Washington, DC 20503.

1. This certification is in accordance with 44 CFR Ch. I, Section 65.2
2. I am licensed with an expertise in WATER RESOURCES (ALL)
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)** structural, geotechnical, land surveying.]
3. I have 25 years experience in the expertise listed above.
4. I have ☐ prepared ☒ reviewed the attached supporting data and analyses related to my expertise.
5. I ☒ have ☐ have not visited and physically viewed the project.
6. In my opinion, the following analyses and /or designs, is/are being certified:

   HYDROLOGIC & HYDRAULIC ANALYSES
7. Base upon the following review, the modifications in place have been constructed in general accordance with plans and specifications.

   Basis for above statement: (check all that apply)

   a. ☐ Viewed all phases of actual construction.

   b. ☐ Compared plans and specifications with as-built survey information.

   c. ☐ Examined plans and specifications and compared with completed projects.

   d. ☒ Other NOT A CONSTRUCTED PROJECT
8. All information submitted in support of this request is correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: GEORGE V. SABOL
(please print or type)

Title: SR. ASSOCIATE
(please print or type)

Registration No. 17928 Expiration Date: 6-30-98

State ARIZONA

Type of License PROFESSIONAL ENGINEER

Signature

4 March 1997
Date

Registered Professional Engineer (Civil) CERTIFICATE NO. 17928 GEORGE V. SABOL Date Signed 4 March 97 ARIZONA, U.S.A.

Seal
(Optional)

*Specify Subdiscipline

Note: Insert not applicable (N/A) when statement does not apply.

FEDERAL EMERGENCY MANAGEMENT AGENCY **CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR FORM**	*O.M.B. Burden No. 3067-0148* *Expires July 31, 1997*	*FEMA USE ONLY*

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1. This certification is in accordance with 44 CFR Ch. I, Section 65.2.
2. I am licensed with an expertise in Land Surveying
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)**, structural, geotechnical, land surveying.]
3. I have 33 years experience in the expertise listed above.
4. I have ☒ prepared ☐ reviewed the attached supporting data and analyses related to my expertise.
5. I ☒ have ☐ have not visited and physically viewed the project.
6. In my opinion, the following analyses and/or designs, is/are being certified:
   Survey field notes
7. Based upon the following review, the modifications in place have been constructed in general accordance with plans and specifications.

   Basis for above statement: (check all that apply)

   a. ☐ Viewed all phases of actual construction.
   b. ☐ Compared plans and specifications with as-built survey information.
   c. ☐ Examined plans and specifications and compared with completed projects.
   d. ☒ Other This is not a construction project.
8. All information submitted in support of this request is correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Richard Alcocer
(please print or type)

Title: Registered Land Surveyor
(please print or type)

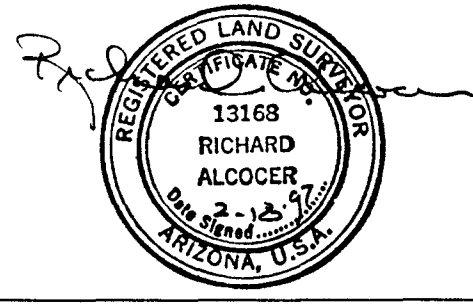
Registration No. 13168 Expiration Date: 3-31-99

State Arizona

Type of License Land Surveyor

Richard Alcocer
Signature

February 18, 1997
Date



Seal
(Optional)

*Specify Subdiscipline

Note: Insert not applicable (N/A) when statement does not apply.

FEDERAL EMERGENCY MANAGEMENT AGENCY **CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR FORM**	*O.M.B. Burden No. 3067-0148* *Expires July 31, 1997*	***FEMA USE ONLY***

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1. This certification is in accordance with 44 CFR Ch. I, Section 65.2.
2. I am licensed with an expertise in HYDRAULICS
   [example: water resources *(hydrology, hydraulics, sediment transport, interior drainage)**, structural, geotechnical, land surveying.]
3. I have 15 years experience in the expertise listed above.
4. I have [x] prepared [ ] reviewed the attached supporting data and analyses related to my expertise.
5. I [x] have [ ] have not visited and physically viewed the project.
6. In my opinion, the following analyses and/or designs, is/are being certified:
   Determination of 100-year water surface elevations, floodway elevations, floodplain/floodway maps and flood zones.
7. Based upon the following review, the modifications in place have been constructed in general accordance with plans and specifications.

   Basis for above statement: (check all that apply)

   a. [ ] Viewed all phases of actual construction.
   b. [ ] Compared plans and specifications with as-built survey information.
   c. [ ] Examined plans and specifications and compared with completed projects.
   d. [x] Other N/A , not a constructed project
8. All information submitted in support of this request is correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Frank Edward Brown
(please print or type)

Title: Civil Engineer
(please print or type)

Registration No. 23969

Expiration Date: 03/31/99

State Arizona

Type of License Registered Professional Engineer / Civil

Frank Edward Brown
Signature

17 February 1997
Date

Seal
(Optional)

*Specify Subdiscipline

Note: Insert not applicable (N/A) when statement does not apply.

FEDERAL EMERGENCY MANAGEMENT AGENCY **HYDROLOGIC ANALYSIS FORM**	*O.M.B. Burden No. 3067-0148* *Expires July 31, 1997*	***FEMA USE ONLY***

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.67 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: UNINCORPORATED MARICOPA COUNTY AND A PORTION OF THE TOWN OF CAVE CREEK, ARIZONA

Flooding Source: CAVE CREEK
(One form for each flooding source)

Project Name /Identifier: CAVE CREEK ABOVE CAREFREE HIGHWAY FLOODPLAIN DELINEATION STUDY, FCD NO. 95-28

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)

☒ Detailed study stream (briefly explain methodology) SEE HYDROLOGY TDN, BOOK 1 OF 2, SECTION 3.1, PAGE 3-1.

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☐ No existing analysis

☒ Improved data *(see data revision on page 3)*

☒ Changed physical conditions of watershed *(explain)* LAND USE CONDITIONS HAVE CHANGED

☒ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)* IMPROVED MODELING OF INFILTRATION CHARACTERISTICS USING GREEN AND AMPT METHODOLOGY AND HEC-1 (SEE HYDROLOGY TDN, BOOK 1 OF 2, SECTION 3.2.2.3, PAGE 3-6).

☐ Evaluation of proposed conditions (CLOMRs only) (explain)

☐ Other

If a computer program/model was used in revising the hydrologic analysis, please provide a diskette with the input files for the 10-, 50-, 100 - and 500-year recurrence intervals. SEE HYDROLOGY TDN, BOOK 1 OF 2, DISKETTE FOLDER

Only the 100-year recurrence interval need be included for SFHAs designated as Zone A.

3. APPROVAL OF ANALYSIS

☐ Approval of hydrologic analysis, including the resulting peak discharge value (s) has been provided by the appropriate local, state, or Federal Agency. (i.e.,_____)

Attach evidence of approval.

☒ Approval of the hydrologic analysis is not required by any local, State, or Federal Agency.

Stream: CAVE CREEK

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs):	Revised (cfs):
BELOW CAREFREE HIGHWAY	124.38	36,860	33,771
CONF. W/ ANDORA HILLS WASH	114.99	35,000	31,176
GVSCE UPSTREAM LIMIT (RM 35.49)	77.5	28,338	23,235

Note: When revised discharges are not significantly different than FIS discharges, FEMA may require a confidence limits analysis on attachment D at a later date to complete the review.

As is often the case with revision requests, only a portion of a stream may actually be revised or be affected by a revision. Therefore, transition to the unrevised portion is important to maintain the continuity of the study. NFIP regulations stipulate that such a transition must be assured. What is the transition from the proposed discharges to the effective discharges? Please explain how the transition was made *(attach separate sheet if necessary)*

ATTACH A COMPLETED REVIEW OF RESULTS PAGE FOR EACH FLOODING SOURCE.

Is the new hydrologic analysis being developed solely to revise the flow values presented in the FIS *(i.e. no changed hydraulic conditions)*? ☐ Yes ☒ No

If yes, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

FEMA does not normally revise NFIP maps solely due to insignificant flow changes where changes in 100-year water surface elevation are less than 1.0 foot.

5. HISTORICAL FLOODING INFORMATION

Is historical data available for the flooding source? ☒ Yes ☐ No

If yes, provide the following:

Location along flooding source: 0.8 mi SW of CAREFREE HIGHWAY

Maximum peak discharge: 12,400 cfs

Second highest peak discharge: 8,570 cfs

Source of information: GARRETT, J.M., AND GELLENBECK, D.J., 1991, USGS BASIN CHARACTERISTICS AND STREAMFLOW STATISTICS IN AZ AS OF 1989 : WRI REPORT 91-4041; P540.

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*
USGS GAGE ALONG FLOODING SOURCE

Gaging Station: CAVE CREEK NEAR CAVE CREEK, AZ USGS GAGE # 09512300

Drainage area at gage: 121 mi² * * PER USGS

Number of years of data: 41 YEARS

7. DATA REVISION

Please use the following table to list all the data and/or parameters affected by this request and identify them as new data (*New*) or as revising existing data (*Revised*). *(If necessary, attach a separate sheet.)*

Data Parameter	New	Revised	Data Source
SEE ATTACHMENT 2	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

- Data source can be from a Federal, State, or local government agency, or from a private source. Some State and local governments may have less strict data requirements than Federal agencies, in which case the hydrologic data may not be accepted by FEMA unless it is demonstrated that the data give a better estimate of the flood discharge.
- Attach documentation corroborating each data source *(i.e., certified statement, report, bibliographical reference to a published document)*. In the case of a published document or a government report, providing copies of the cover and pertinent pages may be helpful. SEE ATTACHMENT 2

8. METHODOLOGY FOR NEW ANALYSIS

☐ Statistical Analysis of Gage Records (*use Attachment A*)

☐ Regional Regression Equations *(use Attachment B)*

☐ Precipitation/Runoff Model *(use Attachment C)*

☐ Other *(specify; attach backup computations and supporting data)* _____

Attachment 2

Form 3, Section 7 (Data Revision)

Data Parameter	Hydrology TDN Section and Page Reference	New/Revised	Source
Soils	Section 3.2.2.3, pg 3-7	Revised	SCS, USFS - Tonto National Forest
Land use	Section 3.2.2.3, pg 3-14	Revised	FCDMC, Aerial photos, Field survey
Hydrograph	Section 3.2.2.3, pg 3-16	New	FCDMC Hydrology Manual
Routing	Section 3.2.2.3, pg 3-22	New	Field survey, Jan 96 mapping
Rainfall	Section 3.3.4, pg 3-29	New	NOAA Atlas II, FCDMC Hydrology Manual

ATTACHMENT C: PRECIPITATION/RUNOFF MODEL

		FIS:	Revised
1.	Method or model used:	TR-20	HEC-1
	Version:	UNKNOWN	4.01E
	Date:	UNKNOWN	MAY 1991
2.	Source of rainfall depth:	US WEATHER BUREAU	NOAA ATLAS II
3.	Source of rainfall distribution:	UNKNOWN	SCS TR55 AS IMPLEMENTED BY FCDMC
4.	Rainfall duration:	24-HOUR	24-HOUR
5.	Areal adjustment to precipitation (%):	UNKNOWN	SEE HYDROLOGY TDN BOOK 1 OF 2, TABLE 3-10, PG 3-33
6.	Maximum overland flow length	UNKNOWN	7.99 MI
7.	Hydrograph development method:	UNKNOWN	SEE ATTACHMENT 3
8.	Loss rate method:	CURVE NUMBER	GREEN AND AMPT + SURFACE RETENTION
	Source of soils information:	SCS	SCS/TONTO NATL. FORES
	Source of land use information	UNKNOWN	FCDMC/AERIA PHOTOS/ FIELD SURVE
9.	Channel routing method:	UNKNOWN	MODIFIED PULS
10.	Reservoir routing:	☐ Yes ☐ No	☐ Yes ☒ No
11.	Baseflow considerations:	☐ Yes ☐ No	☐ Yes ☒ No

If yes, explain how baseflow was determined:

12.	Snowmelt considerations:	☐ Yes ☐ No	☐ Yes ☒ No
13.	Model calibration:	☐ Yes ☐ No	☐ Yes ☒ No

If yes, explain how calibration was performed

14.	Future land use condition:	☐ Yes ☒ No

If yes, explain why

NOTE: FEMA policy is to base flooding on existing conditions.
If data is not available, indicate by N/A.

Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides.

Attachment 3

Form 3, Attachment C, Item 7

Subbasin	Hydrograph Type*
SSW1	Mountain S-Graph
CC1	Mountain S-Graph
BC1	Mountain S-Graph
CC2	Mountain S-Graph
BMM1	Mountain S-Graph
CC3	Mountain S-Graph
UNT1	Mountain S-Graph
STC1	Mountain S-Graph
CC4	Mountain S-Graph
GG1	Mountain S-Graph
MF1	Mountain S-Graph
CC5	Mountain S-Graph
CC6	Mountain S-Graph
CC7	Mountain S-Graph
CWC1	Mountain S-Graph
CC8	Mountain S-Graph
CC9	Mountain S-Graph
CC10	Mountain S-Graph
WSW1	Mountain S-Graph
UNT2	Mountain S-Graph
CC11	Mountain S-Graph
GVW1	Mountain S-Graph
GVW2	Mountain S-Graph
GWW1	Desert/Rangeland S-Graph
GVW3	Desert/Rangeland S-Graph
AHW1	Clark Unit Hydrograph
AHW2	Clark Unit Hydrograph
AHW3	Clark Unit Hydrograph
AHW4	Clark Unit Hydrograph
AHW5	Clark Unit Hydrograph
AHW6	Clark Unit Hydrograph
AHW7	Clark Unit Hydrograph
AHW8	Clark Unit Hydrograph
AHW9	Clark Unit Hydrograph
UNT3	Desert/Rangeland S-Graph
CC12	Mountain S-Graph
CC13	Desert/Rangeland S-Graph

note*: as provided in FCDMC Hydrology Manual

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS FORM**	*O.M.B. Burden No. 3067-0148* *Expires July 31, 1997*	***FEMA USE ONLY***

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County and a portion of the Town of Cave Creek, Arizona

Flooding Source: Cave Creek

(One form for each flooding source)

Project Name/Identifier: Cave Creek Above Carefree Highway Floodplain Delineation Study, FCD No. 95-28

1. REACH TO BE REVISED

Downstream limit: River Mile 30.2, which is about 2,500 feet upstream (north) of the Carefree Highway.

Upstream limit: River Mile 35.57, which is about 300 feet upstream (north) of Morning Star Road.

2. EFFECTIVE FIS

☐ Not studied

☐ Studied by approximate methods

Downstream limit of study _____

Upstream limit of study _____

☒ Studied by detailed methods

Downstream limit of study Cave Buttes Dam (Panel 1210 of 4350)

Upstream limit of study Tonto National Forest (Panel 414 of 4350)

☒ Floodway delineated

Downstream limit of Floodway Cross Section CT shown on Panel 795 of 4350

Upstream limit of Floodway Tonto National Forest (Panel 414 of 4350)

3. HYDRAULIC ANALYSIS

Why is the hydraulic analysis different from that used to develop the FIRM? *(Check all that apply)*

☐ Not studied in FIS

☒ Improved hydrologic data/analysis. Explain: Hydrologic analysis is by the current method approved by the Flood Control District of Maricopa County

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☒ Other. Explain: Updated topographic maps

3. RIVERINE HYDRAULIC ANALYSIS FORM
Models Submitted

For areas which have detailed flooding:

Full input and output listings along with files on diskette *(if available)* for each of the models listed below (items 1, 2, 3, 4, and 5) and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model (e.g. duplicate effective model to corrected effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

For areas which do not have detailed flooding:

Only the 100-year flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses for existing or pre-project conditions and revised or post-project conditions must be submitted. All calculations must be submitted for these analyses. (See item 6 below)

1. Duplicate Effective Model

Natural [x] Floodway [x]

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models *(10-, 50-, 100-, and 500-year multi-profile runs and the floodway run)* must be obtained and then reproduced on the requestor's equipment to produce the duplicate effective model. This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

Below River Mile 35.49 (Harris-Toups)

2. Corrected Effective Model

Natural [x] Floodway [x]

The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

Above River Mile 35.49 (CH2M-Hill)

3. Existing or Pre-Project Conditions Model

Natural [ ] Floodway [ ]

The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.

4. Revised or Post-Project Conditions Model

Natural [x] Floodway [x]

The existing or pre-project conditions model *(or duplicate effective or corrected effective model, as appropriate)* is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.

5. Other: Please attach a sheet describing all other models or calculations submitted.

Natural [ ] Floodway [ ]

6. Hydraulic Analyses (Only if Hydraulic Models are not developed)

Natural [ ] Floodway [ ]

Please attach all calculations for the existing or pre-project conditions and the revised or post-project conditions. Proceed to Form 5, "Riverine/Coastal Mapping Form".

4. MODEL PARAMETERS (from model used to revise 100-year water surface elevation)

1. Discharges:

	Upstream Limit	Downstream Limit
10-year		
50-year		
100-year	23,200 cubic feet per second	33,800 cubic feet per second
500-year		

Attach diagram showing changes in 100-year discharge *See Hydrology TDN, Section 3.*

2. Explain how the starting water surface elevations were determined The starting water surface elevation is taken from the concurrent downstream study, Cave Creek Below Carefree Highway, FCD No. 95-30.

3. Give range of friction loss coefficients *(Manning's "N")* Channel ..... 0.045 - 0.070

Overbanks .... 0.055 - 0.075

If friction loss coefficients are different anywhere along the revised reach from those used to develop the FIRM, give location, value used in the effective FIS, and revised values and an explanation as to how the revised values were determined.

Location	FIS	Revised

Explain: This a complete restudy, using new hydrologic information, updated topographic maps, and a new hydraulic analysis. The friction loss coefficients are determined in accordance with accepted Flood Control District of Maricopa County methodology based upon *Manning's Roughness Coefficients for Stream Channels and Flood Plains in Maricopa County, Arizona*, USGS 1991.

4. Describe how the cross section geometry data were determined *(e.g., field survey, topographic map, taken from previous study)* and list cross sections that were added.

Cross sections were determined by photogrammetric methods taken from the stereo model used to develop the updated topographic maps, and a limited number of cross sections were determined by field survey (at River Mile 31.34, 32.33, 34.19, and 35.54, a total of four surveyed cross sections).

5. Were natural channel banks selected as the location of the left and right channel banks in the model?

☐ Yes ☒ No If no, explain why not: Channel bank stations are generally located at the edge of the unvegetated portion of the channel, or at the toe of the low-flow channel side slopes.

4. MODEL PARAMETERS (Cont'd)

6. Explain how reach lengths for channel and overbanks were determined:

Reach lengths for the channel were determined by computer measurement of the the digitized thalweg, labelled as hydraulic base line on the floodplain maps.

Overbank reach lengths were scaled from the 1 inch = 200 feet floodplain maps, along the centroid of effective overbank flow.

5. RESULTS (from model used to revise 100-year water surface elevations)

1. Do the results indicate:

a. Water surface elevations higher than end points of cross sections? ☐ Yes ☒ No

b. Supercritical depth? ☐ Yes ☒ No

c. Critical depth? ☒ Yes ☐ No

d. Other unique situations? ☐ Yes ☒ No

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps. Explanation: Critical depth is assumed by HEC-2 at a few cross sections. There are an insufficient number of consecutive cross sections to substantiate any supercritical flow reaches.

2. What is the maximum change in energy gradient between cross-sections? 8.76 ft.

Specify location Between River Mile 33.67 and River Mile 33.56

3. What is the distance between the cross-sections in 2 above? 552 ft.

4. What is the maximum distance between cross-sections? 713 ft.

Specify location Between River Mile 30.42 and River Mile 30.28

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? 1.0 foot

b. What is the maximum surcharge for the revised conditions? 1.0 foot

Specify location River Mile 34.36, 34.65, 34.83, 34.92, 35.54

c. What is the maximum velocity? 18.3 fps

Specify location River Mile 33.67

d. Are there any negative surcharge values at any cross-section? ☐ Yes ☒ No

If yes, the floodway may need to be widened. If it is not widened, please explain and indicate the maximum negative surcharge.

Explain:

5. RESULTS (Cont'd)

6. Is the discharge value used to determine the floodway anywhere different from that used to determine the natural 100-year flood elevations? ☐ Yes ☒ No

If Yes, explain:

7. Do 100-year water surface elevations increase at any location? ☒ Yes ☐ No

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases. (For example: State if the increase is due to fill placed within the floodway fringe or placed within the currently adopted floodway limits)

This is a complete re-study using new hydrologic information and updated topographic maps. In some areas the channel has naturally agraded or degraded.

Please attach a completed comparison table entitled: Water Surface Elevation Check (See page 6)

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-[N/A]), 50-[N/A] 100-, and 500-year [N/A])*, downstream of the project at cross-section 30.2* within 0.0 feet (vertical) and upstream of the project at cross section 35.770 within 0.0 feet (vertical). **See adjacent concurrent study "Cave Creek Below Carefree Highway" FCD No. 95-30.*

B. The revised floodway elevations tie into those computed by the effective FIS model, downstream of the project at cross section 30.2* within 0.0 feet (vertical) and upstream of the project at cross section 35.770 within 0.0 feet (vertical). **See adjacent concurrent study "Cave Creek Below Carefree Highway" FCD No. 95-30.*

C. Attach profiles, at the same vertical and horizontal scale as the profiles in the effective FIS report, showing stream bed and profiles of all floods studied (without encroachment). Also, label all cross sections, road crossings (including low chord and top-of-road data), culverts, tributaries, corporate limits, and study limits. If channel distance has changed, the stationing should be revised for all profile sheets. *See Hydraulics Technical Data Notebook, Appendix D.*

D. Attach a Floodway Data Table showing data for each cross section listed in the published Floodway Data Table in the FIS report.

Proceed to Riverine/Coastal Mapping Form.

FEDERAL EMERGENCY MANAGEMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME Maricopa County	FLOODING SOURCE Cave Creek	PROJ. NAME/IDENTIFIER Cave Creek Above Carefree Highway FCD No. 95-28

	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]
30.331	1891.7	1891.9	0.2	1891.7	1981.9	0.2	1892.2	1892.4	0.2				(1893.6)	(1894.3)	(0.7)
30.644	1909.9	1909.9	0.0	1909.9	1909.8	-0.1	1910.4	1910.3	-0.1				(1909.4)	(1910.2)	(0.8)
30.862	1918.7	1919.7	1.0	1918.7	1919.7	1.0	1919.2	1920.2	1.0				(1917.8)	(1918.7)	(0.9)
31.057	1928.2	1928.8	0.6	1928.2	1928.8	0.6	1928.7	1929.3	0.6				(1925.7)	(1926.6)	(0.9)
31.303	1941.5	1942.0	0.5	1941.5	1942.0	0.5	1942.0	1942.5	0.5				(1937.9)	(1938.6)	(0.7)
31.485	1949.4	1949.9	0.5	1949.4	1949.9	0.5	1949.9	1950.4	0.5				(1946.0)	(1947.0)	(1.0)
31.646	1957.5	1958.0	0.5	1957.5	1958.0	0.5	1958.0	1958.5	0.5				(1953.1)	(1953.4)	(0.3)
31.820	1965.0	1965.5	0.5	1965.0	1965.5	0.5	1965.5	1966.0	0.5				(1962.4)	(1963.2)	(0.8)
32.032	1973.4	1974.2	0.8	1973.4	1974.2	0.8	1973.9	1974.7	0.8				(1972.2)	(1972.8)	(0.6)
32.237	1979.3	1979.7	0.4	1979.3	1979.7	0.4	1979.8	1980.2	0.4				(1981.0)	(1981.6)	(0.6)
32.466	1991.6	1992.3	0.7	1991.6	1992.3	0.7	1992.0	1992.7	0.7				(1990.7)	(1991.4)	(0.7)
32.655	2001.0	2001.0	0.0	2001.0	2001.0	0.0	2001.5	2001.5	0.0				(1999.6)	(1999.8)	(0.2)
32.911	2013.1	2013.9	0.8	2013.1	2013.9	0.8	2013.6	2014.4	0.8				(2012.3)	(2013.0)	(0.7)

COMMENTS:

A. Corrected Effective has +0.5 feet added to adjust datum. See Section 2.1 of Hydraulics TDN for Cave Creek Above Carefree Highway.
B. This is a re-study using completely new cross sections. Revised cross section numbers do not correlate to Effective cross section numbers.
C. The NCWSEL column in the Revised Table is taken from the flood profile, and the FCWSEL column is interpolated from the Floodway HEC-2 at the specified Effective River Mile, and are shown in parentheses.

1 - 100-year (natural) Water Surface Elevation 2 - Encroachment (floodway) Water Surface Elevation 3 - Surcharge Value

Include all cross sections in the models between tie-in points. Any interpolated values should be indicated in parentheses.

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FEDERAL EMERGENCY MANAGEMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME Maricopa County | FLOODING SOURCE Cave Creek | PROJ. NAME/IDENTIFIER Cave Creek Above Carefree Highway FCD No. 95-28

	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]
33.112	2024.5	2024.5	0.0	2024.5	2024.4	0.1	2025.0	2024.9	-0.1				(2022.0)	(2022.7)	(0.7)
33.316	2033.9	2034.0	0.1	2033.9	2034.0	-0.1	2034.4	2034.5	0.1				(2032.5)	(2033.2)	(0.7)
33.468	2042.7	2042.7	0.0	2042.7	2042.7	0.0	2043.2	2043.2	0.0				(2038.4)	(2038.5)	(0.1)
33.646	2055.0	2055.2	0.2	2055.0	2055.2	0.2	2055.5	2055.7	0.2				(2047.6)	(2047.7)	(0.1)
33.741	2062.4	2062.4	0.0	2062.4	2062.3	-0.1	2062.9	2062.8	-0.1				(2054.7)	(2055.5)	(0.8)
34.032	2068.5	2068.5	0.0	2068.5	2068.5	0.0	2068.9	2068.9	0.0				(2066.5)	(2067.2)	(0.7)
34.202	2078.1	2078.1	0.0	2078.1	2078.1	0.0	2078.6	2078.6	0.0				(2076.0)	(2076.6)	(0.6)
34.416	2088.8	2088.8	0.0	2088.8	2088.8	0.0	2089.3	2089.3	0.0				(2087.8)	(2088.7)	(0.9)
34.615	2099.6	2099.6	0.0	2099.6	2099.6	0.0	2100.1	2100.1	0.0				(2099.5)	(2100.3)	(0.8)
34.812	2115.1	2115.1	0.0	2115.1	2115.1	0.0	2115.6	2115.6	0.0				(2111.8)	(2112.3)	(0.5)
35.005	2124.9	2124.9	0.0	2124.9	2124.7	-0.2	2125.3	2125.1	-0.2				(2122.0)	(2122.5)	(0.5)
35.204	2137.0	2137.0	0.0	2137.0	2137.0	0.0	2137.4	2137.4	0.0				(2133.4)	(2133.9)	(0.5)
35.46	2148.5	2148.5	0.0	2148.5	2148.5	0.0	2148.9	2148.9	0.0				(2145.5)	(2145.9)	(0.4)

COMMENTS:

A. Corrected Effective has +0.5 feet added to adjust datum. See Section 2.1 of Hydraulics TDN for Cave Creek Above Carefree Highway.
B. This is a re-study using completely new cross sections. Revised cross section numbers do not correlate to Effective cross section numbers.
C. The NCWSEL column in the Revised Table is taken from the flood profile, and the FCWSEL column is interpolated from the Floodway HEC-2 at the specified Effective River Mile, and are shown in parentheses.

1 - 100-year (natural) Water Surface Elevation 2 - Encroachment (floodway) Water Surface Elevation 3 - Surcharge Value

Include all cross sections in the models between tie-in points. Any interpolated values should be indicated in parentheses.

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FEDERAL EMERGENCY MANAGEMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME Maricopa County	FLOODING SOURCE Cave Creek	PROJ. NAME/IDENTIFIER Cave Creek Above Carefree Highway FCD 95-28

	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
				N/A						N/A					
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]
35.69	2158.1	2158.3	0.2				2158.5	2158.7	0.2				2158.5	2158.7	0.2
35.96	2174.0	2174.0	0.0				2174.5	2174.4	-0.1				2174.5	2174.4	-0.1
36.18	2182.1	2182.1	0.0				2182.6	2182.6	0.0				2182.6	2182.6	0.0
36.40	2201.8	2202.7	0.9				2202.2	2203.1	0.9				2202.2	2203.1	0.9

COMMENTS:

A. Corrected Effective has +0.5 feet added to adjust datum. See Section 2.1 of Hydraulics TDN for Cave Creek Above Carefree Highway.
B. Cross sections upstream of 35.54 are from the Corrected Effective model, thus no interpolation is necessary.
. The Revised model actually ties into the Corrected Effective model at Cross Section No. 35.77.

1 - 100-year (natural) Water Surface Elevation 2 - Encroachment (floodway) Water Surface Elevation 3 - Surcharge Value

Include all cross sections in the models between tie-in points. Any interpolated values should be indicated in parentheses.

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FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE/COASTAL MAPPING FORM**	*O.M.B. Burden No. 3067-0148* *Expires July 31, 1997*	***FEMA USE ONLY***

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1.5 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Maricopa County

Flooding Source: Cave Creek

Project Name/Identifier: Cave Creek Above Carefree Highway, FCD No. 95-28

1. MAPPING CHANGES

1. A topographic work map of suitable scale, contour interval, and planimetric definition must be submitted showing *(indicate N/A when not applicable)*:

		Included
A.	Revised approximate 100-year floodplain boundaries (Zone A)	☐ Yes ☐ No ☒ N/A
B.	Revised detailed 100- and 500-year floodplain boundaries: *500-year not applicable*	☒ Yes ☐ No ☐ N/A
C.	Revised 100-year floodway boundaries	☒ Yes ☐ No ☐ N/A
D.	Location and alignment of all cross sections used in the revised hydraulic model with stationing control indicated	☒ Yes ☐ No ☐ N/A
E.	Stream alignments, road and dam alignments	☒ Yes ☐ No ☐ N/A
F.	Current community boundaries	☒ Yes ☐ No ☐ N/A
G.	Effective 100- and 500-year floodplain and 100-year floodway boundaries from the FIRM/FBFM reduced or enlarged to the scale of the topographic work map: *500-year not applicable*	☒ Yes ☐ No ☐ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries: *500-year not applicable*	☒ Yes ☐ No ☐ N/A
I.	The requestor's property boundaries and community easements	☐ Yes ☐ No ☒ N/A
J.	The signed certification of a registered professional engineer	☒ Yes ☐ No ☐ N/A
K.	Location and description of reference marks	☒ Yes ☐ No ☐ N/A
L.	Vertical datum (example: NGVD, NAVD, etc.)	☒ Yes ☐ No ☐ N/A
M.	Coastal zone designations tie into adjacent areas not being revised	☐ Yes ☐ No ☒ N/A
N.	Location and alignment of all coastal transects used to revise the coastal analyses	☐ Yes ☐ No ☒ N/A

If any of the items above are marked no or N/A, please explain: Item A - No Zone A within Study limits.

Item I. The requestor is Flood Control District of Maricopa County and is not an individual property owner.

Items M & N. No coastal regions.

2. What is the source and date of the updated topographic information *(example: orthophoto maps, July 1985; field survey, May 1979, beach profiles, June 1987, etc.)*? Photogrammetry, date of aerial photography is 1/12/96

3. What is the scale and contour interval of the following workmaps?

   a. Effective FIS 400 scale 4 Contour interval

   b. Revision Request 200 scale 2 Contour interval

NOTE: Revised topographic information must be of equal or greater detail.

4. Attach an annotated FIRM and FBFM at the scale of the effective FIRM and FBFM showing the revised 100-year and 500-year floodplains and the 100-year floodway boundaries and how they tie into those shown on the effective FIRM and FBFM downstream and upstream of the revision or adjacent to the area of revision for coastal studies. *500-year not applicable*

Attach additional pages if needed.

5. Flood Boundaries and 100-year water surface elevations:

Has the 100-year floodplain been shifted or increased or the 100-year water surface elevation increased at any location on property other than the requestor's or community's? ☒ Yes ☐ No

If yes, please give the location of shift or increase and an explanation for the increase.

This is a complete re-study. In some areas the channel has naturally agraded, degraded, or naturally shifted laterally, resulting in an increase or decrease in 100-year water surface or a shift in 100-year floodplain.

a. Have the affected property owners been notified of this shift or increase and the effect it will have on their property? ☒ Yes ☐ No

If yes, please attach letters from these property owners stating they have no objections to the revised flood boundaries if a LOMR is being requested.

b. What is the number of insurable structures that will be impacted by this shift or increase? 0 (None)

6. Have the floodway boundaries shifted or increased at any location compared to those shown on the effective FBFM or FIRM? ☒ Yes ☐ No

If yes, explain:

This is a complete re-study. In some areas the channel has naturally agraded, degraded, or naturally shifted laterally, resulting in an increase or decrease in 100-year water surface or a shift in 100-year floodplain.

7. If a V-zone has been designated, has it been delineated to extend landward to the heel of the primary frontal dune? ☐ Yes ☐ No

If no, explain:

Not applicable

8. Manual or digital map submission:

☒ Manual
☐ Digital

Digital map submissions may be used to update digital FIRMs (DFIRMs). For updating DFIRMs, these submissions must be coordinated with FEMA Headquarters as far in advance of submission as possible.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed *Not Applicable*

2. Has fill been/will be placed in the regulatory floodway? ..... ☐ Yes ☐ No

   If yes, please attach completed Riverine Hydraulic Analysis Form.

3. Has fill been/will be placed in floodway fringe *(area between the floodway and 100-year floodplain boundaries)*? ..... ☐ Yes ☐ No

   If yes, then complete A, B, C, and D below.

   A. Are fill slopes for granular materials steeper than one vertical on one-and-one-half horizontal? ..... ☐ Yes ☐ No

      If yes, justify steeper slopes _____

      _____

   B. Is adequate erosion protection provided for fill slopes exposed to moving flood waters? *(Slopes exposed to flows with velocities of up to 5 feet per second (fps) during the 100-year flood must, at a minimum, be protected by a cover of grass, vines, weeds, or similar vegetation; slopes exposed to flows with velocities greater than 5 fps during the 100-year flood must, at a minimum, be protected by stone or rock riprap.)* ..... ☐ Yes ☐ No

      If no, describe erosion protection provided _____

      _____

   C. Has all fill placed in revised 100-year floodplain been compacted to 95 percent of the maximum density obtainable with the Standard Proctor Test Method or acceptable equivalent method? ..... ☐ Yes ☐ No

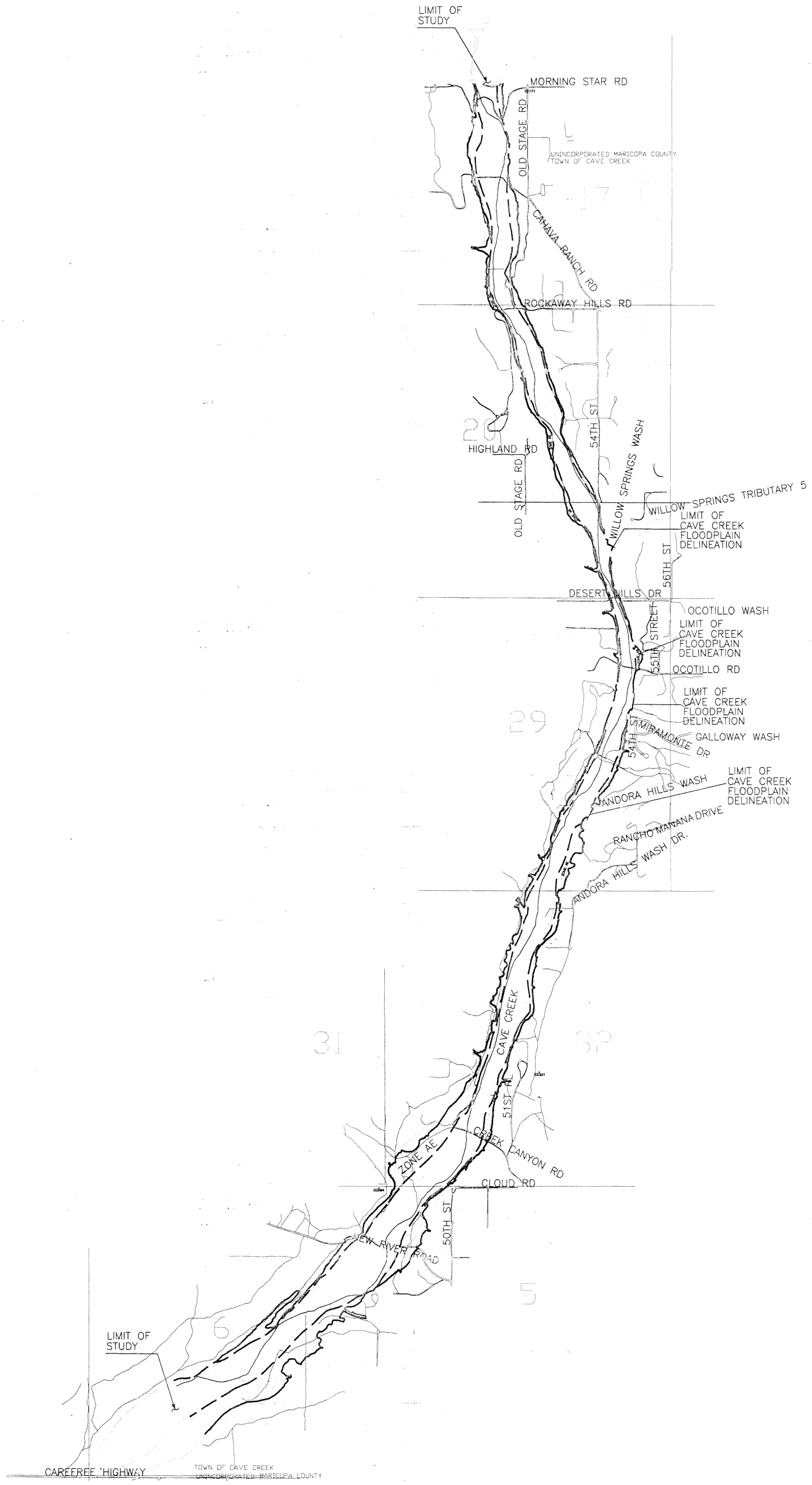
   D. Can structures conceivably be constructed on the fill at any time in the future? ..... ☐ Yes ☐ No

      If yes, provide certification of fill compaction (item C. above) by the community's NFIP permit official, a registered professional engineer, or an accredited soils engineer.

4. Has fill been/will be placed in a V-zone? ..... ☐ Yes ☐ No

   If yes, is the fill protected from erosion by a flood control structure such as a revetment or seawall? ..... ☐ Yes ☐ No

   If yes, attach the coastal structures form.



NOTE: EFFECTIVE FEMA MAPS BASED ON FIRM PANELS 802, 805 & 815 OF 4350 SUPPLIED IN DIGITAL FORM BY THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF CAVE CREEK ABOVE CAREFREE HIGHWAY

F.C.D. CONTRACT NO. 95-28

EFFECTIVE FEMA MAP OVERLAY WITH REVISED MODEL

LEGEND

- 100-YR FLOODPLAIN REVISED
- 100-YR FLOODWAY REVISED
- 100-YR FLOODPLAIN EFFECTIVE
- 100-YR FLOODWAY EFFECTIVE
- HYDRAULIC BASELINE

1000 0' 1000 2000

SCALE: 1"= 1000'

GEORGE V. SABOL CONSULTING ENGINEERS, INC.
in association with
McLAUGHLIN KMETTY ENGINEERS, LTD.

	BY	DATE
DESIGN	FEB	2/97
DESIGN CHK.	FCDMC	2/97
PLANS	KLH,RGS	3/97
PLANS CHK.	FEB	3/97

SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 1 OF 1

Dwg. Name: \P\92400003\ACAD\FEMAOVER.DWG